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October 5, 2023

***Via Hand Delivery & Electronic Mail***

Mr. Steve Kahl
North Dakota Public Service Commission
600 E. Boulevard, Dept. 408
Bismarck, ND 58505-0480
ndpsc@nd.gov

In re: Cerilon GTL ND Inc.
Cerilon GTL North Dakota Project
Williams County
Siting Application
Our File No. 201121-000001

Dear Mr. Kahl:

Enclosed for filing please find eight copies of each of the following:

1) Cerilon GTL ND Inc.'s Application for a Certificate of Site Compatibility in Williams County, North Dakota;

2) Publication Map; and

3) Notice of Appearance.

A wire transfer in the amount of $150,000.00 will take place to transfer funds for the Commission's filing fee ($100,000.00) and administrative fee ($50,000.00).

We are also enclosing a USB containing project GIS and an electronic version of the application for your convenience.

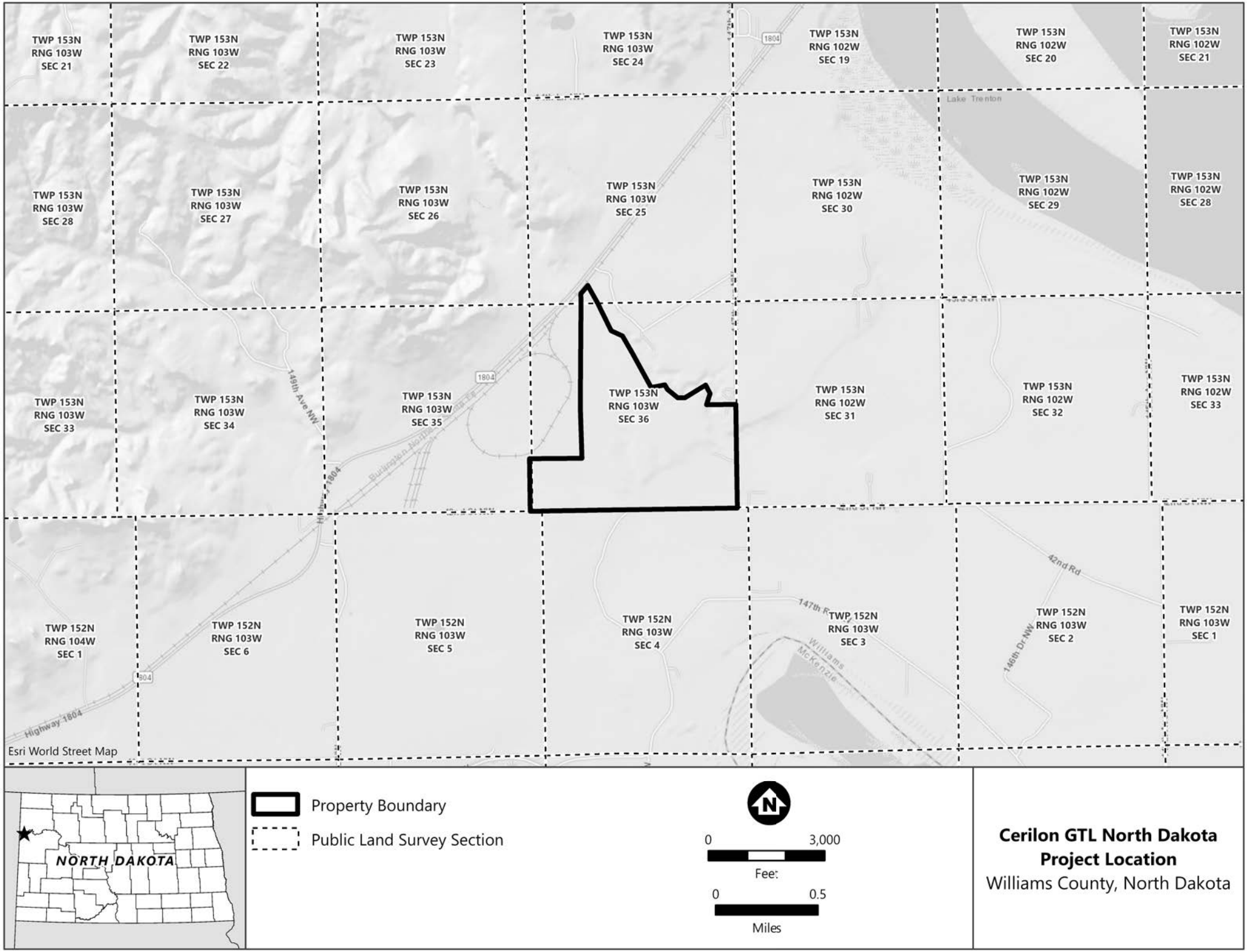
Please feel free to contact me if you have any questions. Thank you.

Sincerely,

Casey A. Furey

CAF/lh
Enc.

cc: Erik Edison (via email)
Rochelle Harding (via email)
Jeff Pendrel (via email)




**Cerilon GTL North Dakota**
**Project Location**
Williams County, North Dakota

**BEFORE THE STATE OF NORTH DAKOTA**

**PUBLIC SERVICE COMMISSION**

| | |
|---|---|
| **In the Matter of the Application of Cerilon GTL ND Inc. for a Certificate of Site Compatibility to construct a gas-to-liquid (GTL) facility in Williams County, North Dakota** | **Case No. PU-23-___** |

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## NOTICE OF APPEARANCE

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Notice is hereby given that Casey A. Furey and Erik J. Edison, Crowley Fleck PLLP, will be appearing in the above-entitled matter on behalf of Cerilon GTL ND Inc. All correspondence, notices, pleadings, and other material relevant to this matter should be served upon the undersigned.

Dated this 5th day of October, 2023.

By: _____

CASEY A. FUREY (Bar ID #08035)
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ERIK J. EDISON (Bar ID #08790)
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CROWLEY FLECK PLLP
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# Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility

## *Cerilon GTL North Dakota Project*

Prepared for
Cerilon GTL ND Inc.

September 2023

4300 MarketPointe Drive, Suite 200
Minneapolis, MN 55435
952.832.2600
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# Application to the North Dakota Public Service Commission for a Certificate of Site Compatibility

## September 2023

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# Abbreviations

| | |
|---|---|
| ASU | Air Separation Units |
| ATR | autothermal reformer |
| Barr | Barr Engineering Co. |
| BEPC | Basin Electric Power Cooperative |
| BLM | Bureau of Land Management |
| BMPs | best management practices |
| bpd | barrels per day |
| ˚C | degrees Celsius |
| CCS | carbon capture and sequestration |
| Cerilon | Cerilon GTL ND Inc. |
| $CH_4$ | methane |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| CoMo | cobalt-molybdenum oxide |
| CPS | Civilian Public Service |
| cSt | centistokes |
| CuO | copper oxide |
| dB | decibels |
| dBA | a-weighted decibels |
| Dkey | North Dakota Determination Key |
| ELF | extremely low frequency |
| EMF | electromagnetic field |
| EPA | Environmental Protection Agency |
| ESA | Endangered Species Act |
| ESG | environmental, social, and governance |
| ˚F | degrees Fahrenheit |
| FEMA | Federal Emergency Management Administration |
| FRP | Facility Response Plan |
| F-T | Fischer-Tropsch Reactors |
| GIS | geographic information systems |
| GTL | gas to liquid |
| $H_2$ | hydrogen |
| $H_2O$ | water |
| $H_2S$ | hydrogen sulfide |
| HDU | hydrogen desulfurization unit |
| LHC | light hydrocarbon condensate |
| LPG | liquefied petroleum gas |
| LYREC | Lower Yellowstone Rural Electric Cooperative |
| mG | milligauss |

| | |
|---|---|
| MMscf/day | million cubic feet per day |
| MPC | Marathon Petroleum Corporation |
| NAAQS | National Ambient Air Quality Standards |
| NDAAQS | North Dakota Ambient Air Quality Standards |
| NDAC | North Dakota Administrative Code |
| NDCC | North Dakota Century Code |
| NDDEQ | North Dakota Department of Environmental Quality |
| NDDOT | North Dakota Department of Transportation |
| NDIC | North Dakota Industrial Commission |
| NDPDES | North Dakota Pollutant Discharge Elimination System |
| NG | natural gas |
| $NO_X$ | nitrogen oxides |
| NRHP | National Register of Historic Places |
| OSHA | Occupational Safety and Health Administration |
| PM | particulate matter |
| POTW | publicly owned treatment works |
| ppb | parts per billion |
| PSC | North Dakota Public Service Commission |
| PSD | Prevention of Significant Deterioration |
| psig | pounds per square inch gauge |
| PTC | Permit to Construct |
| PTO | Permit to Operate |
| PWU | product work-up unit |
| REC | recognized environmental conditions |
| $SO_2$ | sulfur dioxide |
| SPCC | spill prevention, control, and countermeasure |
| SPP | Southwest Power Pool |
| SWPPP | stormwater pollution prevention plan |
| TVOP | Title V Operating Permit |
| $ug/m^3$ | micrograms per cubic meter |
| ULSD | ultra-low sulfur diesel |
| UMPC | Upper Missouri Power Cooperative |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| ZnO | zinc oxide |

# 1 Executive Summary

Barr Engineering Co. prepared this application on behalf of Cerilon GTL ND Inc. (Cerilon) for a Certificate of Site Compatibility (Certificate) to be evaluated by the North Dakota Public Service Commission (PSC). Cerilon intends to construct the Cerilon GTL North Dakota Project (the Project), which includes two gas-to-liquid (GTL) facilities (Phase 1 and Phase 2) on a single site and includes electric power generation as a secondary benefit from excess steam generation. The Project meets both the definitions of *electric energy conversion facility* and *gas or liquid energy conversion facility* from North Dakota Century Code (NDCC) 49-22-03(5) and 49-22.1-01(6), respectively. This application has been prepared in accordance with the requirements of NDCC 49-22 and NDCC 49-22.1.

# 2 Compliance with the Energy Conversion and Transmission Facility Siting Act

The Project, as described in Section 4, triggers two criteria for the *Energy Conversion and Transmission Siting Act*:

1. The Project will exceed the one hundred million cubic feet per day of gas threshold to meet the definition of a *gas or liquid energy conversion facility* under NDCC 49-22.1-01(6).

2. The Project will exceed the 50-megawatt electric energy generation threshold to meet the definition of an *electric energy conversion facility* under NDCC 49-22-03(5).

As such, Cerilon must receive a Certificate from the PSC. Barr Engineering Co. (Barr) has prepared this Certificate application in accordance with the requirements of NDCC 49-22 and 49-22.1, as well as North Dakota Administrative Code (NDAC) Article 69-06, *Energy Conversion and Transmission Facility Siting*. These regulations identify the required contents of a Certificate application and the siting criteria the PSC considers to issue a Certificate. Table 2-1 outlines the requirements of NDCC 49-22, NDCC 49-22.1, and NDAC 69-06 and identifies the section of this application where the specified information is provided.

In addition to the Certificate, Cerilon will secure other permits and approvals as required. Please refer to Section 9 for a complete list of permits and approvals that will need to be issued for the Project to proceed.

**Table 2-1 Certificate Application Completion Checklist**

| Citation | Description | Section |
|---|---|---|
| **NDAC 69-06-04-01** | **Certificate of Site Compatibility** | |
| **Section 2** | **Application Contents** | |
| a.(1) | A description of the type of energy conversion facility proposed. | 4 |
| a.(2) | A description of the gross design capacity. | 4.1.1, 4.2.1 |
| a.(3) | A description of the net design capacity. | 4.1.1, 4.2.1 |
| a.(4) | A description of the estimated thermal efficiency of the energy conversion process and the assumption upon which the estimate is based. | 4.1.1, 4.2.1 |
| a.(5) | A description of the number of acres that the proposed facility will occupy. | 3 |
| a.(6) a | A description of the anticipated time schedule for obtaining the certificate of site compatibility. | 4.6 |
| a.(6) b | A description of the anticipated time schedule for completing land acquisition. | 4.6 |
| a.(6) c | A description of the anticipated time schedule for starting construction. | 4.6 |
| a.(6) d | A description of the anticipated time schedule for completing construction. | 4.6 |
| a.(6) e | A description of the anticipated time schedule for testing operations. | 4.6 |
| a.(6) f | A description of the anticipated time schedule for commencing commercial production. | 4.6 |

| Citation | Description | Section |
|---|---|---|
| a.(6) g | A description of the anticipated time schedule for beginning any expansions or additions. | 4.6 |
| b. | Copies of any evaluative studies or assessments of the environmental impact of the proposed facility submitted to any federal, regional, state, or local agency. | See Appendices |
| c. | An analysis of the need for the proposed facility based on present and projected demand for the product or products to be produced by the proposed facility, including the most recent system studies supporting the analysis of the need. | 5 |
| d. | A description of any feasible alternative methods of serving the need. | 5 |
| e. | A study area that includes the proposed facility site, of sufficient size to enable the commission to evaluate the factors addressed in North Dakota Century Code section 49-22-09. | 6.2 |
| f. | A discussion of the utility's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives. | 8.1 |
| g. | A map identifying the criteria that provides the basis of the specific location of the proposed facility within the study area. | Figure A.4 |
| h. | A discussion of the criteria evaluated within the study area, including exclusion areas, avoidance areas, selection criteria, policy criteria, design and construction limitations, and economic considerations. | 6, 8 |
| i. | A discussion of the mitigative measures that the applicant will take to minimize adverse impacts which result from the location, construction, and operation of the proposed facility. | 7, 8 |
| j. | The qualifications of each person involved in the facility site location study. | 11 |
| k. | A map of the study area showing the location of the proposed facility and the criteria evaluated. | Figure A.4 |
| l. | An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area. | Figure A.2 |
| m. | A discussion of present and future natural resource development in the area. | 8.10 |
| n. | Map and Geographical Information System (GIS) requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the commission. | See figures |
| **NDAC 69-06-08-01** | **Energy conversion facility siting criteria.** | |
| (1) | Exclusion areas. Geographical areas that must be excluded in the consideration of a site for an energy conversion facility. | 6.4 |
| (2) | Additional exclusion areas for wind energy conversion facilities… | NA |
| (3) | Avoidance areas. Geographical areas that may not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative. | 6.5 |
| (4) | Additional avoidance areas for wind energy conversion facilities… | NA |

| Citation | Description | Section |
|---|---|---|
| (5) | Selection criteria. A site may be approved in an area only when it is demonstrated to the commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum. The effects to be considered include: … | 6.6 |
| (6) | Policy criteria. The commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The commission may also give preference to an applicant that will maximize interstate benefits. The benefits to be considered include: … | 6.7 |
| **NDCC 49-22-08 & 49-22.1-06** | **Description of Application Requirements** | |
| **Section 1** | **An application for a certificate shall be in such form as the commission may prescribe, containing the following information:** | |
| a. | A description of the size and type of facility. | 4 |
| b. | A summary of any studies which have been made of the environmental impact of the facility. | 6.3 |
| c. | A statement explaining the need for the facility. | 5 |
| d. | An identification of the location of the preferred site for any energy conversion facility. | 3, 6.1, Figure A.1 |
| e. | An identification of the location of the preferred corridor for any transmission facility. | NA |
| f. | A description of the merits and detriments of any location identified and a comprehensive analysis with supporting data showing the reasons why the preferred location is best suited for the facility. | 6 |
| g. | A description of mitigative measures that will be taken to minimize all foreseen adverse impacts resulting from the location, construction, and operation of the proposed facility. | 8 |
| h. | An evaluation of the proposed site or corridor with regard to the applicable considerations set out in section 49-22-09 and the criteria established pursuant to section 49-22-05.1. | See references in this table |
| i. | Such other information as the applicant may consider relevant or the commission may require. | 5 |
| **NDCC 49-22-09 & 49-22.1-09** | **Factors to be considered in evaluating applications and the designation of sites.** | |
| Section 1 | The commission shall be guided by, but is not limited to, the following considerations, where applicable, to aid the evaluation and designation of sites, corridors, and routes: | See references below |
| a. | Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment. | 8 |

| Citation | Description | Section |
|---|---|---|
| b. | The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects. | 8 |
| c. | The potential for beneficial uses of waste energy from a proposed energy conversion facility. | 4 |
| d. | Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designed. | 8 |
| e. | Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects. | 5 |
| f. | Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designed. | 8 |
| g. | The direct and indirect economic impacts of the proposed facility. | 8 |
| h. | Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route. | 5.4 |
| i. | The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites. | 8.17, 8.18 |
| j. | The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species. | 8.8, 8.9, 8.10 |
| k. | Problems raised by federal agencies, other state agencies, and local entities. | 10 |
| Section 3 | Before the commencement of operations of the proposed facility, the applicant shall inform the commission that the applicant has executed or filed an unexecuted generation interconnection agreement, or comparable transmission services agreement, with the affected regional transmission organization or transmission owner. | 4.2.2 |

# 3 Project Location

Cerilon owns, or is under contract to acquire, approximately 370 acres in Sections 25 and 36, Township 153 North, Range 103 West in Williams County on which the Project will be constructed (the Project Site). The Project Site is approximately 1.5 miles southwest of Lake Trenton and the unincorporated community of Trenton, 2.75 miles northwest of the Missouri River, 5 miles northeast of the unincorporated community of Buford, and 7.5 miles southwest of the city limits of Williston. The Project Site is bordered to the west by Savage Services Corporation's Bakken Petroleum Services Hub (Savage), to the north by the Great Northern Railroad, and to all other sides by agricultural land, homesteads, and farmsteads.

The Project Site is predominantly agricultural, with one active oil and gas production well and associated tank battery. One reported plugged and abandoned oil and gas production well on the site. Eightmile Creek, which flows into the Missouri River, follows along and through the northern Project Site boundary before eventually passing through the eastern edge of the Project Site. The Buford-Trenton Project, an irrigation canal, passes through the southeastern corner of the Project Site.

The United States Army Corps of Engineers (USACE) has a flowage and saturation easement covering 28.81 acres in the southeast corner of the Project Site between 42nd Street NW, 147th Ave NW, and the irrigation canal. This easement restricts the development and construction of the land without written approval. The Buford-Trenton Irrigation District, manager of the irrigation canal, and the Bureau of Reclamation, owner of the canal, also have an easement permitting access to and restricting development and construction near the irrigation canal that would impede either agency from maintaining the canal.

Ten existing underground pipelines pass through the Project Site:

- Two operated by Hiland Crude, LLC [a subsidiary of Kinder-Morgan]
- Five operated by Grayson Mill Operating, LLC
- One operated by Plains Pipeline, L.P.
- One operated by ONEOK, Inc.
- One permanently abandoned pipeline

Cerilon has confirmed that Hiland Crude / Kinder Morgan and Grayson Mill will need to reroute their pipelines to accommodate the construction of the Project. Cerilon has initiated discussions with both Kinder Morgan and Grayson Mill to discuss rerouting these lines at Cerilon's expense. Work is underway to confirm the timing and costs of rerouting these lines. Pipeline owners will be responsible for securing regulatory authorizations for these changes.

The Project Site is shown in Figure A.1. Plot plans for the Project described in Section 4 are shown in Figure A.5 and Figure A.6. The resources currently available at the Project Site, potential impacts to those resources from the Project, and mitigation measures are described in detail in Section 8.

## 3.1 Relationships with Third Parties

Cerilon is coordinating many activities with independent third parties to support the Project. These activities include but are not limited to, connections to a natural gas supply pipeline, a water supply pipeline, electrical transmission lines, a fiber optic line, and a carbon dioxide ($CO_2$) pipeline routed to an off-site sequestration facility. All these activities are outside of the scope of the Project and this application as they (1) will be permitted, constructed, and operated by third parties on property located outside of the Project Site and (2) are not part of the *gas or liquid energy conversion facility* or *electric energy conversion facility*, defined in NDCC 49-22.1-01(6) and NDCC 49-22-03(5), respectively.

A third party whose relationship with Cerilon should be specifically noted is the Savage Bakken Petroleum Services Hub (Savage). Savage is an existing petroleum bulk storage terminal adjacent to the west side of the Project Site that transloads petroleum liquids between railcars and tanker trucks. Savage operates five large petroleum storage tanks, a rail loop, and ten rail spurs to facilitate its transloading activities.

Cerilon and Savage are actively evaluating a commercial arrangement wherein Savage constructs and operates tankage for Cerilon's final products on Savage's property. Savage's existing railroad connection and liquid loading racks provide feasible means of delivering finished products without permitting and construction additional, similar infrastructure on the Project Site. It is anticipated that Savage will permit, construct, own, and operate the storage tanks used to store the Project's finished products, as well as any new rail and truck loading infrastructure that is required. See Figure A.5 and Figure A.6 for plot plans identifying the new storage tanks on Savage's property associated with Phase 1 and Phase 2 of the Project, respectively.

The core operations at Savage, organic liquid storage tanks and truck and rail loading equipment, will not change because of the Project. This arrangement maximizes efficient land use by further developing heavy industrial land and sharing existing rail infrastructure. It also eliminates the need to acquire additional adjacent agricultural land and redevelop it for the finished product storage tanks, rail connection, and truck and rail loading equipment that cannot be constructed on the Project Site while meeting relevant safety and engineering principles of process design.

As noted previously, Savage will permit, construct, own, and operate the storage tanks and new rail and truck loading infrastructure at their terminal. Savage will independently procure any permits that may be necessary for their equipment. Because the storage tanks will be integrated within Savage's existing rail loading facility, they are separate from the Project and not included in this siting application.

# 4 Project Description

The Project will include two GTL facilities constructed in phases (Phase 1 and 2). Both GTL facilities will contain the following key components:

- Process equipment to facilitate the conversion of natural gas to liquid hydrocarbon products:
    - Group III+ Base Oils: these base oils are the primary component of many premium lubricants (e.g., synthetic motor oil). Their primary market is lubricant manufacturers who combine them with their proprietary additives to produce saleable products.
    - Ultra ultra-low sulfur diesel (ULSD): the ULSD to be produced by the Project is a unique, premium quality, synthetic middle distillate. The ULSD produced by the Project is a fully fungible, drop-in alternative for petroleum-based diesel.
    - Naphtha: the naphtha to be produced by the Project is a mixture of hydrocarbons that may be either sold to petroleum refineries or chemical plants for further processing or used as a diluent to reduce the viscosity of bitumen. Bitumen from the oil sands is too viscous to transport via a pipeline efficiently. Diluents are added to the bitumen to reduce its viscosity for pipeline transport.
    - Other hydrocarbon products, such as aviation fuel and liquefied petroleum gas (LPG), may be produced in Phase 2 depending on market conditions but are not included in the Phase 1 development.
- Electric energy generation using excess heat generated by the conversion of natural gas to liquid hydrocarbon products
- Carbon capture for off-site, third-party sequestration of carbon dioxide ($CO_2$)
- Utilities and other support services
- Temporary facilities to support construction

Sections 4.1 through 4.5 describe these five components in detail. Cerilon will construct both GTL facilities on the Project Site described in Section 3. Figure A.5 illustrates the proposed layout for the Project after completion of Phase 1. Figure A.6 illustrates the proposed layout for the Project after completion of Phase 2.

## 4.1 Conversion of Natural Gas to Liquids

### 4.1.1 Gross Design Capacity, Net Design Capacity, and Thermal Efficiency

Each GTL facility will convert 240 million standard cubic feet per day (MMscf/day) of natural gas to 24,000 barrels per day (bpd) of liquid hydrocarbon products. Two GTL facilities will be constructed (Phase 1 and Phase 2). Following Phase 2, the Project will convert 480 MMscf/day of natural gas to 48,000 bpd of liquid

hydrocarbon products (i.e., the gross design capacity). Cerilon is designing Phase 1 to produce approximately 14,600 bpd of ultra-low sulfur diesel (60% of production), 3,600 bpd of naphtha (15%), and 5,800 bpd of Group III+ lubricant base oils (25%). Cerilon intends to construct Phase 2 with the same capacity but may alter the product slate based on future market conditions.

The conversion of natural gas to liquid products has no associated thermal efficiency.

### 4.1.2 Process Overview

The conversion of natural gas to saleable liquid products will include three major process steps:

- Natural Gas Conversion to Syngas (Section 4.1.3) – An autothermal reformer (ATR) will convert natural gas into syngas, a mixture of predominantly hydrogen ($H_2$) and carbon monoxide (CO). Each GTL facility will contain two parallel ATR trains converting natural gas to syngas.
- Syngas Conversion to Liquids (Section 4.1.4) – The Fischer-Tropsch (F-T) process will convert syngas to liquid hydrocarbons and wax. Each GTL facility will contain two parallel F-T reactor trains converting syngas to liquid hydrocarbons.
- Product Work-Up (Section 4.1.5) – The product work-up unit (PWU) will hydroprocess the liquid hydrocarbon and wax streams into the final naphtha, diesel, and base oil products. The PWU will also produce LPG for internal use. Each GTL facility will have one PWU, which will process all liquid hydrocarbons and wax generated by the GTL facility's two ATR and F-T reactor trains.

Each of these three steps will include several process heaters to increase the temperature of materials in specific process locations. These process heaters will combust primarily fuel gas[1]. However, the process heaters will also be capable of combusting natural gas during startup activities before the processes generate sufficient fuel gas to fire the heaters. In the event of a process upset, these three major processes will safely vent excess gases to flares dedicated to each GTL facility. The operation of these flares is covered in Section 4.1.6.

A schematic of the processes to convert natural gas to liquid products is presented in Figure 4-1. This schematic represents a single GTL facility, with both GTL facilities containing the same equipment and operations. Further details on converting natural gas to liquid hydrocarbon products are provided in sections 4.1.3 to 4.1.5.

[1] Fuel gas is a mixture of gases generated in the three major process steps that is unable to be processed into liquid hydrocarbons. The fuel gas will primarily contain $H_2$, CO, methane and other light hydrocarbons, and $CO_2$.

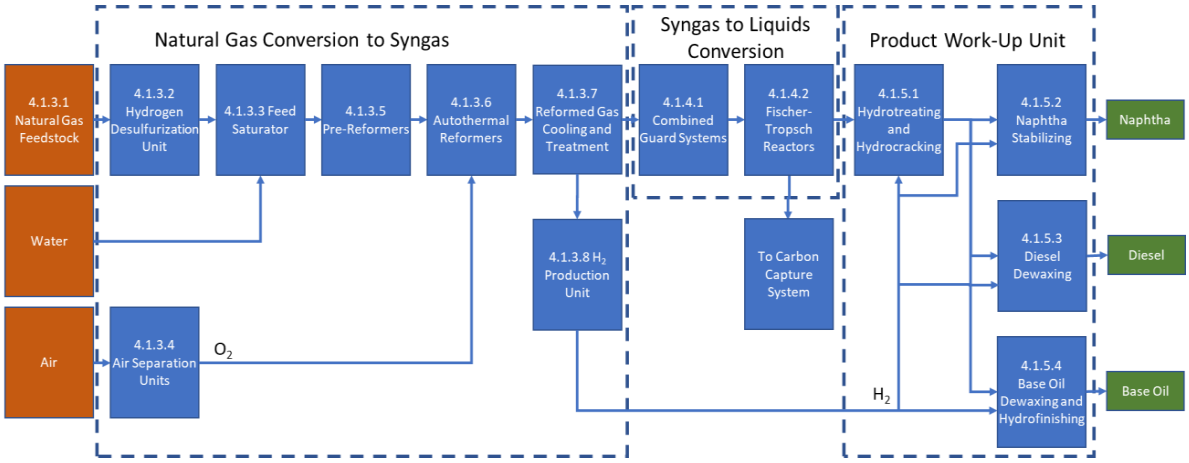


**Figure 4-1 GTL Process Schematic**

## 4.1.3 Natural Gas Conversion to Syngas

### 4.1.3.1 Natural Gas Feedstock

The primary feed to each GTL facility will be high-pressure, pipeline-quality natural gas. As noted in section 4.1.1, each GTL facility will consume a projected maximum of 240 MMscf/day of natural gas (i.e., 480 MMscf/day total for the Project following completion of Phase 2). A direct connection to the existing Northern Border Pipeline will supply this natural gas. This connection will require the construction of a new pipeline, approximately 3 miles in length, that will be permitted, constructed, owned, and operated by a third-party partner.

This natural gas supply pipeline will connect to a pig receiver and a custody transfer meter skid at the Project Site. Any pressure let-down and odorization to facilitate safe usage of the natural gas by Cerilon will be evaluated by Cerilon's site engineering, procurement, and construction contractor. Cerilon will have access to some of the natural gas supply line's instrumentation to provide advance information about variations in the supplied gas's properties, thus allowing the operators to institute any process changes necessary to accommodate the variations.

### 4.1.3.2 Hydrogen Desulfurization Unit

The natural gas feedstock must have all sulfur removed before it can be processed, as even trace sulfur content in the feed gas has the potential to degrade the catalysts used in both the ATR and the F-T reactors. The hydrogen desulfurization unit (HDU) will remove sulfur from the natural gas feedstock and a recycle stream of liquefied petroleum gas (LPG) generated in the PWU by first reacting the feed with $H_2$ in a fixed-bed reactor containing a cobalt-molybdenum oxide (CoMo) catalyst. This reaction will convert all sulfur species to hydrogen sulfide ($H_2S$). Two fixed-bed adsorbers containing zinc oxide (ZnO) and copper oxide (CuO) will then absorb the $H_2S$, desulfurizing the natural gas feedstock. Cerilon may alter the arrangement of these fixed-bed absorbers to facilitate the continued operation of the process while temporarily removing a saturated absorber from service for replacement. Figure 4-2 contains a simplified process flow diagram of the HDU and Feed Saturators.

### 4.1.3.3 Feed Saturators

The desulfurized feed from the HDU splits into two parallel trains operating the same equipment. A packed bed contacting tower saturates the desulfurized gas with water in each train. This water vapor is required for the ATR process chemistry described in Section 4.1.3.6.

Figure 4-2 shows a simplified process flow diagram of the HDU and Feed Saturators.

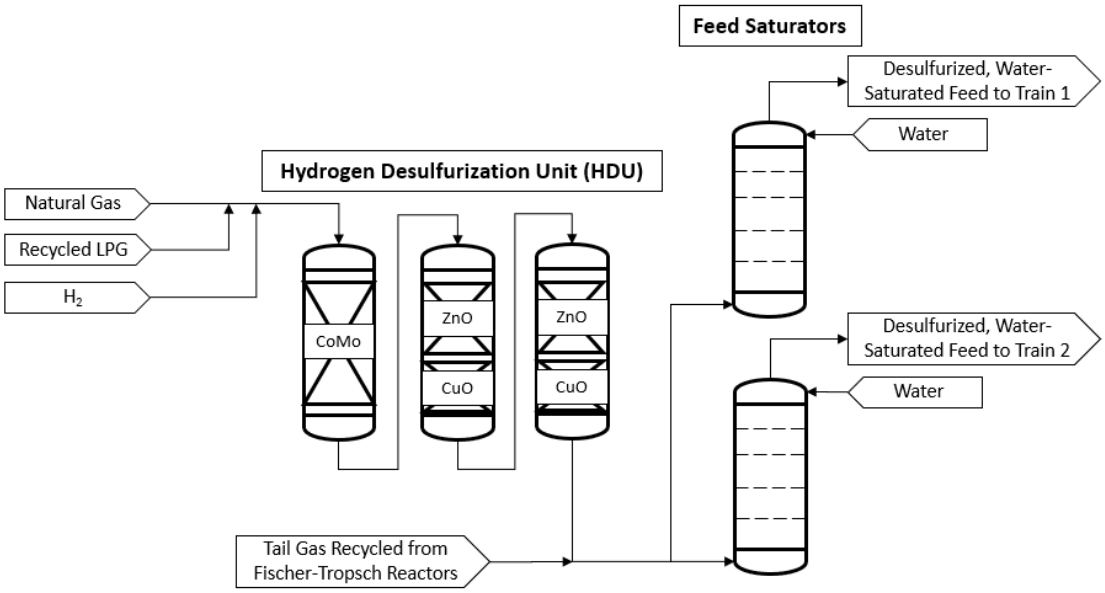


**Figure 4-2 Hydrogen Desulfurization Unit and Feed Saturators**

### 4.1.3.4 Air Separation Units

A vendor will supply Air Separation Units (ASU) to separate ambient air into 99.5% pure streams of nitrogen and oxygen. The ASUs will contain several components to separate the nitrogen ($N_2$) and oxygen ($O_2$): air compressors, cryogenic cooling equipment, cryogenic distillation column, and storage tanks. The process will generate relatively small quantities of water and waste removed or condensed from the ambient air. Cerilon will utilize the purified $N_2$ and $O_2$ throughout the facility, but the primary consumer will be pure oxygen supplied to the ATR process described in Section 4.1.3.6.

There will be two ASUs installed per GTL facility, with one ASU dedicated to each train within each GTL facility.

### 4.1.3.5 Pre-Reformers

The desulfurized and water-saturated feed gas will be preheated and sent to fixed-bed reactors referred to as the pre-reformers. The pre-reformer will use a nickel-based catalyst and high-pressure steam to convert non-methane hydrocarbons to methane ($CH_4$). This step will minimize the risk of soot fouling the ATR's catalyst and allow the ATR process to use feedstocks other than natural gas, namely LPG.

Two pre-reformers will be installed per GTL facility, with one pre-reformer dedicated to each train within each GTL facility.

#### 4.1.3.6 Autothermal Reformers

The ATRs partially oxidize the preheated pre-reformer outlet to convert $CH_4$ in feed gas and $O_2$ from the ASUs to CO and water ($H_2O$). The ratio of $CH_4$ and $O_2$ determines the oxidation level and will be adjusted based on the needs of the GTL facility. Following this reaction, the partially oxidized gas will be passed through a nickel-based catalyst bed to complete the conversion of $CH_4$ to CO and $H_2$. The following chemical reactions will occur in the ATR reactor:

Partial Oxidation – Combustion Zone:

$$CH_4 + \frac{3}{2}O_2 \rightarrow CO + 2\ H_2O$$

Steam Reforming Reactions – Thermal/Catalytic Zone:

$$CH_4 + H_2O \leftrightarrow CO + 3H_2$$

$$CH_4 + 2H_2O \leftrightarrow CO_2 + 4H_2$$

Water Gas Shift Reactions – Thermal/Catalytic Zone:

$$CO + H_2O \leftrightarrow H_2 + CO_2$$

The mixture of CO and $H_2$ produced by the ATR, referred to as synthesis gas or syngas, is the feed for the F-T process. The optimal ratio of $H_2$:CO in the syngas for F-T synthesis is approximately two to one, and Cerilon will alter the ATR's operation to meet this ratio.

Two ATRs will be installed per GTL facility, with one ATR dedicated to each train described in Section 4.1. See Figure 4-3 for a process flow diagram of one train's ATR and Pre-Reformer described in Section 4.1.3.5.

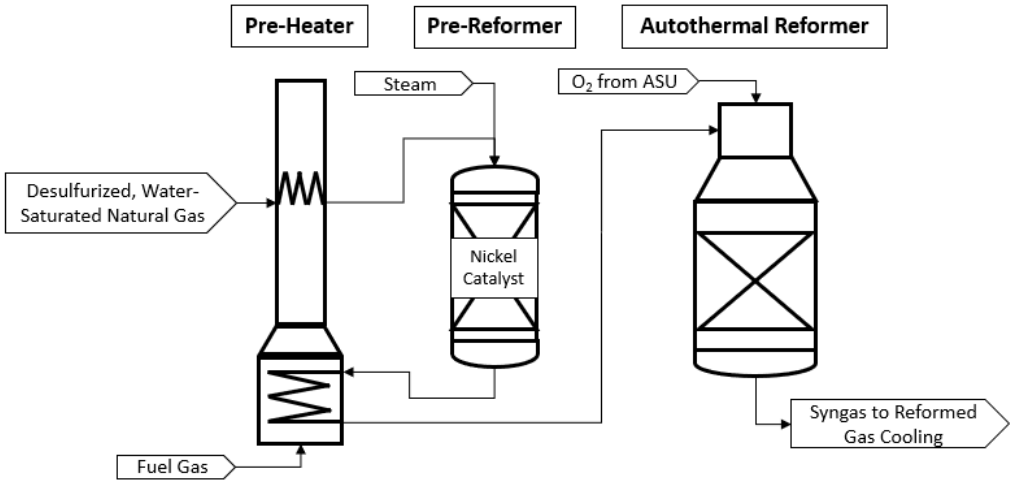

**Figure 4-3 Pre-Reformer and Autothermal Reformer**

#### 4.1.3.7 Reformed Gas Cooling

The syngas will leave the ATRs at a temperature of approximately 1,870°F and a pressure of 610 pounds per square inch gauge (psig). Heat recovery steam generators and other cooling equipment will reduce the syngas temperature to 100°F. The cooled syngas will then be fed to the F-T reactors discussed below. Cooling the syngas will condense water vapor and other condensable byproducts of the ATR reactions to create a process wastewater stream. The wastewater will be routed to an on-site wastewater treatment plant before being recycled or discharged off-site.

The syngas generated by both trains within each GTL Facility will be merged and cooled by one gas cooling and heat recovery system per GTL Facility.

#### 4.1.3.8 $H_2$ Production Unit

The $H_2$ production unit will consist of a high-temperature shift reactor and a pressure swing absorber fed by a slipstream of the cooled syngas produced by the ATRs. The high-temperature shift reactor will convert the CO from the syngas and steam to $H_2$ and $CO_2$. The pressure swing absorber will then purify the $H_2$ to a minimum of 99.5%. The $H_2$ created in this unit is used in the HDU and the PWU. There will be one $H_2$ production unit per GTL facility and two total for the Project.

### 4.1.4 Syngas-to-Liquids Conversion

#### 4.1.4.1 Combined Guard Systems

The cooled product of the ATR will first be run through a sacrificial reactor and wash water system. These operations will remove hydrogen cyanide and ammonia produced in the ATR, which would poison the F-T reactor's catalyst if not removed. The sacrificial reactor will convert the hydrogen cyanide to ammonia. A wash water system will then absorb the ammonia remaining in the syngas. The effluent from the wash water system will be routed to the on-site wastewater treatment plant for eventual recycling or discharge. The washed syngas will then be routed to the F-T reactors discussed in Section 4.1.4.2. See Figure 4-4 for a process flow diagram of the Combined Guard System associated with one GTL Facility.

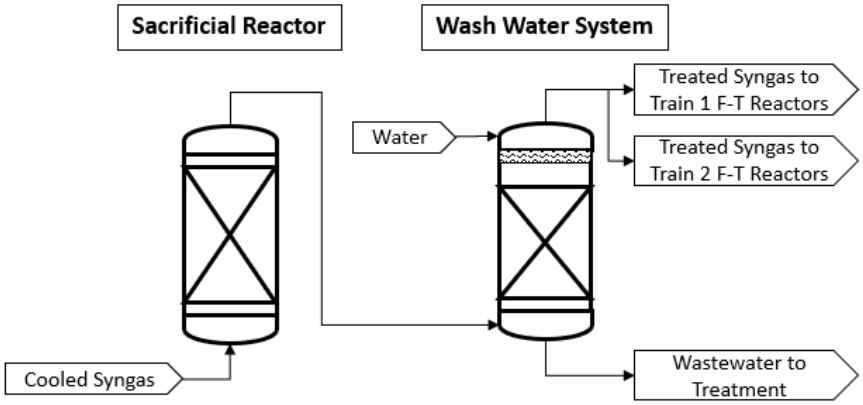

**Figure 4-4 Process Flow Diagram of the Combined Guard System**

### 4.1.4.2 Fischer-Tropsch Reactors

The treated syngas from the combined guard system will be mixed with a recycle gas stream and heated up to 375°F at a pressure of 530 psig before being fed to the F-T reactors. Each train will contain four tubular, water-jacketed, fixed-bed reactors containing a cobalt-based catalyst, which will operate in parallel. While the chemistry is complex, the reactions that occur in the F-T reactors can be simplified into the following four:

Methane Formation:

$$CO + 3H_2 \rightarrow CH_4 + H_2O$$

Hydrocarbon Formation:

$$nCO + 2nH_2 \rightarrow (-CH_2-)_n + nH_2O$$

Alcohol Formation:

$$nCO + 2nH_2 \rightarrow C_nH_{2n+2}O + (n-1)H_2O$$

Water Gas Shift:

$$CO + H_2O \leftrightarrow H_2 + CO_2$$

The reactions within the F-T reactors will be exothermic and, therefore, require temperature control and cooling to prevent any excursion that could lead to catalyst damage, hence the water-jacketed reactors. The F-T reactors will generate wax, light hydrocarbon condensate (LHC), and tail gas. The wax and LHC products are further processed in the PWU described in Section 4.1.5. The tail gas is partially recycled to the front end of the feed saturators described in Section 4.1.3.3, with the remaining routed to the carbon capture system described in Section 4.3. See Figure 4-5 for a process flow diagram of the F-T reactors for one train.

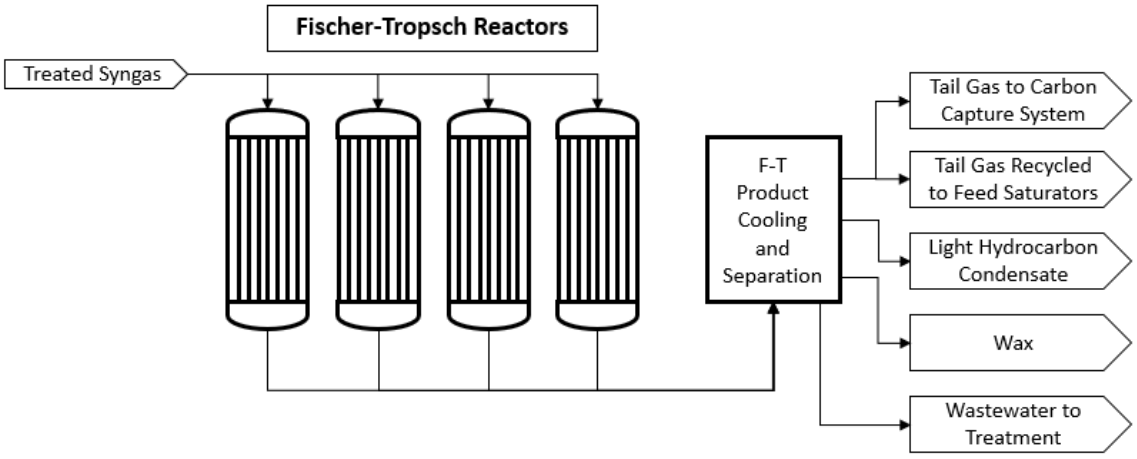

**Figure 4-5 Process Flow Diagram of the Fischer-Tropsch Reactors**

### 4.1.5 Product Work-Up Unit

Each GTL facility will include one PWU. The PWU will be a hydroprocessing unit where hydrocarbons will be reacted with $H_2$ in the presence of a catalyst to convert the liquid hydrocarbons and wax streams generated in the F-T reactor into final products. The $H_2$ used in the PWU will be produced in the hydrogen production unit described in Section 4.1.3.8. The four process units in the PWU are:

1. Hydrotreating and Hydrocracking Unit
2. Naphtha Stabilizer
3. Diesel Dewaxing Unit
4. Base Oil Dewaxing and Hydrofinishing Unit

Sections 4.1.5.1 through 4.1.5.4 describe the four PWU process units in detail.

#### 4.1.5.1 Hydrotreating and Hydrocracking Unit

Wax and LHC produced in the F-T units will be fed to a preheater before combining with $H_2$ and a recycle gas stream. This stream will then be fed to the hydrotreating reactor, where unsaturated hydrocarbons will be saturated[2], and chemically bound oxygen will be removed[3]. The hydrotreated product will then be cooled, and unreacted $H_2$ will be recycled to the front of the PWU. Other gases created in the reactor will be routed to the fuel gas system.

The hydrotreated liquid will then be routed to the first fractionation tower, where it will be split into three streams: overheads, diesel cut, and bottoms. The overheads will be routed to the naphtha stabilizer described in Section 4.1.5.2, diesel will be sent to the diesel dewaxing unit described in Section 4.1.5.3, and the bottoms will be further processed in this unit. Figure 4-6 shows a process flow diagram of the hydrotreating reactor and first fractionation tower.

[2] Saturated hydrocarbons are those that contain only single bonds between carbon atoms, and unsaturated hydrocarbons have at least one double or triple bond between carbon atoms. As an example, propane is a saturated hydrocarbon, whereas propylene is an unsaturated hydrocarbon.
[3] Chemically bound oxygen may be present in the form of various alcohols and acids.

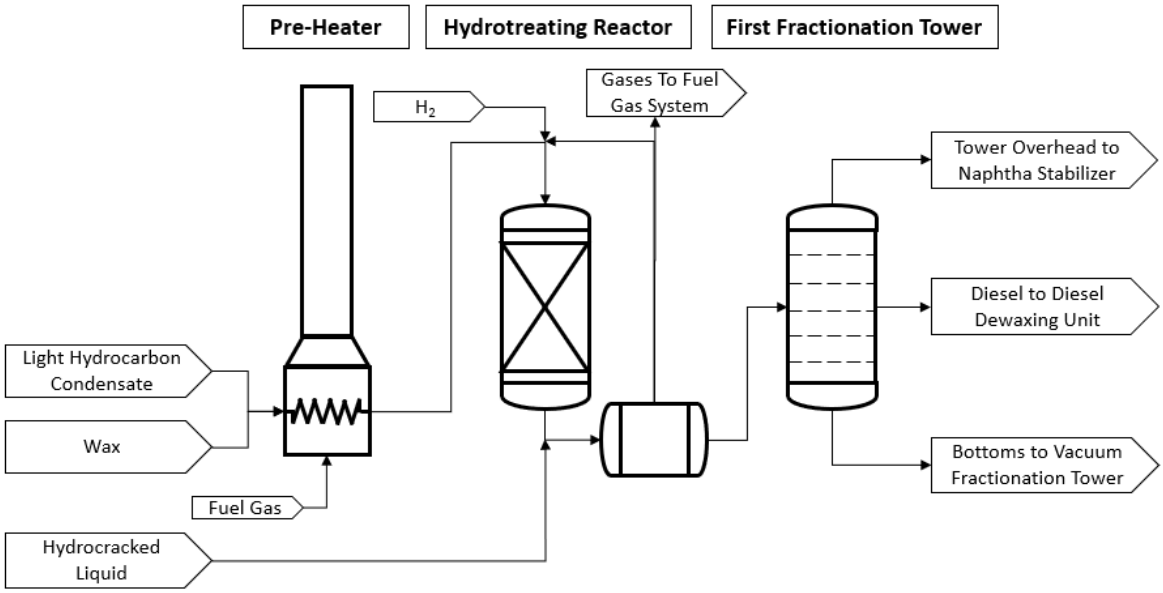


**Figure 4-6 Hydrotreating Reactor and First Fractionation Tower**

The first fractionation tower bottoms will be routed to a vacuum fractionation tower (i.e., a fractionation tower operating below atmospheric pressure), which will split the bottoms into three base oil streams: 3 centistokes (cSt[4]) material, 4 cSt material, and 8 cSt material. The 3cSt, 4cSt, and 8cSt will be sent to the base oil unit for further refinement. The bottoms of the vacuum tower will be recycled back to the hydrocracker to produce lighter materials.

The hydrocracking process involves isomerization and then cracking of the hydrocarbons into smaller constituents. The vacuum tower bottoms will be preheated, and a stream of H2 is added before entering the hydrocracker reactor, which contains a fixed catalyst bed. This reaction cracks the larger hydrocarbons that make up the vacuum tower bottoms into smaller hydrocarbons that may be recovered as saleable products. The hydrocracker outlet stream is then cooled and enters a pressure let down where unreacted H2 is recovered as a recycled gas. Any gaseous hydrocarbons created in the reactor are routed to the fuel gas system. The cooled and degassed hydrocracker outlet is then recycled to the first fractionation tower to be reprocessed.

Figure 4-7 shows a process flow diagram of the vacuum fractionation tower and hydrocracker.

[4] cSt refers to the kinematic viscosity of the base oils, measured in centistokes.

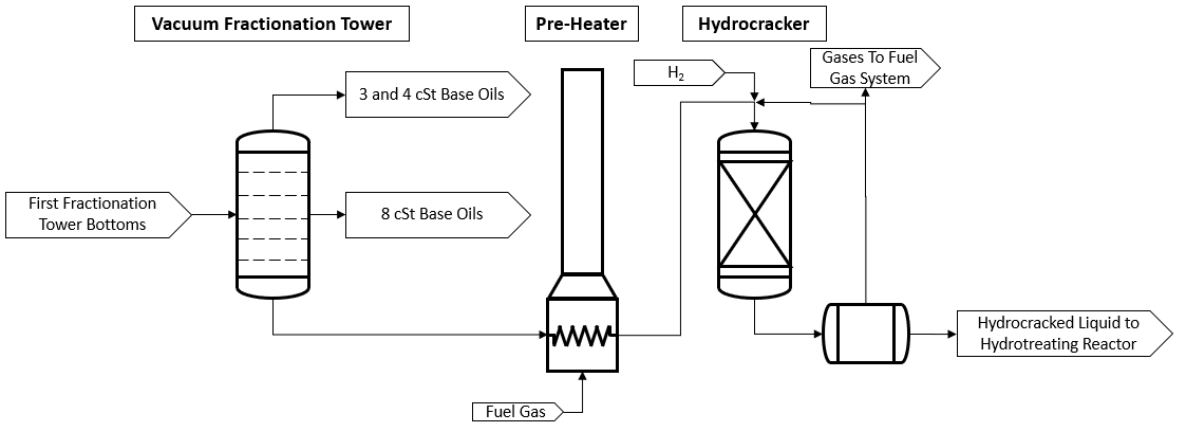


**Figure 4-7 Vacuum Fractionation Tower and Hydrocracker**

### 4.1.5.2 Naphtha Stabilizer

The overheads from the first fractionation tower described in Section 4.1.5.1 will be further fractionated in the naphtha stabilizer. This fractionator will remove high vapor pressure gases and light hydrocarbons from the liquid. The finished naphtha product will leave the bottom of the naphtha stabilizer, while the naphtha stabilizer overhead will be condensed into a stream of LPG routed to the HDU and off-gases routed to the fuel gas system. Figure 4-8 shows a process flow diagram of the naphtha stabilizer.

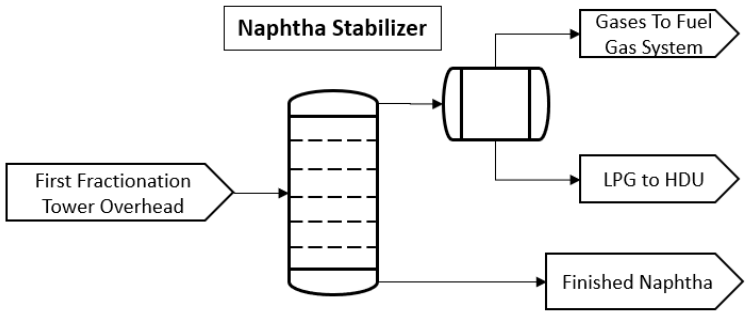


**Figure 4-8 Naphtha Stabilizer**

### 4.1.5.3 Diesel Dewaxing Unit

Dewaxing is an isomerization reaction intended to reduce the pour point and improve the cold flow properties of the diesel product of the first fractionation tower. The diesel will be preheated, and a stream of $H_2$ introduced before it enters the dewaxing reactor. The chemistry is similar to the hydrocracking reactor, except catalysts and operating parameters will minimize cracking. The reactor effluent will then be cooled and enter a pressure let down where unreacted $H_2$ and any gaseous hydrocarbons created in the reactor will be routed to the fuel gas system.

The cooled and degassed reactor outlet will then be sent to the diesel stripping tower. Similar to the naphtha stabilizer discussed in Section 4.1.5.2, the bottoms from the diesel stripping tower will contain

finished diesel. The overhead from the diesel stripping tower will contain LPG routed to the HDU and off gas routed to the fuel gas system. Figure 4-9 shows a process flow diagram of the diesel dewaxing process.

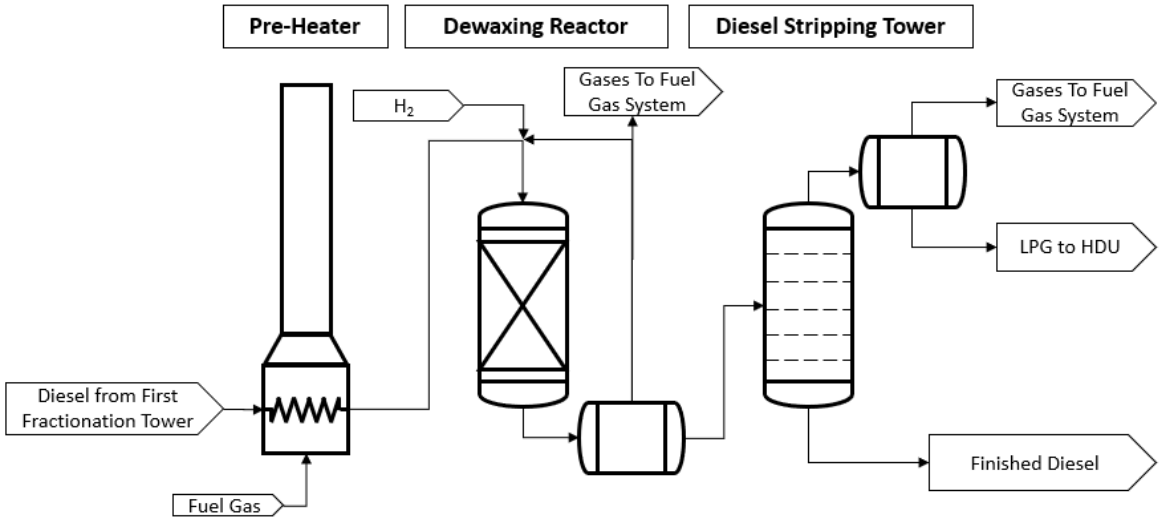


**Figure 4-9 Diesel Dewaxing Unit**

### 4.1.5.4 Base Oil Dewaxing and Hydrofinishing Unit

The 3 cSt and 4 cSt base oil produced in the hydrotreating and hydrocracking process unit will require further refinement to achieve the correct level of dewaxing and saturation. The chemistry of the base oil dewaxing and hydrofinishing unit is essentially the same as the other hydroprocessing units within the PWU, with hydrocarbons reacting with $H_2$ in the presence of a catalyst. However, due to the nature of the heavier cuts, additional processing will be required. This extra processing will result in some cracking of the heavier cuts, which, when fractionated, will produce additional diesel, naphtha, base oils, and off-gas that will be processed with the other similar materials generated in the PWU.

Figure 4-10 shows a process flow diagram of the base oil dewaxing and hydrofinishing reactors.
Figure 4-11 shows a process flow diagram of the base oil fractionators that separate the finished base oils, diesel, naphtha, and off-gas.

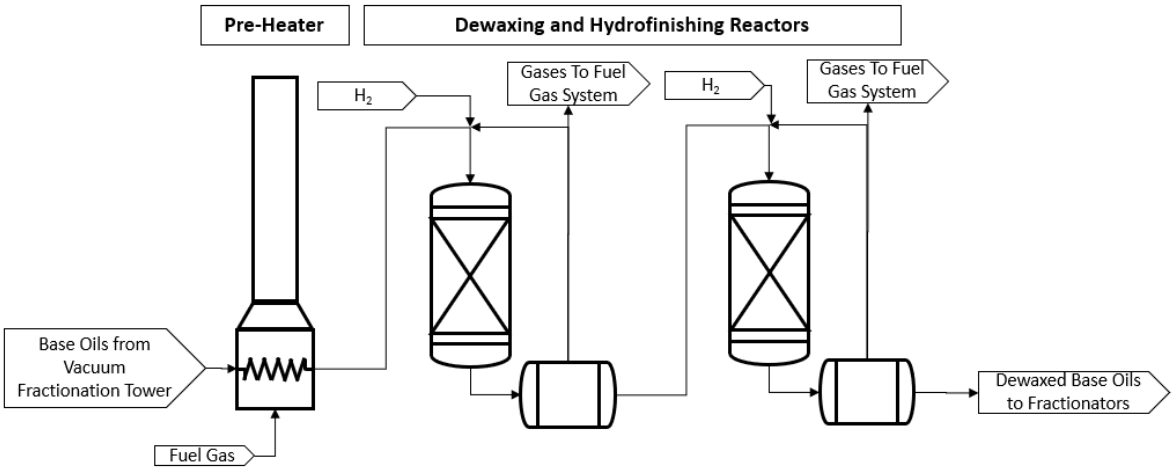


**Figure 4-10 Base Oil Dewaxing and Hydrofinishing Reactors**

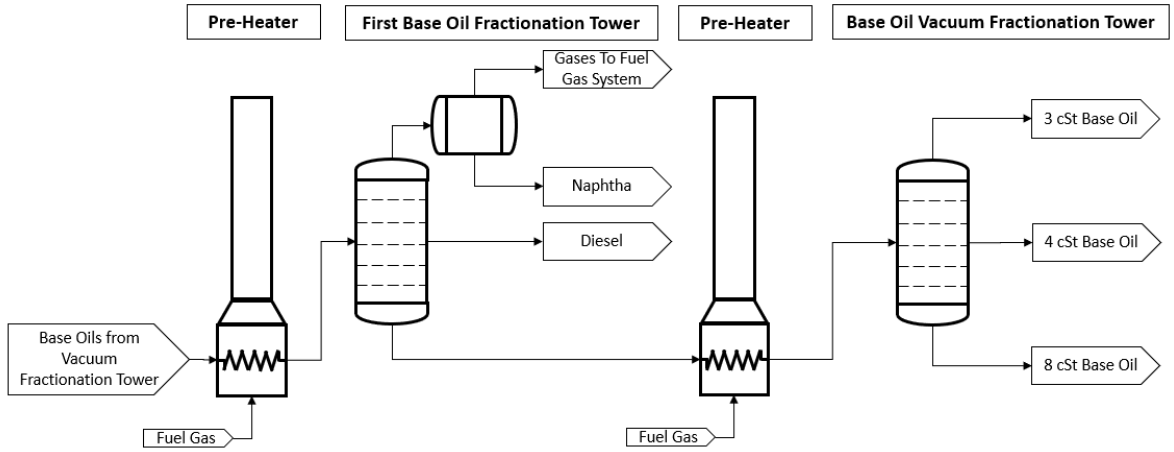


**Figure 4-11 Base Oil Fractionators**

### 4.1.6 GTL Facility Flares and Thermal Oxidizers

Both GTL facilities will be served by separate elevated flare systems to safely combust startup, shutdown, or process upset gases that could otherwise damage process equipment. Cerilon is designing the GTL facility such that there will be no flow of waste gases to the flares during normal operation. Three design features will minimize the flared gas volume:

- Gases generated by the various processes during normal operation will be routed to the fuel gas system or carbon capture system described in Section 4.3.1 and not to the flare header. The package boilers described in Section 4.4.1 will combust any excess fuel gas.
- All process equipment will be equipped with pressure relief devices designed to vent to the flare only during upset conditions.

- The flares will be equipped with water seals to prevent waste gases in the flare header from being released during normal operation. In the event of a process upset event, sufficient gases may be generated such that the pressure in the header breaks the water seal, allowing the waste gases to be safely flared.

Each GTL facility will be served by a high-pressure and low-pressure flare header that routes these gases to a shared flare structure. The flares will use natural gas for both the pilot light to keep the flares lit and the supplemental gas needed to maintain sufficient heat content to achieve proper combustion of the flared gas. Steam or air will also be injected to assist with the mixing of the waste gases and ambient air, promoting combustion of the waste gases and minimizing soot formation.

In addition to the primary flares, each GTL facility will be equipped with a thermal oxidizer to control releases from specific operations unsuitable for venting to the primary flares. These releases include various vents whose emissions must be controlled to meet relevant environmental regulations (e.g., wastewater treatment operations, storage tanks, etc.).

## 4.2 Electric Energy Generation

### 4.2.1 Gross Design Capacity, Net Design Capacity, and Thermal Efficiency

The process of converting natural gas to liquids described in Section 4.1 combines several high-temperature and exothermic process units. This heat energy will be recovered to the extent practicable through several steam-generating heat exchangers. The F-T reactors and the PWU also produce off gases that will be used as fuel gas in various process heaters. However, these processes will generate more fuel gas than the process heaters can consume. Rather than flaring this excess gas, the fuel-fired package boilers described in Section 4.4.1 will increase their firing rate to consume the excess gas.

Cerilon intends to use this steam to generate electric energy via two steam turbines and generators per GTL facility. These turbines and generators at each GTL facility will be capable of meeting the electrical demand of that facility during normal operations, with excess power sold to the grid. Purchased electricity will be required during facility startup, during shutdowns, and in the event of failure of onsite generation. Cerilon is still conducting engineering and making decisions regarding motive power for facility prime movers (e.g., steam- versus electric-driven pumps and compressors). As such, the electric energy generation capacity and demand of each GTL facility have yet to be finalized. Based on current design preferences, Cerilon estimates that the overall electrical generation capacity will be 100 megawatts per phase (gross design capacity), with most of the electrical power generated being used on-site (i.e., less than 50 megawatts provided to the electrical grid, net design capacity). Cerilon will update electricity generation, consumption, and export numbers as engineering decisions evolve regarding the Project's power consumption and generation capacity.

As electricity generation will primarily use excess heat and fuel gas generated by converting natural gas to liquid products as described in Section 4.1, the overall thermal efficiency of the electrical energy generation is not feasible to estimate. Modern steam turbines are estimated to reach or exceed an energy conversion efficiency of 80% (reference (1)).

### 4.2.2 Facility Interconnection

The GTL facility will generate sufficient power to support the Project's operations during normal operation and export excess energy to the grid. Planning and delivery of electrical power in North Dakota is a multi-layered system involving several organizations and cooperatives responsible for delivering system components. The following organizations are involved with the electrical interconnection to the grid near the Project Site, which all have some involvement with interconnection, electrical power delivery, or purchase of electrical power from the GTL facility:

- Southwest Power Pool (SPP): The technical administrator of the bulk electrical system where the GTL facility will be located. The SPP also works with the Midcontinent Independent System Operator, which is responsible for an adjacent region in North Dakota.
- Lower Yellowstone Rural Electric Cooperative (LYREC): The regional electrical distributor and Cerilon's primary point of contact into the system. LYREC is expected to own and operate the infrastructure connected to the facility.
- Upper Missouri Power Cooperative (UMPC): The electrical Transmission Facility Operator in the region. Upper Missouri G & T Electric Cooperative Inc., doing business as UMPC, is the regional power provider of Basin Electric Power Cooperative (BEPC) and the Western Area Power Administration (WAPA) power to 11 distribution cooperatives in eastern Montana and western North Dakota, including LYREC.
- Basin Electric Power Cooperative (BEPC): The region's primary generator and coordinator of generation.

Cerilon is navigating contractual and regulatory requirements as the facility utility systems become more defined. The base case scenario is that Cerilon will generate power for internal use and export to the grid, and the Project will need to be interconnected for both demand and supply. Cerilon will construct, own, and operate electrical infrastructure inside the Project Site, and LYREC will construct, own, and operate infrastructure beyond the Project Site. Cerilon intends to file a generator interconnection application with the Southwest Power Pool by October 2023.

## 4.3 Carbon Capture and Sequestration

Cerilon has committed to using carbon capture and sequestration (CCS) to reduce carbon emissions from the North Dakota GTL facility. CCS is a set of technologies that captures $CO_2$ emissions from industrial processes and stores them in geological formations to prevent their release into the atmosphere. CCS consists of several stages, including the capture, purification, compression, transportation, and injection of $CO_2$. $CO_2$ is safely and permanently stored in deep underground rock formations, where it becomes structurally trapped beneath impermeable cap rock. Ongoing monitoring is essential to confirm that the $CO_2$ is stored safely and effectively, including the pressure and temperature of the storage formation and the movement of the $CO_2$ underground. Cerilon's proposed processes to capture and sequester $CO_2$ are covered in Sections 4.3.1 and 4.3.2.

### 4.3.1 Carbon Capture System

The F-T process described in Section 4.1.4.2 will generate tail gas that consisting of unreacted light hydrocarbons, $H_2$, CO, and approximately 30% $CO_2$. Cerilon plans to capture the $CO_2$ contained within the tail gas, which will provide two primary benefits:

- The tail gas will have a higher energy density and be routed to the facility's fuel gas system to fuel the various process heaters and fuel-fired boilers.
- The $CO_2$ may be sequestered to reduce the carbon emissions from the facility.

Each GTL facility will be equipped with a dedicated carbon capture system using amine absorption technology. Amines undergo a reversible reaction with $CO_2$, making them ideal for separating $CO_2$ from other gases. The tail gas will be washed with an amine solution to remove approximately 99.5% of the $CO_2$ within the tail gas. The washed tail gas, with significantly reduced $CO_2$ content, will be sent to the fuel gas system. The $CO_2$-saturated amine solution will then be stripped of the captured $CO_2$ in another vessel. The stripped amine will then be recycled to the front of the carbon capture system. The captured $CO_2$ will be treated with a triethylene glycol solution to remove any water before being routed to other equipment for eventual transport to an off-site sequestration location, as described in section 4.3.2. This configuration will capture approximately 496,000 short tons (450,000 metric tons) of $CO_2$ per year, reducing the projected $CO_2$ emissions from the facility by approximately 33%. Cerilon is designing these facilities with optionality for increased pre- and post-combustion $CO_2$ capture to be later retrofitted into the Phase 1 operations, or to be incorporated into the Phase 2 design.

Figure 4-12 shows a process flow diagram of the carbon capture system.

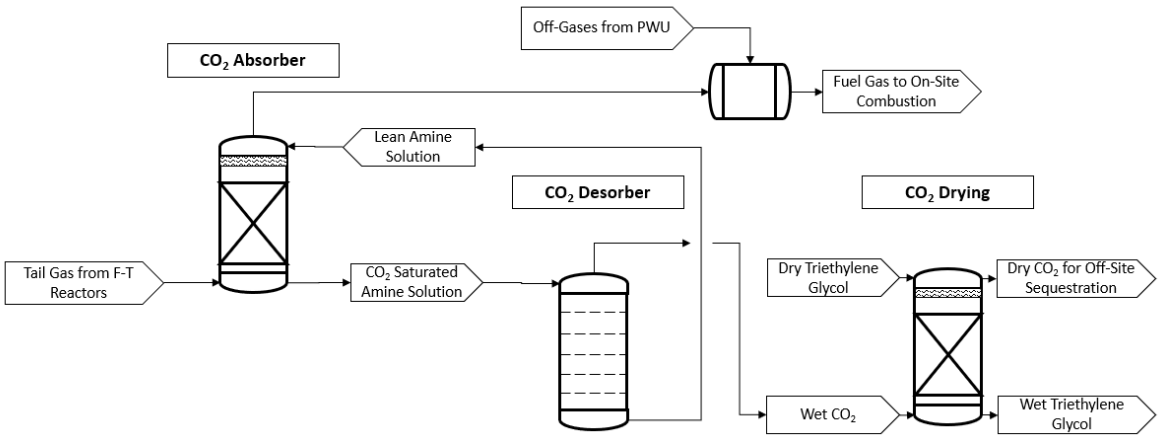


**Figure 4-12 Carbon Capture System**

### 4.3.2 Carbon Sequestration

Cerilon conducted a CCS pre-feasibility study with the Energy & Environmental Research Center (EERC) to develop a geologic $CO_2$ storage site for the Project. The Energy & Environmental Research Center report

analyzed four potential locations for $CO_2$ storage in the Williston Basin, considering factors like well density, proximity to existing infrastructure, topography, and more. This evaluation confirmed the Project Site as an ideal location to support Cerilon's proposed implementation of CCS, and all four sites are potentially workable alternatives. Additional evaluation is necessary before finalizing a site for $CO_2$ storage.

On-site, Cerilon will install compressors, pig traps, custody transfer meters, and other equipment necessary to inject the captured $CO_2$ into a transfer pipeline. Cerilon does not plan to own or operate the $CO_2$ transfer pipeline or the sequestration site. A third party will apply for all permitting and approvals required for the pipeline and sequestration.

## 4.4 Utilities and Other Support Services

The Project will require additional utilities and support services to successfully operate the GTL conversion process, electricity generation, and CCS described in Sections 4.1, 4.2, and 4.3, respectively. Sections 4.4.1 through 4.4.8 describe these other operations supporting the GTL facilities.

### 4.4.1 Package Boilers

The Project will include two fuel-fired package boilers capable of generating 200,000 pounds per hour of steam per GTL facility (four total boilers for the Project). These boilers will be primarily fueled by fuel gas but fire natural gas during process unit shutdowns when fuel gas is not produced.

The heat recovery steam-generating boilers in each GTL facility will produce enough steam for use in the various processes. However, each GTL facility will also create more fuel gas than can be consumed by the various fuel-fired process heaters to meet the facility's demands (i.e., the GTL facilities will be fuel gas long). Rather than flaring this excess fuel gas, it will be used to fuel the package boilers, which will produce additional steam that will be used to generate electricity, as described in Section 4.2. The package boilers will also help stabilize the very high pressure (1,500 psig) steam loop in the event of process unit upsets and provide a steam source during process unit startups, shutdowns, and turnarounds.

### 4.4.2 Process Cooling Water and Cooling Towers

While as much heat energy will be recovered as practical from various processes in both GTL facilities (e.g., via heat recovery steam generators), certain processes will require cooling process fluids to a temperature lower than is practical for heat recovery. These fluids will be cooled by indirect contact with ambient air or cooling water in heat exchangers. Air cooling will be achieved via fin fan coolers. Water cooling will be achieved via non-contact heat exchangers supplied by a closed-loop cooling water system. Each GTL facility will operate a separate cooling water system with its own cooling tower to dissipate the heat removed from the process fluids by the cooling water to the atmosphere.

Cooling with water is significantly more efficient than air cooling. As such, water cooling requires smaller heat exchangers than air cooling to achieve the same temperature drop. However, water cooling also

increases the water demand for the facility, and cooling towers are a source of air emissions. Cerilon has elected to use air cooling to the extent practicable to minimize water usage.

Even as a closed-loop cooling water system, the cooling towers will lose some water due to evaporation and suspended water droplets generated as the water passes through the cooling tower (i.e., drift). Drift eliminators and modern cooling tower design will minimize the loss of water from the cooling tower. A slipstream of cooling water will also be removed from the closed-loop cooling water system to prevent the build-up of salts and other dissolved solids due to evaporation (i.e., cooling tower blowdown). The cooling water system will be supplemented with treated and recycled water generated by the F-T reactors and raw water mentioned in Section 4.4.2 to offset the water losses from evaporation, drift, and blowdown.

### 4.4.3 Water Supply and Usage

#### 4.4.3.1 Raw Water

Cerilon estimates raw water demand for the GTL Facility to be 700 US gallons per minute for each phase. As such, the water supply system will be designed for at least 1,400 US gallons per minute to supply both the Phase 1 and Phase 2 GTL facilities. This raw water will primarily be used as process water and make-up water for losses from the closed-loop cooling water systems at each GTL facility. These losses are due to evaporation and drift from the cooling towers, and blowdowns to prevent the build-up of salts, solids, and other impurities in the process and cooling water. Raw water will also be added to the recycled water used within various process units and, once appropriately treated, as make-up water for losses within the steam system at each GTL facility.

Cerilon is designing the facility to minimize raw water demand in two ways:

- Many processes within the GTL facilities will generate water in their chemical reactions. This water will be treated and recycled within the GTL facilities to the extent practical.
- Cerilon has elected to optimize air cooling to the extent practicable. While air cooling increases the complexity of the Project's design, Cerilon estimates that it reduces water demand by approximately 70% relative to only using water cooling.

Raw water will be appropriated from the Missouri River. Cerilon is in discussions with third-party water suppliers with existing permits for industrial water withdrawal from the river sufficient to supply the Project. If commercial arrangements cannot be made with a third-party water supplier, Cerilon will evaluate other options for water access, including potentially applying for a water appropriation permit from the North Dakota Department of Water Resources and all other permits necessary to construct an intake structure and water pipeline to the site.

#### 4.4.3.2 Potable Water

There are two existing domestic water wells and a high-capacity domestic water well previously used by the abandoned homesteads on the Project Site that Cerilon does not intend to use during construction or operation of the Project. The Northwest Rural Water District and Williams County plan to provide a

potable water supply for the community of Trenton and the Marley Crossing industrial area where the Project Site is located. Cerilon does not intend to install a potable water treatment system on-site. Thus, if the regional water supply is unavailable during construction, Cerilon will deliver potable water to the site by truck.

#### 4.4.3.3 Well Water

There are two existing domestic water wells and a high-capacity domestic water well previously used by the abandoned homesteads on the Project Site that Cerilon does not intend to use during construction or operation of the Project. There is also an industrial water well on the Project Site that is permitted to withdraw 500 acre-feet of groundwater per year for industrial use (North Dakota Department of Water Resources Permit No. 6273). Cerilon intends to maintain this permit moving forward. The groundwater at the site is insufficient and does not have appropriate chemistry for process water use, hence the need for raw water from the Missouri River. However, this groundwater from the industrial water well may be sold to other commercial entities for off-site use.

### 4.4.4 Wastewater Management

The Project will generate four types of wastewater that will be discharged off-site: treated process wastewater, industrial stormwater runoff, uncontaminated stormwater runoff, and sanitary wastewater. Each of these is discussed in Sections 4.4.4.1 through 4.4.4.4.

#### 4.4.4.1 Treated Process Wastewater

The GTL processes will produce wastewater that will need to be treated. As noted in Section 4.4.3, Cerilon is designing the facility to recycle as much of this treated process wastewater as practicable, with the remaining treated process wastewater volume discharged. This design will minimize the volume of wastewater that will need to be discharged. Cerilon's process chemistry and the specific treatment methods that will meet discharge limits (Section 8.4.2) are currently under evaluation. Each GTL facility will have a dedicated wastewater treatment plant (i.e., two wastewater treatment plants for the Project).

Treated wastewater will be discharged to the Missouri River. Cerilon anticipates that a discharge line will be installed in the same right-of-way as the water supply line described in Section 4.4.3.1, with the water discharged near the intake structure. The discharge will be within or upstream of the Source Water Protection Area for the City of Williston's public water intake. The outfall structure will be permitted and constructed per applicable environmental requirements.

#### 4.4.4.2 Potentially Contaminated Stormwater Runoff

The areas of the Project Site that will be developed will manage stormwater through grading, berms, ditches, and stormwater sewer piping that is segregated from the piping used for processed wastewater. Stormwater from within the GTL Facility process units has an increased potential for minor contamination due to small leaks from equipment, inadvertent small spills to grade when equipment is opened for maintenance, or other means. Good operation, maintenance, and housekeeping practices will mitigate potential sources of stormwater contamination potential. However, as an added precaution this stormwater will be routed to an onsite stormwater pond for temporary holding. The stormwater pond will

be tested for contamination and routed to an outfall to Eightmile Creek on the Project Site if found safe for discharge. If the stormwater in this pond is found to be potentially contaminated, it will be sent to the wastewater treatment operations that are also used to treat process wastewater (see Section 4.4.4.1).

The potentially contaminated stormwater pond will be designed with sufficient capacity for a large rainfall event. However, in the event of an unusually large rainfall event, or series of rainfall events, that exceed the capacity of the stormwater pond, it will overflow to the outfall on Eightmile Creek. In the unlikely event that a hydrocarbon spill reaches the potentially contaminated stormwater pond during a rainfall event that exceeds the pond's capacity, additional steps will be taken to mitigate the risk of stormwater leaving the site. These steps include potentially deploying booms, skimmers, and/or other equipment. Please refer to Section 8.4.2.3 for the projected impacts and mitigative measures for industrial stormwater.

#### 4.4.4.3 Uncontaminated Stormwater Runoff

Stormwater from the developed areas of the Project Site with reduced potential for contamination (e.g., utilities, electric energy production, liquid storage, etc.) will be routed to a separate stormwater holding pond. The pond will allow the settling of sediments collected in stormwater runoff before discharging to Eightmile Creek.

Some areas of the Project Site will be lightly developed or undeveloped. These areas include roads and buildings outside of the process unit, fencing, landscaping, and other areas not impacted by the Project. The Project Site naturally drains from west to east, with the flow either going into Eightmile Creek, which runs along the site's eastern boundary, or to the Buford-Trenton Irrigation Canal, which runs through the southeast corner. Stormwater runoff from these areas will largely follow existing flow patterns and be managed in accordance with the North Dakota Department of Environmental Quality's (NDDEQ's) regulations. Please refer to Section 8.4.2.3 for the projected impacts and mitigative measures for industrial stormwater.

#### 4.4.4.4 Sanitary Wastewater

Sanitary wastewater from the occupied buildings on site (i.e., domestic wastewater from sinks, toilets, showers, etc.) will be routed to holding tanks. These holding tanks will be emptied by trucks as needed for off-site treatment. No sanitary wastewater will be directly released from the facility.

### 4.4.5 Solid Waste

Cerilon anticipates a relatively low generation of hazardous and non-hazardous solid wastes for an industrial site of its size. The types of waste to be generated include, but are not limited to:

- Spent catalysts that cannot be regenerated, recycled, or otherwise reclaimed.
- Wastewater treatment plant solids
- General industrial wastes such as aerosol cans, paints and other coatings, and used cleaning solvents.

Non-hazardous solid waste will be transported by truck to the local landfill. Any contaminated or hazardous waste would be trucked to an appropriate licensed disposal of site. No wastes will be disposed on-site.

### 4.4.6 Buildings and Roads

In addition to buildings associated with process units, the site will include support buildings for office/administration, emergency services, and utilities.

There will be two access points to the site: a primary access located on the south side of the Project Site from 42nd Street NW and a secondary access located on the east side of the Project Site from 147th Avenue NW. Cerilon is coordinating with the local Townships to verify the increase in traffic load from the Project and necessary upgrades. Internal facility roads will be located and designed as part of the plot planning process to be finalized in the next phase of engineering. A traffic study will be completed as part of the Williams County Conditional Use Permit application process.

### 4.4.7 Storage Tanks

Cerilon has developed a preliminary tankage philosophy for the required volumes and mode of facility operation for the intermediate and final product tankage, and the necessary tankage is being incorporated into the plot plan. The types of storage tanks will include:

- Pressurized storage tanks for natural gas, oxygen, nitrogen, and other gaseous or high-vapor pressure compounds.
- Floating roof storage tanks for mid-vapor pressure liquids such as naphtha.
- Fixed roof storage tanks for low-vapor pressure liquids such as diesel and base oils.

Cerilon is still evaluating the specific needs for storage capacity and potential space constraints at the Project Site. All tanks will be designed and operated in accordance with industry standards. Appropriate spill containment will also be incorporated as required by the applicable Spill Prevention, Control, and Countermeasure (SPCC) and Facility Response Plan (FRP) regulations enforced by the NDDEQ. Intermediate storage tanks will be located on the Project Site and will be designed in accordance with regulatory requirements relevant to their service. As noted in Section 3.1, final product storage tanks will be owned and operated by Savage and located on their property west of the Cerilon site.

### 4.4.8 Product Transport

As noted in Section 3.1, finished products will be transported from the site by truck or rail through the Savage terminal adjacent to the Cerilon Project Site. Logistics plans are still under development; however, current plans are as follows:

- Naphtha will be loaded into tanker trucks.
- Diesel sold to the local market will be loaded into tanker trucks.

- Diesel sold to other markets will be loaded into railcars.
- Base oils will be loaded into railcars.

As these activities will occur at Savage, they are outside this application's scope.

## 4.5 Temporary Facilities

Project construction will require temporary staging and construction laydown yards. Additional temporary facilities will include road improvements to deliver large components and crane paths to move construction cranes across the Project Site. All temporary facility locations will meet applicable local requirements. Temporary offices will also be constructed on-site. Cerilon will remove temporary facilities and road improvements at the end of construction and restore the disturbed areas to preconstruction conditions.

Please refer to Section 7.1 for further discussions of the construction of the Project and associated temporary facilities.

## 4.6 Project Schedule

The anticipated schedule, including the commercial operation date, depends upon permitting approval, Project agreements, and other development activities. Cerilon plans to begin construction activities in mid- 2025. Other Project-related activities include:

- **Obtaining Certificate of Site Compatibility**: Cerilon anticipates approval of the Certificate in approximately mid-2024.
- **Completing Land Acquisition:** Cerilon has already acquired or has purchase agreements for the Project Site.
- **Construction:** Cerilon anticipates construction of Phase 1 of the Project to begin in mid-2025, subject to receipt of the necessary permits, approvals, and weather. Construction of Phase 1 is projected to be completed in 2028.
- **Test and Operations:** Testing for Phase 1 of the Project is expected to occur in the first half of 2028, and finish by mid-2028.
- **Commercial Operation:** Cerilon expects full commercial operation of Phase 1 of the Project to begin in mid-2028.
- **Expansion or Additions:** Construction of Phase 2 of the Project is anticipated to begin in approximately 2030 and be complete in 2032. Testing for Phase 2 of the Project is anticipated to occur in early 2032 and be completed approximately six months later.

## 4.7 Project Cost

The estimated total cost to construct Phase 1 of the Project is approximately $3.2 billion. Cerilon has not estimated the cost to construct Phase 2, but it is expected to be comparable.

# 5 Evaluation of Facility Need and Alternatives

The Project meets several needs of the local communities and economies surrounding the Project Site, North Dakota, and the United States. The specific needs that the Project will meet can be broken into three categories:

- Consumption of excess natural gas in western North Dakota
- Enabling the strategic development of CCS capability in the region
- Liquid product demand
- Electric energy demand

These needs and potential alternatives are evaluated individually in Sections 5.1 through 5.4.

## 5.1 Consumption of Excess Natural Gas in Western North Dakota

### 5.1.1 Need Analysis

The Bakken Formation in western North Dakota contains crude oil and natural gas deposits. The production of crude oil, therefore, also results in the production of natural gas. This gas can be recovered and processed into natural gas, turning a byproduct of oil production into a saleable product. However, if the gas cannot be recovered, it must be vented to a flare per NDAC 43-02-03-45. The flare combusts the methane in the gas to form carbon dioxide, significantly reducing the greenhouse gas emissions from the gas venting[5].

The North Dakota Industrial Commission (NDIC) issued order no. 24665 to reduce the volume of flared gas in the state (reference (2). The NDIC issued its current policy and guidance document on this order on September 22, 2022 (reference (3)). Among other policies identified in the document, it sets a goal of 91% recovery of this gas and restricts oil production for operators that cannot meet this goal. Individual operators have also established plans to reduce flaring as part of their environmental, social, and governance (ESG) objectives.

However, capacity constraints within the infrastructure to collect, process, and transport coproduced gas to market have limited the ability of oil and gas wells in western North Dakota to maximize oil production while meeting the requirements to reduce the volume of flared gas. As noted in Section 4.1.1, the Project would consume 480 MMscf/day of natural gas in western North Dakota, where the infrastructure constraints are the tightest. This consumption would allow additional oil to be produced while continuing to meet the NDIC's targets for reducing the volume of flared gas.

[5] Per 40 CFR Part 98, the federal *Mandatory Greenhouse Gas Reporting* rule, methane is 25 times more potent a greenhouse gas as carbon dioxide. Please refer to Table A-1 to Subpart A of Part 98 for details.

### 5.1.2 Alternatives

Alternative means of reducing the volume of gas flared in western North Dakota would require either the installation of additional natural gas pipeline capacity or the construction of one or more other facilities that could productively use the gas in western North Dakota. The additional pipeline capacity to transport the 480 MMscf/day of natural gas to be processed by the Project is comparable to the 420 MMscf/day of natural gas that is transported by TC Energy's Bison Pipeline, which transports natural gas from Wyoming to TC Energy's Northern Border Pipeline that passes through North Dakota (reference (4)). Installation of such a pipeline would require the identification of a corridor from North Dakota to another area or pipeline with sufficient demand. This corridor would require significantly more land than the proposed Project, likely including impacts to landowners, wildlife habitats, and public lands. The pipeline and corridor would also require approval of a Transmission Facility Permit under NDAC 69-06-05, among other state, local, and federal permits.

Alternative facilities to consume 480 MMscf/day of natural gas in western North Dakota could be a single large industrial facility of comparable complexity and magnitude to the Project or several smaller facilities. The most likely use of this quantity of gas in one large facility would be combusting it in a boiler to produce steam to feed a turbine or directly in a combustion turbine to generate electricity. Such a facility would be expected to have similar impacts as the Project and require approval of a Certificate as an *electric energy conversion facility* under NDCC 49-22. Consumption of 480 MMscf/day of natural gas across several smaller facilities would impact significantly more land than the Project. These smaller facilities might fall below certain regulatory thresholds, potentially falling outside of NDPSC jurisdiction and requiring various levels of review, approval, and public input, with the result that their cumulative impacts could be more significant than the Project.

## 5.2 Liquid Product Demand

### 5.2.1 Need Analysis

As noted in Section 4.1, the Project will produce three primary products: Group III+ base oils, ultra-low sulfur diesel (ULSD), and naphtha. Each of these are in high demand:

- Group III+ Base Oils: Demand in the United States for premium base oils is projected to rise 6.94% annually through 2027 (reference (5)). Automobile manufacturers increasingly adopt premium quality lubricants to improve fuel economy, reduce harmful tailpipe emissions, and realize longer drainage intervals. These lubricants and associated specialty fluids are used in conventional internal combustion, hybrid, and electric vehicles. Other industrial applications, such as compressors and hydraulic equipment also look to premium base oils for similar efficiency improvements. There are no producers of Group III+ base oils in North America. Local demand for these premium products is fully satisfied via imports from Indonesia and the Middle East. Cerilon is discussing with purchasers for the offtake of base oil to be produced by the Project.
- ULSD: The ULSD to be produced by the Project is a unique, premium quality, synthetic middle distillate. It is a fully fungible drop-in alternative for petroleum-based diesel that offers a cleaner engine burn and reduced emission levels due to a lack of impurities. Cerilon ULSD's sulfur content

will be well below the ULSD standard of 15 parts per million by weight. This diesel will be sold to the market neat as a fuel or to other fuel providers as a blendstock for their ULSD products. The demand for distillate fuel oils, including ULSD, is projected to remain strong in the United States through 2050 (reference (6)).

- Naphtha: The highly paraffinic GTL naphtha produced by the Project is similar in chemical structure to the more familiar US natural gasoline stream. The product can be sold either to a petroleum refinery to be further processed into finished product gasoline, to chemical plants as ethylene cracker feedstock, or to an oil producer in the oil sands of Alberta, Canada, to be used as a diluent. Bitumen from the oil sands is too viscous to be efficiently transported via a pipeline, and diluents are added to reduce its viscosity for pipeline transport.

New laws, regulations, and requirements have also directly increased the demand for low-carbon liquid products. The GTL process to be used by the Project will yield superior quality, high-performance products with environmentally beneficial lower sulfur and aromatics content. The addition of CCS will also reduce the carbon emissions from the GTL facilities, adding to the demand for Cerilon's GTL products.

### 5.2.2 Alternatives

As noted previously, there are no GTL facilities in North America producing Group III+ base oils, and all Group III+ base oils consumed in the United States are imported. Petroleum refineries in the United States produce group I, II, and III base oils. Low-viscosity poly alpha olefins, the closest high-quality lubricant blend stock to Cerilon's Group III+ base oils, are chemically synthesized in the United States by a few companies, including Exxon Mobil and Chevron Phillips. However, these products demand prices almost double that of their mineral alternatives. Further, no petroleum refineries produce base oils in North Dakota or its neighboring states (reference (7)).

Cerilon has assessed product carbon intensity based on the current Project scope, including carbon capture, and compared this to conventional refineries using accepted models and aggregated carbon and energy use information specific to global refinery operations. Based on this assessment, Cerilon Group III+ base oils are expected to have a best-in-class well-to-tank carbon footprint performance. Cerilon base oils will also offer consistent quality superior to most competitive products (reference (8); (9)). These base oils will have superior viscosity indices, top-tier volatility and cold flow properties, and minimal contaminant content compared to conventional, petroleum-based base oils.

Petroleum refineries are also producers of ULSD and conventional naphtha. There is one operating refinery in North Dakota, Marathon Petroleum Company's Mandan Refinery near Bismarck, and one permitted petroleum refinery that has not yet been constructed, the Meridian Energy Group's Davis Refinery near Belfield. Additional diesel and naphtha would need to be imported to North Dakota or from increased petroleum refinery capacity, either via enhancements to the existing facilities or construction of a new refinery capacity.

The ULSD and naphtha to be produced by the Project will also have several advantages over their petroleum-based alternatives. GTL-based naphtha offers consistent quality superior to competitive

products, being highly paraffinic with minimal aromatic and sulfur content. GTL-based diesel has improved properties over conventional diesel, such as a higher cetane number and reduced aromatics. The ULSD is also generally more biodegradable than conventional fuels (references (8); (9)). In the European Union, GTL ULSD can be classified as readily biodegradable, whereas conventional diesel does not have this classification (reference (9)). Ready biodegradability means that it undergoes rapid degradation in the environment under most conditions (reference (10)). As such, spills of GTL ULSD are projected to have a reduced impact on the environment compared to conventional ULSD.

Diesel- and naphtha-grade products are also produced from non-petroleum, renewable sources in North Dakota. Marathon Petroleum Corporation's (MPC) Dickinson Renewable Diesel Facility also produces renewable diesel and naphtha primarily from corn oil and soybean oil. However, the renewable diesel and renewable naphtha produced by the Dickinson Facility are primarily shipped out of North Dakota to meet other states' reduced carbon fuel standards (reference (11)). ADM also operates a biodiesel production plant near Velva. Additional renewable diesel and biodiesel production in North Dakota would require enhancements to the existing facilities or the construction of a new facility. The raw materials for these facilities, primarily corn and soybean oil, are also limited in their production. As an example of this bottleneck to the supply of these renewable oils, MPC has recently teamed with ADM on a new soybean processing facility near Spiritwood, with the produced oil exclusively provided to MPC (reference (12)). In contrast, the diesel and naphtha to be produced by the Project will utilize existing supplies of excess natural gas near the Project Site, with limited additional infrastructure needed to supply this gas to the Project Site.

## 5.3 Electric Energy Demand

### 5.3.1 Need Analysis

As noted in Section 4.2, the production of electricity is a means of recovering thermal energy generated by the various processes within the GTL facilities. If not for the generation of electricity, this thermal energy would be released to the environment, likely by venting excess steam. This steam venting would increase the Project's water demand and generate a visible steam cloud and additional sound from the facility, increasing the off-site impacts of the Project. Recovering the thermal energy produced by the Project reduces these additional impacts.

Cerilon has engaged with BEPC, UMPC, and LYREC to discuss the Project, and all expressed significant interest in additional electric energy generating capacity connecting to the grid near the Project Site. Cerilon is working with BEPC, UMPC, and LYREC to verify their needs for the interconnection to the grid and commercial arrangements to purchase the power. Cerilon will also be applying to the SPP for the interconnection to the grid (i.e., entering the queue).

### 5.3.2 Alternatives

As noted previously, the electricity generated by Cerilon will be a byproduct of the exothermic processes within the GTL facilities. Potential alternative sources of electricity have drawbacks that the Project will not have:

- Fuel-fired boilers, turbines, and engines – These sources all release air pollutant emissions, generate wastes that need to be disposed of, and some also require water to be supplied and discharged in the process of generating electricity. The generation of electricity from the Project will release no additional air emissions, generate no additional waste, and likely decrease the amount of water supplied and discharged from the Project[6].

- Wind turbines – The primary impacts from wind turbines are the large amount of land required in specific areas with sufficient wind energy available to generate utility-scale electricity and impacts on avian species. The generation of electricity from the Project requires no additional land beyond the Project Site and limited additional projected impacts to avian species. See Section 8.9 for further details on the Project's impacts on wildlife.

- Solar farms – The primary impact of solar farms is the large amount of land needed to generate utility-scale electricity. The generation of electricity from the Project requires no additional land beyond the Project Site.

- Hydroelectric dams – Two primary impacts from hydroelectric dams are the inundation of land by the reservoir formed by the dam and the disruption of the river characteristics downstream of the dam. The formation of a reservoir could displace communities and destroy existing wildlife habitat. Downstream of the dam, the flow of nutrients and sediments, and the water temperature are impacted. The only impacts on rivers from the Project will be from the appropriation of water from the Missouri River, discharges of treated wastewater to the Missouri River, and stormwater discharges to Eightmile Creek. All three impacts are evaluated further in this application and will be conducted in accordance with the various regulations and permitting requirements. See Section 8.4 for further details on the impacts of the Project on surface water.

- Nuclear power – The primary concerns with nuclear power are the potential for nuclear radiation being released from the site and the generation and disposal of radioactive waste, neither of which apply to the Project.

As noted here and in Section 4.2, generating electricity from the Project maximizes the facility's energy efficiency and reduces impacts on the Project Site and surrounding areas.

## 5.4 Other Industrial Developments

NDAC 69-06-08-01(5)(d) requires an evaluation of the cumulative impacts of existing and planned facilities and other industrial development with the Project. North Dakota's Combined Environmental Regulatory Information System (reference (13)) identifies the following industrial sites within the Study Area[7]:

[6] Decreased water supplied and discharged from generating electricity is due to the excess thermal energy needing to be released in some way. This would likely be achieved by directly releasing excess steam produced by the GTL facilities to the atmosphere and increased water cooling, both of which would require additional water.
[7] As described further in Section 6.2, the Study Area is the area within one mile of the Project Site.

- Savage Services Corp. – Savage Bakken Petroleum Services Hub – Located west of the Project Site, this existing facility is a petroleum bulk storage terminal that transloads petroleum liquids between railcars and tanker trucks. The site operates five large storage tanks, a rail loop, and ten rail spurs to facilitate the transloading. See Section 3.1 for further details on Cerilon's relationship with Savage.

- Grayson Mill Operating, LLC - Aune Oil Facility – Located southwest of the Project Site, this existing facility is a bulk petroleum storage terminal with two large storage tanks and tanker truck loading and unloading equipment. The facility transloads crude oil between a pipeline and tanker trucks.

- SAFuels X Sustainable Aviation Fuel Production Plant – Located southwest of the Project Site, this proposed facility will refine soybean oil and canola oil primarily into renewable jet fuel, as well as renewable diesel and naphtha. The facility was issued a minor source Permit to Construct (No. ACP-18161 v1.0) by the NDDEQ on January 31, 2023. At the time of this application, construction on the site has not started.

- Dakota Oil Processing Trenton Refinery – This is a previously permitted petroleum refinery intended to be constructed on the site the SAFuelsX project identified above is now permitted to construct on. This facility's permits have expired, and new permits have been issued to SAFuelsX. As such, this facility is not considered elsewhere in this application.

- Oil and Gas Wells – There is one operating oil well and one plugged and abandoned oil well on the Project Site. Several more permitted and operating oil wells are also in the Study Area.

Potential cumulative effects from these other industrial facilities center on air emissions, surface water, sound resources, visual resources, demographics, land use, and public services. Please refer to Section 8 for further details on the impacts of the Project and cumulative impacts from other industrial sites in the Study Area.

## 5.5 Ten-Year Plan

Cerilon submitted a ten-year plan to the PSC in accordance with NDCC 49-22-04 and NDAC 69-06-02 on September 19, 2023.

# 6 Site Selection and Layout Criteria

## 6.1 Site Selection Criteria

Cerilon considered locations in several North American jurisdictions, including Alberta, Oklahoma, and Louisiana, as well as potential locations in the Middle East, before concluding that the first facility would be in North Dakota. Once this decision was made, Cerilon undertook a site selection study to identify an optimal location for the Project within the state. Critical site location criteria that were included in the study are:

- Proximity to the following infrastructure:
    - Existing natural gas pipelines for feedstock supply
    - Suitable for geology for $CO_2$ sequestration or an existing $CO_2$ pipeline to geology that is suitable for sequestration
    - Rail line and product pipelines for economical product shipping
    - Electric transmission lines for access to sufficient electric power for the site when not generating electricity and for interconnection to the grid to supply excess electricity.
- Sufficient distance from airports and air force bases that would be impacted by tall structures to be constructed
- Reasonably flat and level land suitable for the construction of large industrial structures and equipment
- Zoned for industrial development or eligible for rezoning
- Sufficient acreage available for purchase

Western North Dakota was identified as a promising jurisdiction for the Project due to the abundant natural gas supply, suitable geology for carbon sequestration, and available transportation to markets. The North Dakota Department of Commerce identified nine potential sites and provided information that Cerilon incorporated into the site selection study. Cerilon then met with local development authorities and municipal officials to evaluate their interest in the proposed industrial development. The Project Site was identified as the ideal candidate as it met all the above criteria.

Cerilon subsequently acquired the parcels, or has agreements in place to acquire the parcels, making up the Project Site. Cerilon has also received conditional approval from Williams County to zone the Project Site for heavy industrial, contingent upon receiving a Conditional Use Permit from Williams County (reference (14)). Cerilon has also received financial support for the Project in the form of a grant and a loan from the North Dakota Industrial Commission for Clean Sustainable Energy Projects (reference (15)), a loan from the North Dakota Development Fund (reference (16)), a loan from Williams County (reference (17)), and a loan from McKenzie County (reference (18)).

## 6.2 Project Site and Study Area

The Project Site is described in detail in Section 3. In addition to the potential direct impacts of the Project on the Site, Cerilon evaluated the project's potential impacts on the area within one mile of the site, referred to as the "Study Area" within this application. Specific potential impacts outside of the Study Area are also evaluated where appropriate. For example, the wastewater discharge from the Project will be routed to the Missouri River outside of the Study Area. However, this application evaluates the status of the Missouri River at the proposed discharge location and the impacts of the discharge.

## 6.3 Summary of Environmental Impact Studies

Barr conducted several studies of the projected impacts of the Project:

- Phase I Environmental Site Assessment: Barr conducted this assessment in accordance with the requirements of 40 CFR Part 312 (*Standards and Practices for All Appropriate Inquiries*) and the American Society for Testing and Materials International Method E1527-21 (*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*); and ASTM E2247-16 (*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property*). This evaluation included inspections of the Project Site in September and November of 2022, as well as desktop evaluations of the Project Site and adjoining properties. The assessment identified several recognized environmental conditions and business environmental risks in connection with the Project Site, most related to historical and current petroleum extraction, storage, and transmission on and near the Project Site. A copy of this study is included as Appendix C to this application.

- Wetland Delineation Report: Barr conducted an aquatic resource delineation of the Project Site and prepared a report in accordance with the U.S. Army Corps of Engineers 1987 *Wetland Delineation Manual* (USACE, 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region* (USACE, 2010), and the *Corps of Engineers Minimum Standards for Acceptance of Aquatic Resources Delineation Reports* (USACE, 2019). Wetlands were classified using the U.S. Fish and Wildlife Service (USFWS) Cowardin System (Cowardin et al., 1979) and the USFWS Circular 39 system (Shaw and Fredine, 1956). This evaluation included inspections of the Project Site in September 2022, as well as desktop evaluations of the Project site. This report was submitted to the USACE on March 27, 2023, requesting an Approved Jurisdictional Determination, which has not yet been received at the time of this application's submittal. The evaluation identified four wetlands totaling 0.13 acres and two other waters. Barr anticipates that the USACE will identify the wetlands and two other waters as non-jurisdictional. A copy of this study is included as Appendix D to this application.

- Threatened and Endangered Species Evaluation: Barr surveyed the Project Site to identify potential impacts on threatened and endangered species or their habitats. The survey also identified potential impacts on bald and golden eagles. This evaluation included a field survey of the Project Site in June 2023, as well as desktop evaluations of the Project Site. This evaluation identified that the Project "may affect but is not likely to adversely affect" the northern long-eared

bat and "not likely to adversely affect" or "no effect" for all other threatened and endangered species identified within the USFWS Information and Planning Consultation for the Project Site or to bald or golden eagles. A copy of this study is included as Appendix E to this application.

- Class III Cultural Resource Inventory: Juniper Environmental Consulting conducted a Class III cultural resources inventory of the Project Site in accordance with the State Historical Society of North Dakota Class III Intensive Pedestrian Cultural Resource Inventory standards (SHSND 2020). This inventory included a field survey of the Project Site in September 2022, as well as a Class I desktop evaluation of the Project Site and Study Area. The inventory identified 27 previously recorded cultural resources and 32 previous cultural resource investigations within the Study Area, as well as one isolated find and two historic farmsteads identified during the survey of the Project Site. The report recommended a finding of *No Historic Properties Affected* and was sent to the North Dakota State Historical Preservation Office for its review. The North Dakota State Historical Preservation Office has not yet finalized its review at the time of the submittal of this application. A copy of this study is included as Appendix F to this application.

In addition to these studies included as Appendices, Barr conducted desktop reviews of the Project's impacts and mitigative measures throughout Section 8 of this Application.

## 6.4 Exclusion Areas

NDAC Section 69-06-08-01(1) states that specified "*geographical areas shall be excluded in the consideration of a site for an energy conversion facility.*" Table 6-1 lists the exclusion areas identified in NDAC 69-06-08-01 and summarizes how the Project Site does contain any exclusion areas.

**Table 6-1 Summary of Exclusion Areas**

| Description | Present in Study Area? | Present in Project Site? | Summary | Section Addressed |
|---|---|---|---|---|
| Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands | No | No | None of these areas are identified within the Project Site or Study Area. | Figure A.4 |
| Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves | Yes | No | Approximately 75 acres of the Trenton Wildlife Management Area are within the Study Area. At its closest point, it is 0.65 miles from the Project Site. | 8.9, Figure A.4 |

| Description | Present in Study Area? | Present in Project Site? | Summary | Section Addressed |
|---|---|---|---|---|
| County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands. | No | No | None of these areas are identified within the Project Site or Study Area. | Figure A.4 |
| Areas critical to the life stages of threatened or endangered animal or plant species | No | No | None of these areas are identified within the Project Site or Study Area. | 8.8, 8.9, 8.10 |
| Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged | No | No | None of these areas are identified within the Project Site or Study Area. | 8.8, 8.9, 8.10 |
| Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile launch or launch control facility. | No | No | None of these areas are identified within the Project Site or Study Area. | 6.6 |
| Areas within thirty feet [9.14 meters] on either side of a direct line between an intercontinental ballistic missile launch facility and a missile alert or launch control facilities to avoid microwave interference. This restriction only applies to aboveground structures, not to surface features, such as roads, or belowground infrastructure. | No | No | None of these areas are identified within the Project Site or Study Area. | 6.6 |

## 6.5 Avoidance Areas

NDAC Section 69-06-08-01(3) states that specified "*geographical areas shall not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative. … A buffer zone of a reasonable width to protect the integrity of the area must be included. Natural screening may be considered in determining the width of the buffer zone.*" Table 6-2 lists the avoidance areas specified in NDAC 69-06-08-01(3) and summarizes the Project's compliance with the siting requirements in North Dakota rules.

**Table 6-2 Summary of Avoidance Areas**

| Description | Present in Study Area? | Present in Project Site? | Summary | Section Addressed |
|---|---|---|---|---|
| Historical resources which are not designated as exclusion areas | Yes | Yes | The Buford-Trenton Project, an operating irrigation canal previously recommended as eligible for the National Register of Historic Places, runs through the Project Study Area. The United States Bureau of Reclamation has been granted an easement for the irrigation canal's route through the Project Site, and any changes to or near the canal would need to meet the conditions of the easement. Cerilon does not intend to encroach on or impact the canal or easement. | 8.17 |
| Areas within the city limits of a city or the boundaries of a military installation | No | No | None of these areas are identified within the Project Site or Study Area. | 3 |
| Areas within known floodplains as defined by the geographical boundaries of the hundred-year flood | Yes | Yes | The Project Site and Study Area are not currently mapped in the Federal Emergency Management Administration's (FEMA) flood hazard mapping program and cannot be identified as within the 100-year or 500-year floodplain. However, the North Dakota flood risk assessment map identifies multiple locations in the Project Site with a 1% annual risk of flooding in their base-level engineering data. The USACE has been granted a flowage easement for the area of the Project Site bounded by 42nd St NW, 147th Ave NW, and the irrigation canal, which is also within the 100-year floodplain. This easement restricts development and construction of the land without written approval from USACE due to potential flooding due to the operation of the Garrison Dam. These areas will be avoided to the extent practicable. However, the Project Site's relatively small size, geometry, existing infrastructure in and around the Project Site, and safe and efficient design of the Project may require minimal impacts to the flowage easement. Activity within the flowage easement will only occur with prior USACE approval. Potential impacts include the construction of guy wire foundations to support the two flare structures proposed for the Project. | 8.4.1.2 |
| Areas that are geologically unstable | No | No | None of these areas are identified within the Project Site or Study Area. | 8.11 |

| Description | Present in Study Area? | Present in Project Site? | Summary | Section Addressed |
|---|---|---|---|---|
| Woodlands and wetlands | Yes | Yes | Approximately 0.13 acres of wetlands and 9.2 acres of drainages will be filled during construction of the Project. The Project Site's relatively small size, geometry, and safe and efficient design of the Project require the land these wetlands and drainages occupy to be available for construction. The Project will require the removal of trees and shrubs in areas larger than 50 ft to accommodate construction and operation of the Project, but will otherwise occur in accordance with the PSC's tree and shrub mitigation specifications. | 8.6, 8.8 |
| Areas of recreational significance which are not designated as exclusion areas | No | No | None of these areas are identified within the Project Site or Study Area. | 8.18 |

## 6.6 Selection Criteria

NDAC Section 69-06-08-01(5) states that "*a site shall be approved in an area only when it is demonstrated to the commission by the applicant that any significant adverse effects resulting from the location, construction, and operation of the facility in that area, as they relate to the following, will be at an acceptable minimum, or that those effects will be managed and maintained at an acceptable minimum.*" Table 6-3 summarizes the Project's compliance with the selection criteria specified in NDAC 69-06-08-01(5).

**Table 6-3 Summary of Selection Criteria**

| Selection Criteria | Potential Adverse Effects | Section Addressed |
|---|---|---|
| Impact Upon Agriculture: | | |
| Agricultural production | The Project will impact agricultural production currently occurring on the Project Site by changing the site's land use from its current agricultural production to future heavy industrial operations. No adverse impacts to agricultural production are anticipated outside of the Project Site. | 8.4, 8.5, 8.7, 8.8, 8.15 |
| Family farms and ranches | The Project Site currently contains two family farms. The houses on these farms are unoccupied, but the land continues to be used for agricultural production. The Project will change from its current agricultural production to heavy industrial operations. Minimal adverse impacts are anticipated to family farms and ranches outside the Project Site. | 8.4, 8.5, 8.7, 8.8, 8.15 |

| Selection Criteria | Potential Adverse Effects | Section Addressed |
|---|---|---|
| Land which the owner demonstrates has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation | The Project Site is currently irrigated agricultural land that will be converted to future heavy industrial operations. Minimal adverse impacts are anticipated outside of the Project Site. | 8.4, 8.5, 8.7, 8.8, 8.15 |
| Surface drainage patterns and ground water flow patterns | No adverse impacts to surface or ground water are anticipated. | 8.4, 8.5 |
| The agricultural quality of the cropland | See 'Agricultural production' above. | 8.4, 8.5, 8.7, 8.8, 8.15 |
| Impact Upon Availability and Adequacy of: | | |
| Law enforcement | No adverse impacts on local services are anticipated. | 8.16 |
| School systems and education programs | No adverse impacts on local services are anticipated. | 8.16 |
| Governmental services and facilities | No adverse impacts on local services are anticipated. | 8.16 |
| General and mental health care facilities | No adverse impacts on local services are anticipated. | 8.16 |
| Recreational programs and facilities | Minimal adverse impacts to recreation are anticipated as there are other heavy industrial operations and ample additional opportunities for recreation in the vicinity of the Project. Adverse impacts will primarily be visual in nature to those engaged in recreational activities on adjacent private property or nearby public lands. | 8.18 |
| Transportation facilities and networks | The Project will increase traffic on nearby North Dakota Highway 1804 and the adjacent county roads during the construction and operation of the Project. Potential adverse effects will be evaluated with Williams County and the North Dakota Department of Transportation. | 8.16 |
| Retail service facilities | No adverse impacts to local services are anticipated. | 8.16 |
| Utility services | No adverse impacts to local services are anticipated. | 8.16 |
| Impact Upon: | | |
| Local institutions | No adverse impacts to local institutions are anticipated. | 8.16 |
| Noise sensitive land uses | The Project will increase background noise levels in its vicinity. Cerilon is coordinating with stakeholders to identify and mitigate their concerns. | 8.1.4, 8.12 |
| Light sensitive land uses | The Project will be well-lit to allow for the operation of the facility at all hours of the day and improve monitoring of site security during night hours. Cerilon is coordinating with stakeholders to identify and mitigate their concerns. | 8.1.4, 8.13 |

| Selection Criteria | Potential Adverse Effects | Section Addressed |
|---|---|---|
| Rural residences and businesses | Retail services in communities such as Trenton and Williston may experience temporary and minimal increases in business during the construction and operation of the Project due to the influx of workers. Cerilon is coordinating with stakeholders to identify and mitigate their concerns about the Project. | 8.1.4, 8.16 |
| Aquifers | No adverse impacts to aquifers are anticipated. | 8.5 |
| Human health and safety | Minimal adverse impacts to human health and safety are anticipated. General risks related to the construction and operation of a heavy industrial site are anticipated and will be mitigated in accordance with workplace safety regulations. Off-site impacts will be mitigated via compliance with various environmental regulations. Cerilon is coordinating with stakeholders to identify and mitigate their concerns about the Project. | 8.1.4, 8.2 |
| Animal health and safety | See 'Agricultural production' above. | 8.9 |
| Plant life | See 'Agricultural production' above. A weed mitigation plan will be implemented in consultation with Williams County. | 8.8 |
| Temporary and permanent housing | Per previous communications with Williams County, it is anticipated that there is an adequate supply of temporary housing units available in the County for use by construction workers temporarily relocating to the area. Housing availability and the need for Project-specific housing for construction workers is being evaluated. | 8.14 |
| Temporary and permanent skilled and unskilled labor | Most construction contractors and workers would temporarily relocate to the Project area as construction of the Project would require a specialized workforce. The operation of Phase 1 of the Project would require approximately 100 additional full-time employees for operation of the Project. Employment for Phase 2 of the project is being evaluated. | 8.14 |
| The cumulative effect of the location of the facility in relation to existing and planned facilities and other industrial development | Multiple other industrial developments are already in operation or permitted for construction near the Project Site. The primary cumulative impacts include the loss of agricultural lands and increased traffic on North Dakota Highway 1804 and adjacent county roads. | 5.4 |
| The impact upon military installations, assets, and operations. | No military installation, assets, or operations occur in the vicinity of the Project Site. There is no anticipated impact on military operations, installations, or assets. | 10[1] |

[1] Agency consultation summarized in Section 10 included confirmation from the Minot Air Force Base that there are no military impacts from the Project. While a notification was provided to them, a final response confirming this understanding was not received from the United States Department of Defense or the Grand Forks Air Force Base. Cerilon will update the PSC on any additional feedback from these military agencies

## 6.7 Policy Criteria

NDAC Section 69-06-08-01(6) states that "*(t)he commission may give preference to an applicant that will maximize benefits that result from the adoption of the following policies and practices, and in a proper case may require the adoption of such policies and practices. The commission may also give preference to an*

*applicant that will maximize interstate benefits.*" Table 6-4 summarizes the Project's compliance with the policy criteria specified in NDAC 69-06-08-01(6).

**Table 6-4 Summary of Policy Criteria**

| Policy Criteria | Suitable Policy or Practice of Applicant | Section Addressed |
|---|---|---|
| Recycling of the conversion byproducts and effluents | Cerilon is designing the Project to meet this criterion in multiple ways:<br>1. Excess heat will be recovered as steam used to produce electricity for use on-site and sold to the electrical grid.<br>2. Excess combustible gases generated by the GTL facilities will be consumed by fuel-fired boilers, which will also generate steam to generate electricity for use on-site and sold to the electrical grid.<br>3. Water usage will be minimized through the treatment and recycling of process wastewater, and by minimizing the cooling water demands of the Project. | 4 |
| Energy conservation through location, process, and design | Cerilon selected the Project Site and is designing the Project to meet this criterion in multiple ways:<br>1. The Project is being designed to modern, energy-efficient standards.<br>2. The Project Site is proximal to crucial infrastructure, reducing the energy needed to transport feedstocks to and finished products and from the site:<br>• Existing natural gas supply pipelines<br>• Railroad and pipeline connections<br>• Potential carbon sequestration locations<br>3. Excess energy will be conserved and recovered to the extent practical through steam and electricity generation. | 4, 6.1 |

| Policy Criteria | Suitable Policy or Practice of Applicant | Section Addressed |
|---|---|---|
| Training and utilization of available labor in this state for the general and specialized skills required | Cerilon's organizational design is based on a highly automated and integrated operation. This includes the facility's working environment, the requirement to interface with corporate functions and potentially a remotely controlled room to supplement the onsite control room. Creating an organizational design for an automated facility requires additional considerations compared to a traditional facility. The requirements to find employees with the desired attributes are demanding since not all skills are locally available, and the recruitment plan will consider the following:<br>• Local recruitment, which is imperative, will be supplemented by relevant training.<br>• Investment in customized training programs in the local communities through collaboration with local and regional education institutions.<br>• Training programs for local workers looking for a second career or who need 're-skilling.'<br>• Targeted efforts aimed at local women in science and technology.<br>• Recruiting people out of State who already possess the requisite skills.<br>• Instituting levers that encourage people recruited out of state to relocate to the local community and retain them.<br>• Agreements with licensors, equipment manufacturers, and other companies that do not compete for relevant training and skills development in the same market.<br>• Engagement with State high schools to encourage youth to stay in North Dakota by highlighting potential employment at the facility.<br>Developing a robust training program is critical to the Company's success because of the necessity for employees with advanced level thinking, technical problem solving, and personal commitment to excellence. Jobs will include technology-based roles and skilled trades. The Company will partner closely with North Dakota and Alberta educational institutions to develop the necessary GTL technical knowledge. Further, the intent is to create hands-on training and work experience opportunities by seconding employees to other automated energy facilities. | 8.14 |
| Use of a primary energy source or raw material located within the state | The Project will use the plentiful natural gas available in western North Dakota as its primary raw material. | 4, 5, 6.1 |
| Nonrelocation of residents | There are no occupied residences on the Project Site. There are several residences in the Study Area, and Cerilon is working directly with the residents to address their concerns regarding the Project and reach amenable solutions. | 8.1.4 |
| The dedication of an area adjacent to the facility to land uses such as recreation, agriculture, or wildlife management | Areas adjacent to the Project Site will continue to be used for agricultural purposes. | 8.15 |
| Economies of construction and operation | The Project will create economies of construction and operation. | 8.14 |

| Policy Criteria | Suitable Policy or Practice of Applicant | Section Addressed |
|---|---|---|
| Secondary uses of appropriate associated facilities for recreation and enhancement of wildlife | The Project does not include associated facilities that would be appropriate for recreation or enhancement of wildlife. | 4 |
| Use of citizen coordinating committees | Cerilon initiated engagement with external stakeholders early in project development. This includes engagement with federal, state, county, and township officials and staff, as well as adjacent neighbors and local landowners to identify their questions and concerns regarding the Project. | 8.1.4 |
| A commitment of a portion of the energy produced for use in this state | All electric energy produced by the Project and unused on-site will be sent to the local electrical grid and managed by Basin Electric Power Cooperative and/or Lower Yellowstone Rural Electric Cooperative. | 4, 5 |
| Labor relations | Labor relations will not be negatively affected by the Project. Cerilon intends to work with both union and non-union labor. Cerilon and its construction and engineering contractors will be establishing construction labor agreements for the Project in the near future. | 8.14 |
| The coordination of facilities | Cerilon is coordinating with third parties to construct additional support infrastructure to minimize off-site impacts. As noted previously, this infrastructure will be constructed and operated by a third party and is out of the scope of this application. | 4 |
| Monitoring of impacts | Cerilon will use Best Management Practices (BMPs) during construction to minimize environmental impacts and will monitor compliance with the commitments made in this application and applicable permit conditions, including the Certificate. | 8 |

# 7 Project Construction, Operation and Maintenance, and Decommissioning

## 7.1 Project Construction

### 7.1.1 Construction Activities and Workforce

Various activities must be completed throughout Project construction, including land surveying, geotechnical surveys and analyses, locating existing underground utilities, site grading, installation of foundations and underground utilities, erection of aboveground components and utilities, and finally, Project commissioning. Cerilon will hire an Engineering, Procurement, and Construction (EPC) contractor to manage the design and construction of the Facility. The EPC contractor will coordinate multiple construction and vendor contracts and ensure conformity with Project plans and specifications as well as compliance with all regulatory requirements.

As noted in Section 4 the Project includes constructing two GTL facilities in two phases. The areas associated with Phase 2 of the project will be used as laydown and temporary office space during the construction of Phase 1. Significant space constraints exist on the Project Site for laydown and temporary offices for Phase 2 of the Project. Cerilon is evaluating options for locating these areas, which may require leasing or purchasing land adjacent to the Project Site. Cerilon will notify the PSC if such additional off-site activities and impacts will be required.

Several existing pipelines cross the site and interfere with the currently proposed layout of the facility. Cerilon has confirmed that pipelines owned by Hiland Crude / Kinder Morgan and Grayson Mill will need to be rerouted to accommodate construction of the Project. Cerilon has initiated discussions with both Kinder Morgan and Grayson Mill to discuss rerouting these lines at Cerilon's expense. Work is underway to confirm the timing and costs of rerouting these lines. Pipeline owners will be responsible for securing regulatory authorizations for these changes.

Existing access roads (typically paved or maintained with gravel or aggregate base) will be used in their original condition or upgraded depending on use. Road upgrades will be designed in consultation with Trenton and Buford Townships and NDDOT. Heavy equipment, component delivery, and worker vehicles will travel to and from the site during construction. Peak construction is anticipated to be during the summer and fall months when most of the grading, foundation construction, and component erection would occur. Construction access will be from the south (42nd St NW, primary access) and east (147th Ave NW, secondary access) of the Project Site. Cerilon will be responsible for reimbursing the appropriate public entity for repairing any damage caused by construction equipment movement and will return existing roads to their original or better condition following construction. A crossing will be required over Eightmile Creek within the Project Site for the eastern access road.

An initial geotechnical investigation comprised of 10 boreholes was completed in 2022. Preliminary foundation design is underway, and most of the foundations are anticipated to be piles. An additional

geotechnical investigation of about 100 boreholes is planned for the 4th Quarter of 2023, providing a better understanding of the Project Site's subsurface conditions.

To minimize erosion during and after construction, Cerilon will prepare a Stormwater Pollution Prevention Plan (SWPPP) and submit the Notice of Intent to the NDDEQ before construction. See Section 8.4.2.2 for further details on construction stormwater.

Site clearing and grubbing will remove existing trees and brush within the parts of the Project Site that will be constructed upon. This clearing will include areas larger than 50 ft wide that must be cleared to accommodate site construction and facility operations. Cerilon understands that this will require a modification of the PSC's standard Tree and Shrub Mitigation Specifications, which will otherwise be met. Cerilon will ensure a minimum 100-foot-wide setback from the edge of Eightmile Creek is maintained throughout construction in accordance with the Williams County Zoning Ordinance and Subdivision Regulations. In accordance with the ordinance, there will be no disturbance within this setback, and all vegetation will be preserved. The one exception to this requirement will be for the construction and operation of the crossing over Eightmile Creek mentioned previously.

Once clearing and grubbing are complete, the existing topsoil will be stripped and stockpiled for future use. While there is limited area available for soil stockpiles, it is anticipated that most of the topsoil will be stored on the Cerilon site. An alternate location may be necessary for excess soil amounts beyond the limited site capacity. Barr sampled the topsoil throughout the site in July 2023 to assist in estimating the volume of topsoil that must be stripped and stockpiled. This evaluation identified portions of the site that contain silty clay or silty clay loam unsuitable for reclamation due to elevated salt and/or sodium content. These soils would likely contaminate any stockpiled topsoil and are recommended to be segregated from reclaimable topsoil. Further testing will be conducted to confirm that topsoil is managed appropriately for future reclamation.

Once topsoil has been removed and stockpiled, the site will be rough-graded to accommodate Project construction. If the need arises, excess subsoils and rock will be hauled off-site to an approved landfill or other suitable location. Grading plans are in preliminary stages; as such, it currently needs to be determined whether any imported general fill will be required. Finish gravel for Project construction will be imported from existing commercial quarries.

Foundation installation will begin following rough grading, which will in turn be followed by the installation of equipment and modules. As mentioned previously, Cerilon anticipates that the pilings will be utilized for foundations at the site.

Project construction will be highly modularized to minimize construction duration and reduce the amount of onsite labor required. Equipment and modules will be manufactured in the US, Canada, and overseas and fully assembled and pretested to the extent possible. Pipe rack modules will be assembled with all piping preinstalled at the fabrication facility. The pipe rack modules will be transported to the site, lifted into place on foundations, and connected. Some heavy reactors will likely be manufactured overseas, shipped to the Port of Duluth, MN, and transported by road or rail to the site using special

equipment. Oversized load permits will be secured as required by statute. A heavy transportation contractor is studying transportation modes, routes, load limits, and other logistical factors.

Buildings such as the main administration, control room, laboratory, and electrical houses will be delivered to the Project Site in prefinished modules and joined together. Other buildings, e.g., process or warehouse structures that require high clearances and long spans, will be erected onsite using panelized components. Piece-by-piece stick building of structures will be minimized. Once construction is substantially complete, reclamation activities will include:

- Removing and disposing of debris.
- Dismantling all temporary facilities, including staging.
- Removing temporary administration and construction management offices.
- Reclaiming temporary material storage areas.

Project-specific mitigation measures are described in greater detail in Section 8 for each resource evaluated. Table 6-3 provides a summary of site impacts and mitigation proposed.

The workforce will comprise of skilled trades such as pipefitters, electricians, and iron workers. During peak construction activities, an estimated maximum of 2,000 to 3,000 workers are anticipated to be engaged in the construction of the facility. However, this estimate will be reevaluated during the Project's next engineering and design stage. Local labor will be used to the extent practicable. Because of the tight labor market in the region and low unemployment rates, most of the construction workforce is anticipated to come from outside the region. The need for construction labor will be minimized by utilizing a modularization and equipment module manufacturing approach and execution strategy. Cerilon will work with the EPC contractor on a labor force plan and will have a daily presence onsite during construction to monitor contractor performance.

### 7.1.2 Construction Management

Cerilon will require the EPC contractor to develop a Health and Safety Plan to address public and worker safety during the construction and operation of the proposed Project. The Health and Safety Plan will identify requirements for minimum construction or operation distances from residences or businesses and for temporary fencing around staging, excavation, and laydown areas during construction. It would also include provisions for worker protection, as required by OSHA, emphasizing the Code of Federal Regulations (CFR) 1926 – Safety and Health Regulations for Construction. All employees, contractors, and sub-contractors must conform to OSHA safety standards and procedures during construction. Heavy equipment will comply with OSHA requirements for safety devices such as backup warnings, seat belts, and rollover protection. Adequate training will be mandatory for all onsite workers, and personal protection safety equipment such as hard hats, ear and eye protection, and safety boots will be required for all onsite workers. All accidents and injuries would be reported to the designated safety officer.

Risks of accidental fire during construction could occur from human activities such as refueling, welding, cigarette smoking, and use of vehicles and construction equipment in or near dry, grassy areas. The Health and Safety Plan will reduce fire-related risks by imposing restrictions or procedures regarding these activities.

Construction activities will also generate waste materials that will need to be managed. Typical waste materials generated from construction activities include miscellaneous lumber and shipping materials used to protect equipment during transportation, paper products, food-related materials, and sanitary waste. Waste from construction materials and rubbish from all construction areas will be collected, hauled away, and disposed of in an approved landfill. Sanitary waste will be disposed of through arrangements with local municipal sanitary waste treatment facilities. Material staging, vehicle maintenance, and refueling areas will not be located near waterways. If any storage of petroleum products (e.g., gasoline or diesel fuel) exceeds 1,320 gallons, a Spill Prevention, Control, and Countermeasure (SPCC) plan will be developed. The SPCC plan will address 1) operating procedures to prevent spills, 2) control measures to prevent a spill from reaching navigable waters, and 3) countermeasures to contain, clean up, and mitigate the effects of a spill that reaches navigable waters.

Spill containment and clean-up materials (e.g., absorbents, shovels, etc.) will also be available at every work site. The materials will contain and clean up oil and hydraulic spills that may result from equipment leaks. Workers will be trained in procedures to contain and clean up released hazardous materials.

### 7.1.3 Commissioning

Pre-Commissioning activities will begin once each phase of the Project is mechanically complete and ready for commissioning. Individual systems will then undergo testing to verify their fitness for operation. Any identified discrepancies will be recorded, and changes will be made where required.

Once the individual systems are verified fit for operation and signed off as ready for startup by relevant stakeholders (e.g., engineering leads, operation supervisors, etc.), a GTL facility will be declared ready for startup. Commissioning of a GTL facility will include multiple test runs to demonstrate that the GTL Facility is capable of achieving its design production capacity:

- Test run one will require a GTL facility to meet its design production capacity for 72 hours.
- Test run two will require a GTL facility to meet its design production capacity for 14 to 30 days.

Commissioning of a GTL facility will also require trained and experienced operators. Cerilon will begin training operators during the construction phase. Cerilon also intends to hire or contract operators with experience at other GTL facilities. Operators will also be supported by the engineering team and licensors of the equipment used at the GTL facility. During initial startup and commissioning, Cerilon intends to overstaff operators to maximize the direct experience the operators have with the operating facility. Staffing levels will then be reduced upon completing commissioning activities.

The ramp-up of each GTL Facility is projected to be aggressive as the technologies used are demonstrated at many other operating facilities worldwide.

Once commissioning nears completion, various environmental requirements will need to be met. These include various demonstrations that equipment is meeting their permitted standards. These activities will

## 7.2 Project Operation and Maintenance

### 7.2.1 Normal Operation

Upon beginning operation, the Project will typically operate continuously 24 hours per day, 7 days per week with minimal downtime over the course of a typical year. Typical operations will consist of the activities identified in section 4. Some minor adjustments to specific operating parameters will be required to make the various liquid products to be produced by both phases of the Project. These operational adjustments will be planned well ahead of time by Cerilon's leadership, engineering, operations, and maintenance staff with several goals in mind:

- Safe operation of the facility by following all standard operating procedures and conducting required routine maintenance for all equipment.
- Complying with all applicable environmental regulatory requirements, permits, and internal policies.
- Optimizing the production to meet market demand within available feedstock, processing capacity, storage, loadout, and other constraints.
- Minimizing production of off-specification products through well-designed equipment, well-controlled operations, and pre-planning for product slate changes.

Operations staff will work in shifts to facilitate continuous operation of the facility through day and night. The various shift schedules (e.g., two 12-hour shifts vs. three 8-hour shifts) are being evaluated and will incorporate input from the workforce.

To minimize the number of workers needed, increased safety risks, and off-site impacts during night hours, Cerilon intends to conduct certain planned activities only during day shifts under most circumstances. For example, the loading of finished products will typically occur during the day shift, reducing truck and rail traffic during night hours. Activities that may increase background noise off-site (e.g., operating unusually loud equipment or operating equipment unusually close to residences) will also be planned for day shifts to the extent practicable. However, extenuating circumstances due to process unit upsets, equipment availability, or other factors may require such activities during night hours.

### 7.2.2 Startup, Shutdown, and Malfunction

Startups, shutdowns, and malfunctions are abnormal operating conditions that may increase risks to on-site workers, environmental impacts, and process equipment. Planned startups and shutdowns of individual pieces of equipment or entire process units will be conducted per standard operating procedures designed to minimize these risks through a structured process. These standard operating procedures will be continuously updated and improved to reduce these risks further, and operators will be trained in accordance with these procedures.

Malfunctions, by definition, are unplanned and pose the greatest risk of impacts to on-site workers, the environment, and process equipment. The Project is being designed with monitoring devices, alarms, and fail-safe devices and equipment that will mitigate the risk of dangerous operating conditions developing due to malfunctions. Cerilon will also have standard operating procedures to safely return malfunctioning equipment to normal operation or enter a safe shutdown while minimizing the environmental impacts of such events to the extent practicable.

Following a malfunction, Cerilon intends to document and investigate the incident. This documentation will include describing what happened, identifying the factors contributing to the incident, identifying the root causes, and recommending corrective actions. Potential corrective actions include but are not limited to, physical changes to equipment, changes to standard operating procedures, and training for relevant Cerilon staff and contractors. In the event of a significant incident or high severity near miss, work will be ceased and only allowed to continue once the necessary actions, including reevaluation of relevant risk assessments, have been undertaken to reduce the risk of recurrence, and after the equipment and/or area has been confirmed to be safe to resume operation.

### 7.2.3 Turnarounds

Turnarounds are planned shutdowns of the entire facility or individual process unit intending to conduct activities that are typically not feasible during normal operation. Activities that may occur during a turnaround include conducting routine maintenance, evaluating the integrity of process equipment, implementing projects to protect and/or prolong the life cycle of the GTL Facilities, and replenishing spent catalysts or other process materials. Turnarounds increase equipment asset reliability, maintain production integrity, permit all required inspections to be conducted safely, and reduce the risk of unscheduled shutdowns and malfunctions.

Turnarounds are planned and scheduled well in advance to identify all activities that must be conducted and minimize the time needed to complete these activities. Cerilon currently projects that turnarounds will be scheduled once every three years. To reduce the disruption to the facility's operation and the complexity of planning these turnarounds, Cerilon intends to schedule turnarounds for each GTL facility (i.e., Phase 1 and Phase 2) not to coincide. As such, on average, there will be one GTL facility turnaround every 1.5 years. Each turnaround is projected to last 25 days before returning the equipment to operation for startup.

During turnarounds, Cerilon will require a temporarily increased workforce to execute all the planned activities. This will require supplementing Cerilon’s existing workforce with contractors and hiring specialty contractors with skills or equipment that are normally unavailable on-site. Cerilon’s workforce and the contractors will work in shifts to allow work to continue 24 hours per day, minimizing the time needed for the turnaround.

## 7.3 Decommissioning and Restoration

If the Cerilon facility were to be decommissioned or rebuilt, the decommissioning and removal of Project equipment and site restoration would be in accordance with applicable regulations.

# 8 Environmental, Cultural, and Economic Analyses

Section 8 provides an analysis of the potential impacts of the Project, mitigative measures, and any unavoidable adverse environmental impacts in accordance with NDAC Section 69-06-04-01(2), and NDCC Sections 49-22-08(1), and 49-22.1-06(1). In this application, "mitigative measures" means proposed actions that will avoid or minimize impacts, including BMPs and any proposed actions to compensate for impacts (i.e., compensatory mitigation).

## 8.1 Environmental Policies and Commitments

Cerilon's four corporate pillars - ownership, leadership, stewardship, and excellence – guide corporate decisions and behaviors. The stewardship pillar requires that relationships and assets be managed in ways that lead to sustainable benefits for stakeholders, the economy, and the environment. This pillar drives Cerilon's sustainability journey and requires that environmental and social responsibility are integrated into every decision. Cerilon believes that this decision-making approach supports their business's long-term economic sustainability. Sections 8.1.1 through 8.1.4 review how Cerilon has integrated these responsibilities into the Project.

### 8.1.1 Environment, Social, and Governance

Cerilon's corporate ESG Policy aims to emphasize and integrate environmental and social responsibility into all aspects of their business. The ESG Policy and Framework considers the following:

- **Environment:** How Cerilon manages its environmental footprint across the entire business, from selecting raw materials through the manufacturing process to product use and disposal.
- **Social:** Cerilon manages its relationships with its workforce, partners, customers, suppliers, and the communities in which it is embedded to understand the impacts on people across the value chain.
- **Governance:** How Cerilon manages the company to maintain and enhance its ability to create value over the long term.

Cerilon's ESG Framework defines the specific ESG elements they will act on, describes the actions that will be undertaken to implement the ESG strategy, links those actions to corporate policies and procedures, and identifies key metrics to track progress and commitment to desired outcomes. The specific elements included in the ESG framework are expected to evolve as Cerilon grows as a company and through continuous improvement processes.

### 8.1.2 Product Stewardship

Product stewardship is a management strategy implemented to minimize adverse health, safety, environmental, and social impacts of a product. This includes a full lifecycle view of the entire value chain, including:

- The design of Cerilon's facilities and manufacturing processes;
- The supply chain decisions Cerilon makes to engage partners and source materials;
- The effects of Cerilon's facilities and manufacturing processes, including energy, material, and water consumption, waste generation, and emissions (including greenhouse gasses);
- Product storage, packaging, and distribution;
- Consumer education and use; and
- Product disposal after use.

Cerilon has developed a Product Stewardship Framework that defines the components being considered, actions to be taken to implement the framework, corporate- and project-level fundamentals, policies, and procedures to integrate the framework into decisions, and metrics by which progress towards achieving these objectives will be monitored.

### 8.1.3 Environment in Design

#### 8.1.3.1 Minimizing Impacts

To align with its corporate sustainability principles, Cerilon is considering environmental impacts in all areas of Project design. Early engineering decisions have been made to include CCS, minimize water use, and select appropriate emission abatement technology. Cerilon expects the Project to be the world's first GTL facility to include CCS commercially. Including CCS allows Cerilon to produce low-carbon, high-value products to support the transition towards a net-zero carbon future. See Section 4.3 for further discussion of the CCS proposed by the Project. Other impacts from the Project are evaluated in the remainder of Section 8.

#### 8.1.3.2 Product Environmental Performance

Cerilon's GTL facilities will convert natural gas into high-value, low-emission synthetic energy products. Cerilon's primary products are in high demand due to increasing environmental and regulatory requirements and the overall growth in energy demand. These products will offer exceptional performance characteristics and will be the first products of this type manufactured in a facility deploying CCS commercially anywhere in the world.

Section 5.2 identifies the many environmental performance advantages that the GTL products to be produced Project have over conventionally produced alternatives.

### 8.1.4 Stakeholder Engagement

Cerilon initiated engagement with local stakeholders early in project development. Cerilon believes that transparent, open, and frequent two-way communication with project stakeholders is critical to building strong relationships that benefit both Cerilon and the local community. Cerilon shares Project information

as it becomes available and is committed to continued engagement and information transfer as the Project develops. Engagements to date have included:

- Frequent communication with State, County, and Township officials and staff from a very early stage in project development to align the Project with the objectives and requirements of state and local governments.
- In-person opportunities for adjacent neighbors and local landowners to receive information about the Project, provide the Cerilon team with local knowledge, ask questions, express concerns, and propose potential options for addressing those concerns.
- In-person meetings with the Eight Mile School District and Trenton Indian Services Area representatives to understand how the Project may affect their stakeholders and to identify ways Cerilon can support their efforts to strengthen the local community.
- In-person meetings and planned follow-ups with local emergency service providers two years prior to construction to understand regional capacity and identify ways in which our safety and emergency planning can strengthen regional capacity.
- In-person meetings with State, County, and Federal regulatory agencies to provide project information and solicit guidance on project design, application content, and mitigation options.
- Sponsorship of community events and economic development organizations.

Cerilon is planning a public open house in Trenton in the fall of 2023 to provide a venue for all interested stakeholders and the broader public to learn more about the project and provide their input. Members of Cerilon's leadership and technical teams will be present to provide information on topics of interest to local stakeholders, answer questions, and solicit feedback.

Five residences are directly adjacent to the Project Site (Figure A.3), and these neighbors have participated in Cerilon's early engagement activities. Now that facility plot plans are available (Figure A.5 and Figure A.6), Cerilon has held individual meetings with these adjacent neighbors to understand their concerns. Cerilon will work with these neighbors to address project impacts through mitigation measures to address specific concerns, project design changes (where possible), and other options to be identified during consultation with the landowners.

## 8.2 Human Health and Safety

There are two categories of humans with different concerns regarding their health and safety: onsite workers, both during construction and operation of the facility, and the offsite public. The impacts of the Project and associated mitigation measures are addressed in Sections 8.2.1 and 8.2.2.

### 8.2.1 Description of Resources

A Phase I Environmental Site Assessment adhering to ASTM International standards has been conducted for the Project Site (see Appendix C). The Phase I Environmental Site Assessment identified potential and

existing hazards at the Project Site. As identified within the report, the land use in the Study Area is currently predominantly agricultural. The Project Site contains two farmsteads with various parked farming machinery, septic tanks, and repair barns. Polychlorinated biphenyls associated with a pole-mounted transformer may also be present.

The Project Site includes one active oil and gas well with an active tank battery and one plugged and abandoned oil and gas well. The Study Area includes several more active oil and gas production wells and associated tank batteries. A bulk petroleum terminal and associated high-capacity storage tanks, and a salt-water disposal well and associated tank battery are located directly adjacent to the west of the Project Site.

Agricultural land, homesteads, and farmsteads surround the Project Site to the north, east, and south. Savage borders the Project Site to the west. Multiple recognized environmental conditions (RECs) were identified within and adjacent to the Project Site. Two recent general environmental incidents were reported on or within 0.5 miles of the Project Site. Both were contained and marked as no further action required by the NDDEQ (Appendix C).

### 8.2.2 Impacts and Mitigative Measures

The Phase I Environmental Site Assessment identified several potential and existing hazards at the Project Site. A Phase II Environmental Site Assessment adhering to ASTM International standards is also planned to further evaluate the Project Site in the Fall of 2023. The information obtained from this assessment will be used to further categorize the various identified RECs. If the RECs cannot be avoided, appropriate remediation measures will be taken to avoid potential concerns associated with RECs.

The findings and potential findings of the Phase I and II Environmental Site Assessments of the Project Site will be mitigated to the extent practicable during the construction of the Project (e.g., removal of the decommissioned underground storage tank referenced in the Phase I report). However, the Project will introduce new equipment and activities that could impact human health and safety, both to workers supporting the construction or operation of the Project on-site and the public off-site. These impacts and mitigation measures thereof are evaluated in Sections 8.2.2.1 and 8.2.2.2.

#### 8.2.2.1 Onsite Worker Safety

Different potential safety hazards will be present during construction than during the operation of the Project. During the construction of Phase 2 of the Project, both sets of hazards may be present as Phase 1 will be operating. Potential safety hazards during construction include heavy equipment operation, the presence of overhead materials and cranes, and the use of construction tools. Construction and operation of the Project will also involve using and storing regulated and hazardous materials, including diesel fuel, gasoline, lubricating oils, hydraulic fluid, paint, and solvents that workers may interact with as part of their job or be accidentally leaked or spilled. During operation, much of the equipment within the GTL facilities will be operating at high temperatures (e.g., the steam system that will be present throughout the facility). The air separation units will also operate at cryogenic temperatures (less than -220˚F or -140˚C).

The Project will be subject to the Occupational Safety and Health Administration (OSHA) regulations, which establish safe and healthful working conditions for workers by setting and enforcing standards and providing training, outreach, education, and assistance. OSHA regulations for workplace safety will be enforced and executed as necessary to protect the safety of the workers. All employees, contractors, and sub-contractors will receive mandatory worker safety training appropriate for their expected duties and must conform to OSHA safety procedures. Personal safety equipment such as hard hats, ear and eye protection, safety boots, high visibility vests, and fire-resistant clothing would be required for all workers onsite whose duties may expose them to specific hazards. Accidents and injuries would be reported to Cerilon's designated safety officer. All equipment brought or constructed onsite will also meet the requirements of OSHA regulations. For mobile equipment, these requirements include backup warning signals, seatbelts, and rollover protection. For stationary equipment, these requirements include signage indicating hazards, restricting access to hazardous areas, guards on rotating equipment, insulation on exceptionally hot and cold surfaces, and proper storage of hazardous materials.

A risk of fire may be present during the operation of the Project due to the proximity of flammable materials (e.g., natural gas, syngas, hydrogen, diesel, naphtha, and base oils) to potential ignition sources in the form of electricity and high-temperature equipment. The Project will meet or exceed industry and regulatory standards for the safe design of process equipment to minimize the risk of a fire starting or spreading to other potential fuel sources. The standards include using appropriate building materials and properly spacing equipment. The Project will also be equipped with a fire suppression system.

All potentially hazardous materials (automotive fluids, spray paint cans, etc.) will be collected and shipped to a licensed and permitted disposal or recycling facility. To reduce the potential for a release of regulated or hazardous materials during the construction phase of the Project, work will be planned and performed in accordance with OSHA standards and protocols addressing the use of potentially hazardous materials and applicable federal and state environmental regulations. If a hazardous release were to occur, cleanup, management, and disposal of contaminated soils would be conducted according to U.S. Environmental Protection Agency (EPA) and state standards. Conformance to these standards and procedures would reduce the potential for significant impacts resulting from releasing hazardous materials.

As discussed in Section 4.2, Project will include on-site electricity generation via steam turbines, substations, transformers, and transmission lines, which will generate electromagnetic fields (EMFs). Natural and human-made electromagnetic fields are present everywhere in our environment. Natural electric fields in the atmosphere range from background static levels of 0.01 to 0.12 kV/m to well over several kV/m produced by the build-up of electric charges in thunderstorms. The earth has a magnetic field ranging from approximately 300 to 700 mG; in addition to the earth's steady-state electric field, an average home experiences additional magnetic fields of 0.5 mG to 4 mG that arise from its general wiring and appliances.

In 2007, the World Health Organization reviewed the health implications of magnetic fields. It concluded that there are potential acute and chronic biological effects for EMF exposure of the type to be generated by Cerilon (reference (19)). However, the strength of EMFs decreases with the square of the distance from the source. Based upon current research regarding EMFs and the separation distances being maintained

between transformers, powerlines, and collector lines from public access and occupied residences, EMFs associated with the Project are not expected to have an impact on public health and safety. Areas within the Project Site where higher EMFs will be present (e.g., near transformers) also have increased risk of exposure to electricity and their access will be restricted to mitigate risks associated with exposure to both potential hazards.

#### 8.2.2.2 Offsite Public Safety

Potential direct public hazards primarily involve increased traffic volume and larger construction vehicles operating on rural roads. Other indirect impacts on the public, such as those on air and water quality, are evaluated in Sections 8.3 through 8.18. The impacts on traffic are identified in Section 8.16.

Security measures will also be taken to restrict the public's access to the Project Site during the construction and operation of the Project. These measures will include identifying workers permitted to enter the Project Site, fencing, gating of entrances, and monitoring by security personnel.

## 8.3 Air Emissions

### 8.3.1 Description of Resources

#### 8.3.1.1 Current Air Quality

Ambient air quality monitoring data from stations in the region (Table 8-1) indicates that all criteria pollutants are well below the National Ambient Air Quality Standards (NAAQS) and/or North Dakota Ambient Air Quality Standards (NDAAQS). There are no non-attainment or maintenance areas in North Dakota. Local to the project area, there are existing sources of emissions at the adjacent Savage terminal and Grayson Mills Oil, oil wells, vehicle emissions from area highways, as well as potential dust generation and vehicle emissions from agricultural activity on surrounding properties.

**Table 8-1 Summary of Compliance with NAAQS and NDAAQS**

| Pollutant | Averaging Period | Monitored Levels (ppb) | Monitored Levels (ug/m3) | NAAQS/NDAAQS (ppb) | NAAQS/NDAAQS (ug/m3) |
|---|---|---|---|---|---|
| $SO_2$ | 1-hr | 5 | | 75 | |
| $SO_2$ | 3-hr | 8.8 | | 500 | |
| $NO_2$ | 1-hr | 10 | | 100 | |
| $NO_2$ | Annual | 1.48 | | 53 | |
| $PM_{10}$ | 24-hr | | 101 | | 150 |
| $PM_{2.5}$ | 24-hr | | 20 | | 35 |
| $PM_{2.5}$ | Annual | | 4.8 | | 12 |
| CO | 1-hr | 1,570 | | 35,000 | |
| CO | 8-hr | 900 | | 9,000 | |
| Ozone | 8-hr | 58 | | 70 | |

Note:
Concentrations from 2022 North Dakota Ambient Air Quality Monitoring Program Network Plan/Assessment with Data Summary (https://deq.nd.gov/DataPDFs/AQ/Monitoring/Monitoring_Annual_Reports/ARNP_22.pdf), supplemented with data from EPA Air Quality System. Theodore Roosevelt National Park – North Unit Station, Bismarck (CO only)

#### 8.3.1.2 Visibility

North Dakota has two federally designated Class I Areas: Lostwood Wilderness and Theodore Roosevelt National Park and Elkhorn Ranch Site. The Medicine Lake Wilderness Area and Fort Peck Tribal Class I Area in Montana are also Class I areas closer to the Project Site than the two in North Dakota. The Clean Air Act gives special protection to Class I areas against impacts to their Air Quality Related Values (AQRVs). Specifically listed among these values is visibility. The NDDEQ studied the sources of pollution affecting visibility during the worst visibility days for Theodore Roosevelt National Park and Lostwood National Wildlife Refuge Wilderness Area. The NDDEQ reported that sulfate and nitrate emissions within the state account for between 13 and 21 percent of pollutants affecting visibility. Far greater amounts of pollution are transported into the state from upwind areas (reference (20)). Monitoring data indicates visibility trends at the nearby Class I areas are relatively stable or slightly improving (reference (21)). Targeted improvements to visibility continue through ongoing reviews and assessments provided for under the Regional Haze Rule. Projects undergoing air permitting in the area include an evaluation of impacts to the Class I areas, scoped depending on their emissions.

### 8.3.2 Impacts and Mitigative Measures

Potential air emission impacts are described in Section 8.3.2.1. Mitigative measures to control air emission impacts will be required by the Permit to Construct (Section 8.3.2.2), the Title V Permit to Operate (section 8.3.2.3), and the Title IV Acid Rain Permit to Operate (Section 8.3.2.4), all of which fall under the NDDEQ's jurisdiction.

#### 8.3.2.1 Air Emission Sources

Cerilon will construct many types of equipment that generate air emissions. These sources of air emissions will include, but are not limited to:

- Fuel combustion sources used to generate heat for the processes at the facility (e.g., process heaters and steam-generating boilers).
- Process gas flares used to allow the safe release and combustion of process-upset gases.
- Storage vessels for liquid and gaseous raw materials, intermediates, and finished products.
- Internal combustion engines primarily used to generate emergency backup electric power and pump fire water during emergencies.
- Management and treatment of process wastewater.
- Fugitive emissions from equipment and pipe component leaks.

Emissions will also be generated from storage vessels and liquid loading racks for tanker trucks and railcars at Savage. See Section 3.1 for further details on the relationship between the Project and Savage.

These emission sources will primarily generate air emissions of volatile organic compounds, nitrogen oxides ($NO_X$), hazardous air pollutants, and greenhouse gases. These sources will also generate air emissions of other pollutants, including, but not limited to CO, particulate matter (PM), and sulfur dioxide ($SO_2$).

Construction activities will also generate air emissions. These air emissions will primarily be in the form of fugitive dust (i.e., PM) generated by various activities, including, but not limited to, vehicles traveling on paved and unpaved roads; digging, loading, and transport of dirt, aggregate, and other granular materials; and erodible surfaces on temporary storage piles and exposed soil. Cerilon will develop a fugitive dust control plan to mitigate potential impacts from these emission sources. Cerilon is also coordinating with the township to pave the segments of 42$^{nd}$ St NW and 14$^{th}$ Ave NW that Cerilon will utilize to minimize fugitive dust generation from vehicle traffic.

#### 8.3.2.2 Permit to Construct

In accordance with NDAC 33.1-15-14, Cerilon must apply for, and the NDDEQ must issue a Permit to Construct (PTC) before construction, installation, or establishment of the site. The PTC application requires identifying all sources of air emissions Cerilon proposes, the regulations that apply to those emissions, and the measures that will be taken to comply with the applicable regulations. Cerilon anticipates that the Project will require a major Prevention of Significant Deterioration (PSD) permit to be issued in accordance with NDAC 33.1-15-15. A PSD permit requires enhanced evaluations to confirm that the air emissions generated by the Project will not significantly impact ambient air quality, among other evaluations of the impacts those emissions may have on the environment. These evaluations include, but are not limited to:

- Evaluation and installation of best available control technology, as defined within 40 CFR 52.21(b)(12), for each source of emissions and regulated pollutant that source generates.
- Modeling of the Project's projected impacts to ambient air quality confirming that both NAAQS and the maximum allowable increase over the baseline concentration will not be exceeded.
- Modeling of the Project's projected impacts to visibility in Class I areas, including notification of these impacts to the Federal land manager and the Federal official charged with direct responsibility for management of any lands within such an area.
- Additional impacts analyses of the Project, including impairments to visibility, soils, vegetation, commercial, residential, industrial, and other growth. This Certificate of Site Compatibility application also addresses many of these items.

A draft PSD permit must also undergo a public and EPA comment period, and the NDDEQ must respond to these comments and update the permit as needed to address concerns raised via these comments.

In addition to these PSD permitting requirements, the facility will also be subject to various air quality regulations that will be incorporated into the PTC. These include, but are not limited to:

- Federal New Source Performance Standards under 40 CFR Part 60.
- National Emission Standards for Hazardous Air Pollutants under 40 CFR Part 61.
- National Emission Standards for Hazardous Air Pollutants for Source Categories under 40 CFR Part 63.
- North Dakota state air pollution regulations under NDAC 33.1-15.

The PTC will also include restrictions on the timeline to begin construction after the PTC is issued and the maximum time construction may be halted before a new PTC must be applied for and reissued.

#### 8.3.2.3 Title V Permit to Operate

The PTC identified in 8.3.2.2 only permits a source to construct and begin the operation of the Project approved within the PTC. A source must receive a Permit to Operate (PTO) to continue operation of the facility after commencing operations. In accordance with NDAC 33.1-15-14, sources that receive a PTC and require a Title V Operating Permit (TVOP), which Cerilon anticipates the Project will require, must submit a complete TVOP application within 12 months of commencing operation. The PTO may only be issued after the conditions of the PTC have been verified by the NDDEQ.

The TVOP will include ongoing obligations for the facility to maintain compliance with all air quality regulatory requirements. The specific requirements of a PTO are typically concordant with those identified within a PTC.

#### 8.3.2.4 Title IV Acid Rain Permit to Operate

As the Project will include electric generating units in the contiguous United States, it will also require an operating permit under the Acid Rain Program, pursuant to Title IV of the federal Clean Air Act. This program includes $NO_X$ and $SO_2$ emissions limitations, enhanced monitoring requirements to verify compliance with those limitations, and additional recordkeeping and reporting. The initial application must be submitted to the NDDEQ 24 months before the date an electric generating unit commences operation.

## 8.4 Surface Water

### 8.4.1 Description of Resources

#### 8.4.1.1 Surface Water at or Near the Project Site

The Project Site is located within the Lake Sakakawea watershed. Surface water generally flows southeast towards Eightmile Creek or the Buford-Trenton Irrigation Canal, the nearest surface water bodies. Eightmile Creek is located on the eastern side of the Project Site and flows south-southeast until exiting the Project Site. The Buford-Trenton Irrigation Canal passes through the southeast corner of the facility before exiting the eastern boundary of the Project Site. The creek and canal converge before eventually flowing into the Missouri River and Lake Trenton approximately two miles downstream of the Project Site.

The Project Site is partially within a Source Water Protection Program area for the City of Williston (public water system ND5301012). As such, the NDDEQ and the City of Williston completed a source water assessment, identifying natural and anthropogenic sources that could contaminate the city's water source (the Missouri River). The source water assessment determined that the City of Williston's public water system is "moderately susceptible" to potential contamination from local industries and land uses (references (22); (23)). However, the City of Williston's annual drinking water quality reports since 2012 have not identified any exceedances of safe drinking water standards (reference (23)).

#### 8.4.1.2 Floodplains

Flood hazards are identified through the FEMA's 100-year floodplain analysis. The Missouri River 100-year floodplain is mapped adjacent to the Project Site along the southeast corner (reference (24)). Some soil types within the Project Site are identified as being susceptible to occasional flooding (reference (25)). The North Dakota flood risk assessment map identifies lower-lying areas within the Project Site with a 1% annual risk of flooding in their base-level engineering data. These areas are primarily located adjacent to the natural drainages and waterways within the Project Site (reference (26)) or within the USACE easement referenced in Sections 3 and 8.15.

### 8.4.2 Impacts and Mitigative Measures

The Project will avoid or minimize impacts to surface water features and existing drainage patterns to the extent practicable. The site will be filled and graded to manage stormwater as identified in Section 8.4.2.3. Impacts pertaining to wetlands are discussed in Section 8.6.

As noted in Section 8.4.1.2, the North Dakota flood risk assessment map identifies some lower-lying areas within the Project Site as having a 1% annual risk of flooding in their base-level engineering data. This includes the area within the USACE easement referenced in Sections 3 and 8.15, which may be minimally impacted in accordance with the requirements of the easement. Cerilon's initial Project design included placing two foundations within the easement, to which guy wires would be mounted to support the Project's flares. Cerilon is evaluating alternatives that may allow the construction of the flares without the need for these foundations.

However, the Project Site's relatively small size and geometry, existing infrastructure in and around the Project Site, and safe and efficient design of the Project will require the development of most of the rest of the Project Site, including in areas with a 1% annual flood risk. Cerilon anticipates that the filling and grading identified in section 8.4.2.3 will mitigate much of this flood risk and is considering flood risk in its design of the Project. The Project is not projected to cause or contribute to flooding at or near the site. The Project Site is not identified as within the 100-year or 500-year FEMA floodplain and will not require a permit from the local floodplain administrator.

Physical observations at the site indicate that the culverts that allow Eightmile Creek, to which industrial stormwater is proposed to be discharged, to pass under 147 Avenue NW on the east side of the Project Site are undersized. Cerilon is assessing whether these culverts need to be replaced with larger culverts.

#### 8.4.2.1 Water Appropriation

The main raw water supply will be from the Missouri River. Cerilon is discussing with third-party water suppliers with existing permits for industrial water withdrawal from the river sufficient to supply the Project. If commercial arrangements cannot be made with a third-party water supplier, Cerilon will evaluate other options for water access, including potentially applying for a water appropriation permit from the and all other permits necessary to construct an intake structure on the Missouri River and pipeline to the Project Site. Water appropriation from groundwater is addressed in section 8.5.2.

#### 8.4.2.2 Construction Stormwater

Any construction work that disturbs one or more acres of soil requires a construction stormwater permit from the NDDEQ. A stormwater pollution prevention plan (SWPPP) for construction activities must be prepared before construction begins. The SWPPP must identify how the facility will minimize the impact of potential sources of stormwater pollution at the construction site, describe practices to reduce pollutants in stormwater discharges, and identify procedures and mitigative steps the operator will implement to comply with the terms and conditions of the permit. Reduction of pollutants is often achieved by controlling the volume of stormwater runoff and sediment carried along with the runoff to adjacent areas. BMPs must be employed to prevent stormwater pollutants from being discharged off-site. The BMPs may be structural, such as silt fences, sedimentation ponds, erosion control blankets, and temporary or permanent seeding, or the BMPs may be non-structural, such as good housekeeping practices and employee training.

Construction stormwater is anticipated to discharge into Eightmile Creek, which is within the Source Water Protection Area for the City of Williston. The BMPs required by the construction stormwater permit and SWPPP will mitigate the risk of construction stormwater impacting the Source Water Protection Area.

#### 8.4.2.3 Industrial Stormwater

All industrial stormwater generated on-site must be managed in accordance with the multi-sector general permit NDR05-0000 issued by the NDDEQ. This permit requires baseline control practices aimed at minimizing the impact of stormwater discharges to waters of the state. A new SWPPP must be developed, which identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges and specifies practices to minimize pollutants in stormwater discharges from industrial facilities. Controls must be identified for each industrial source or activity that could contribute pollutants to stormwater runoff, including good housekeeping, dust control, preventative maintenance, spill prevention and response, employee training, erosion and sediment controls, stormwater management, total maximum daily load conditions, and non-stormwater control practices. Cerilon intends to route stormwater from process areas to the wastewater treatment operations also used to treat process wastewater, and route stormwater from other developed areas of the facility to retention ponds. The ponds will also provide a location for settling of sediments collected by stormwater runoff to settle before discharging to Eightmile Creek. These stormwater management techniques will be incorporated into the NDPDES permits.

Industrial stormwater is anticipated to discharge into Eightmile Creek, which is within the Source Water Protection Area for the City of Williston. Cerilon does not anticipate any contamination from the construction stormwater that would impact the Source Water Protection Area.

#### 8.4.2.4 Process Wastewater

Process wastewater generated during normal facility operations will be managed under the North Dakota Pollutant Discharge Elimination System (NDPDES). The NDPDES program addresses wastewater discharged from point source facilities either to an on-site wastewater treatment facility or a publicly owned treatment works (POTW). Depending on the location of the discharge, water quality impairments, total maximum daily loads, and technology-based effluent limits would impact the concentration at which certain constituents may or may not be permitted to be discharged. These conditions are in place to protect the environment and the water quality.

Process water is anticipated to discharge to the Missouri River. As the Project Site is not adjacent to the river, it will be routed via pipeline within the same right-of-way as the raw water influent line described in Section 8.4.2.1. The discharge location is projected to be upstream of the Source Water Protection Area for the City of Williston. All process wastewater discharged will be treated, managed, and monitored under the applicable NDPDES permit requirements to maintain water quality within the river.

#### 8.4.2.5 Sanitary

As noted in Section 4.4.4.4, Sanitary wastewater from the occupied buildings on site will be routed to holding tanks. These holding tanks will be emptied by trucks as needed for off-site treatment. No sanitary wastewater will be directly released from the facility.

## 8.5 Groundwater Resources

### 8.5.1 Description of Resources

The Project Site overlies the Trenton Aquifer, with the water table between three and fifteen feet below the ground surface. This aquifer is primarily composed of interbedded silty clays, sands, and gravels, classified as alluvium. The Trenton Aquifer is considered an unconfined surficial aquifer and ranges in thickness from 1 foot to 125 feet (Williams County GW Report). This aquifer is monitored by the NDDEQ and is sampled every five years to confirm that it has not been contaminated and may continue to be used for agricultural irrigation (reference (27)). No sole source aquifers exist within or near the Project Site (reference (28)). There are two domestic water wells, one high-capacity domestic well, and one industrial water well, located within the Project Site (reference (29)). The industrial water well is permitted to withdraw 500 acre-ft per year for industrial use (North Dakota Department of Water Resources Permit No. 6273).

### 8.5.2 Impacts and Mitigative Measures

Cerilon intends to utilize many techniques to mitigate the risk of impacts to groundwater. First, the unused existing water wells within the Project Site will be abandoned prior to construction to remove potential pathways for contamination. The abandoned wells will be plugged, and documentation will be submitted to the North Dakota Board of Water Well Contractors, which is associated with the North Dakota Department of Water Resources. Second, Cerilon will appropriately implement SPCC techniques to mitigate the risk of groundwater pollution. These techniques include, but are not limited to, the appropriate design and use of impermeable surfaces (e.g., concrete, asphalt, liners for stormwater ponds), spill containment structures (e.g., berms, curbing), and spill response measures. Impacts and mitigation pertaining to hazardous materials and hazardous waste are discussed in Section 8.2.

Groundwater from the permitted industrial water well on the Project Site is intended to be sold for off-site commercial use, but no changes to the existing permit are anticipated.

## 8.6 Wetlands

### 8.6.1 Description of Resources

Wetlands are defined in Executive Order 11990- Protection of Wetlands as "areas that are inundated by surface or groundwater with a frequency sufficient to support and under normal circumstances does or would support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction." The Project Site is situated within the Missouri Plateau ecoregion of North Dakota. This semiarid, largely unglaciated region of North Dakota contains occasional buttes and badlands but few natural wetland basins (Reference (30)).

Barr completed an aquatic resources field delineation for the Project impact area on September 12-13, 2022. Four wetlands (totaling 0.13 acres) and two other waters were identified during the field delineation (Appendix D). The delineated wetlands were primarily associated with natural drainages and natural depressions. The delineated other waters are identified as a section of the Eightmile Creek flowing through the Project Site, as well as an artificial stream created for irrigation uses.

An Approved Jurisdictional Determination request has been submitted to the USACE to determine if the wetlands and other waters located within the Project Site are considered jurisdictional waters of the United States and regulated under Section 404 of the Clean Water Act (Appendix D); no response has been received to date. On 25 May 2023, the United States Supreme Court issued a decision in the case of Sackett v. Environmental Protection Agency (reference (31)). Barr understands that USACE Headquarters is working with the EPA, Army, and DOJ to determine the full scope and effect of this decision. As this decision will have implications on the determination of waters covered under the Clean Water Act, all USACE staff are directed to pause the issuance of any Approved Jurisdictional Determination until further notice. Additional information will be provided as it becomes available. Barr anticipates that the USACE will identify the wetlands and two other waters as non-jurisdictional.

### 8.6.2 Impacts and Mitigative Measures

The Project will avoid and minimize impacts on wetlands to the extent practicable. The largest wetland on the Project Site, located in the USACE easement mentioned in Sections 3 and 8.15, will be avoided. However, the Project Site's relatively small size and geometry, existing infrastructure in and around the Project Site, and safe and efficient design of the Project will require the development of most of the rest of the Project Site. As such, completely avoiding the remaining wetlands on the Project Site is not feasible. An Approved Jurisdictional Determination request has been submitted to the USACE to determine if the wetlands and other waters within the Project Site are considered jurisdictional waters of the United States. A response has not been received at the time of this application's submittal. Should any wetlands be deemed Waters of the U.S., the impacts would be permitted and mitigated pursuant to Section 404 of the Clean Water Act. In addition, a Section 401 water quality certification would be obtained from the North Dakota Department of Health unless waived.

Section 404 of the Clean Water Act regulates discharges into waters of the U.S. (i.e., wetlands and other waters under the jurisdiction of the USACE), and Section 401 regulates water quality by requiring that impacts to waters of the U.S. receive a Water Quality Certification. The Project would require a Section 404 permit if there will be any discharge of dredge or fill material in waters of the United States. It is not anticipated that the Project will require a Section 404 permit.

## 8.7 Soils

### 8.7.1 Description of Resources

The Project Site is in the Williams County Soil Survey Area. Seven soil regions are present within the Project Site (reference (25). The largest area of 231 acres consists of two different loam soils with less than two percent slope and is classified as well-drained soil with occasional flooding. Seventy-four acres consist

of silty clay with less than two percent slopes. The rest of the Project Site is considered silty loams or fine sandy loams with less than six percent slope and a well-drained landscape.

All acres on the Project Site are classified as "farmland of statewide importance." Farmland of statewide importance includes soils "that are nearly prime farmland and that economically produce high yields of crops." No prime or unique farmland, as defined within the Farmland Protection Policy Act, is located within the Project Site.

Barr sampled the topsoil throughout the site in July 2023 to assist in estimating the volume of topsoil that must be stripped and stockpiled. This evaluation identified portions of the site contain silty clay or silty clay loam with elevated salt and/or sodium content. These soils would likely contaminate any stockpiled topsoil and are recommended to be segregated from reclaimable topsoil. Further testing will be conducted to confirm that topsoil is managed appropriately for future reclamation.

### 8.7.2 Impacts and Mitigative Measures

The Project will result in unavoidable temporary and permanent impacts on farmland of statewide importance. The Project Site will be converted from agricultural use to heavy industrial, including grading of the site, the installation of permanent structures, and covering large areas with impermeable surfaces (e.g., concrete). As such, the Project will impact agricultural production presently occurring within the Project Site.

The Project will be constructed using BMPs to minimize erosion and soil compaction and promote reclamation success in all areas practicable. These BMPs will include erosion and sediment control, segregating topsoil from subsurface materials, reseeding of temporarily disturbed areas, using proper construction equipment for the scope and scale of the Project, properly storing topsoil for future reclamation to the extent practicable, properly disposing of excess topsoil and subsoil, de-compacting soil with a deep blade stripper, and maintaining proper drainage. All BMPs will be monitored and corrected promptly as needed.

Because the Project is not a federal undertaking, a Farmland Impact Conversion Rating (Form AD-1006) will not be required.

## 8.8 Vegetation

### 8.8.1 Description of Resources

This ecoregion is predominantly native grasslands interspersed with small grain cropland. The native grassland species within this ecoregion typically consist of blue grama, western wheatgrass, prairie junegrass, needle-and-thread, needleleaf sedge, buffalo grass, spikemoss, sixweeks fescue, green needlegrass, plains muhly, little bluestem, threadleaf sedge. Common forbs are yarrow, gumweed, skeleton weed, purple coneflower, sand lily, white wild onion, death camas, buffalo-bean, purple loco, silverleaf, plains prickly pear, ball cactus, moss phlox, white beardtongue, and fringed sage (reference (32)).

The Project Site consists of approximately 225 acres of cultivated cropland (including 97 acres of irrigated cropland), 93 acres of pastureland, 25 acres of tamed hay land, roughly 8 acres of wooded areas (primarily windbreaks), and 20 acres of farmsteads. Croplands are planted annually and harvested each fall. The hay land is harvested each summer and used for livestock feed.

The North Dakota Department of Agriculture has identified 13 noxious weed species for which the property owners are responsible for controlling in accordance with NDCC 4.1-47-02. This regulation requires: "Each person shall do all things necessary and proper to control the spread of noxious weeds." The regulation is enforced by county weed officers who can inspect and determine if noxious weeds are present. The officer may subsequently provide written notification to a landowner requiring that they be removed.

The 13 noxious weed species identified by the North Dakota Department of Agriculture and another weed species identified by Williams County are shown in Table 8-2.

**Table 8-2 North Dakota State and Williams County Noxious Weed Lists**

| Noxious Weed Species | Scientific Name |
|---|---|
| **State** | |
| Absinth wormwood | *Artemisia absinthii* |
| Canada thistle | *Cirsium arvense* |
| Dalmatian toadflax | *Linaria genistifolia spp. Dalmatica* |
| Diffuse knapweed | *Centaurea diffusa* |
| Houndstongue | *Cynoglossum officinale* |
| Leafy spurge | *Euphorbia esula* |
| Musk thistle | *Carduus nutans* |
| Palmer amaranth | *Amaranthus palmeri* |
| Purple loosestrife | *Lythrum salicaria, Lythrum virgatum, & all cultivars* |
| Russian knapweed | *Centaurea repens* |
| Saltcedar | *Tamarisk spp.* |
| Spotted knapweed | *Centaurea maculosa* |
| Yellow toadflax | *Linaria vulgaris* |
| **Williams County Additional Species** | |
| Narrowleaf Hawksbeard | *Crepis tectorum* |

## 8.8.2 Impacts and Mitigative Measures

Construction of the Project will result in short-term and long-term adverse impacts on existing vegetation, including localized physical disturbance and soil compaction. Construction activities, such as laydown areas, access roads, and staging will have a short-term effect on vegetation by concentrating surface disturbance and equipment use. Construction activities will also result in long-term impacts on vegetation by permanently removing vegetation at the Project Site and replacing it with permanent structures, impermeable surfaces (e.g., concrete), and landscaping.

Disturbance at this site from construction activities may lead to increased weed pressure, specifically the introduction of invasive and noxious weed species. Ground disturbance that leaves soil exposed for extended periods, contaminated topsoil respread, vehicle traffic, or conversion of landscape type are all potential causes of an increase in noxious weed pressure. Cerilon will implement a weed mitigation plan in consultation with the Williams County Weed Board. Invasive and noxious weeds will continue to be controlled consistent with the weed mitigation plan after the facility is fully operational.

Revegetating disturbed areas not required for operations as soon as possible with a weed-free native vegetation seed mix will minimize unwanted weed pressure. Seeding the disturbed area into a prepared seed bed with adequate topsoil and moisture is crucial for the success of the seeded vegetation.

The Project will also remove trees and shrubs from up to 3 acres of the currently wooded areas of the Project Site. The removal of these trees and shrubs, as well as any other trees or shrubs at the Project Site, will be conducted in accordance with the PSC's tree and shrub mitigation specifications, which will require several tasks, including:

- Inventorying the location, number, and species of trees and shrubs;
- Selectively clearing trees and shrubs, leaving mature trees and shrubs intact where practical;
- Planting two new native trees or shrubs for each tree or shrub, regardless of species;
- Filing the results of this tree and shrub replacement with the PSC; and
- Annually inspecting the tree and shrub replacements and submitting a final report to the PSC.

Cerilon intends to clear areas of trees and shrubs larger than 50 ft, which is contrary to the PSC's tree and shrub mitigation specifications, to accommodate Project construction and facility operations. Cerilon understands that this will require a modification of the PSC's standard Tree and Shrub Mitigation Specifications and requests that this modification be made.

## 8.9 Wildlife

### 8.9.1 Description of Resources

The Study Area is comprised primarily of non-native vegetation communities and agricultural lands. These areas may provide suitable habitats for common wildlife species, including white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), sharp-tailed grouse (*Tympanuchus phasianellus*), mourning doves (*Zenaida macroura*), coyote (*Canis latrans*), thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*), and raccoon (*Procyon lotor*).

### 8.9.2 Impacts and Mitigative Measures

This Project may entail temporary and permanent impacts on wildlife species that utilize the Project Area. However, impacts are anticipated to be minimal. Construction of the Project will displace those species currently using the Project Site, and the increased human presence may indirectly affect wildlife in the surrounding area.

The species that may be displaced or otherwise impacted by this Project have a broad ecological amplitude and are generalist species adapted to various habitats. As a result, it can be anticipated that such wildlife will find suitable habitat in the surrounding areas, and overall Project impacts will be minimal. While the Project may directly impact a small number of animals, most will avoid humans and the Project area while work is taking place and after project completion. The Project Site will also be enclosed with security fencing and gated entrances, mitigating the risk of terrestrial animals entering the site and encountering hazards.

Best management practices designed to avoid impacts on migratory birds and their active nests will be implemented in accordance with the U.S. Fish and Wildlife Service (USFWS) Nationwide Standard Conservation Measures for migratory birds.

## 8.10 Rare and Unique Natural Resources

### 8.10.1 Description of Resources

Rare and unique natural resources that may occur within the scope of or otherwise be impacted by this Project have been assessed at the state and federal levels. At the federal level, threatened and endangered species are protected under the Endangered Species Act (ESA). The act is administered by the USFWS and the National Marine Fisheries Service. The ESA defines an endangered species as one that is in danger of extinction throughout all or a significant portion of its range, while a threatened species is likely to become endangered in the near future. The act prohibits the "taking" of any listed species, which includes killing, harming, harassing, or disturbing the species in any way. It also prohibits the trade of any listed species, and the destruction or modification of their critical habitats. The ESA provides for listing species as endangered or threatened, the designation of critical habitats, and the development of plans to help these species recover to a point where they no longer need ESA protection.

Another federal regulation, the Bald and Golden Eagle Protection Act, prevents the unlawful taking of these species and their nests.

The USFWS's Information for Planning and Consultation (IPaC) tool was used to generate an official species list. In addition, the Northern Long-eared Bat Rangewide Determination Key and the North Dakota Determination Key (Dkey) were utilized to assist in determining the likelihood of impacts on protected species. The results of this review are summarized in Table 8-3.

**Table 8-3 Protected Animal Species Endemic to Study Area**

| Common Name | Scientific Name | Determination | Justification |
|---|---|---|---|
| Bald Eagle | *Haliaeetus leucocephalus* | May Affect, Not Likely to Adversely Affect | Given the Project's location in primarily open habitats with limited nearby tree cover, impacts on nesting bald eagles are unlikely. However, as due diligence, it is recommended that large trees within 660 feet of the Project Site be visually inspected for potential bald eagle nests if work will occur during the active season (January 31 - July 15). Barr's wildlife study (Appendix E) did not identify any eagles or their nests within the Study Area. |
| Northern Long-Eared Bat | *Myotis septentrionalis* | May Affect, Not Likely to Adversely Affect | Based on the USFWS Rangewide Determination Key for Northern Long-eared Bat, supplemented with species location data from the North Dakota Game and Fish Department, this Project may affect and is not likely to adversely affect this species. There are no documented occurrences of this species in the Project Site. Tree removal is expected to be minimal and is not likely to result in direct impacts on this species. The IPaC North Dakota Dkey results in this determination. |
| Piping Plover | *Charadrius melodus* | May Affect, Not Likely to Adversely Affect | No sandy shoreland or beaches will be impacted because of this project. No suitable habitat is present. Project work will occur in terrestrial habitats and not adjacent to any suitable body of water. The IPaC North Dakota Dkey results in this determination. |
| Rufa Red Knot | *Calidris canutus rufa* | May Affect, Not Likely to Adversely Affect | There are no suitably large wetland complexes within the Project Site that may provide suitable habitat for this species. The IPaC North Dakota Dkey results in this determination. |
| Whooping Crane | *Grus americana* | No Effect | There is no suitable habitat present for this species. Wetlands on site lack sufficient open water characteristics to support this species. The IPaC North Dakota Dkey results in this determination. |
| Dakota Skipper | *Hesperia dacotae* | No Effect | Based on state-level land cover data, most of the Project Site is classified as cultivated cropland and, as such, does not provide suitable habitat for this species. The IPaC North Dakota Dkey results in this determination. |
| Monarch Butterfly<br><br>(Candidate Species) | *Danaus plexippus* | May Affect, Not Likely to Adversely Affect | Suitable habitat may be present for this species within the Project Site. However, impacts to this species are likely minimal and potentially beneficial. Candidate species are not legally protected. |

No USFWS-designated critical habitats for threatened or endangered species are known to occur within the Study Area.

The State of North Dakota does not maintain an independent list of threatened or endangered species.

A field study to assess the potential for protected species to occur within the Project Site was conducted on June 7, 2023. This field study identified a suitable habitat on the Project Site for one protected species, the Northern Long-Eared Bat. A report of this site visit has been included in Appendix E.

### 8.10.2 Impacts and Mitigative Measures

Based on the desktop review for the Project Site, determination keys provided by the IPaC tool, and the threatened and endangered species study conducted in 2023, it is determined that impacts to rare and unique natural resources are not likely to occur. Potentially suitable trees for the Northern Long-Eared Bat roosting habitat were identified on the Project Site. However, the Project is anticipated to only clear up to 3 acres of wooded areas. Due to the limited tree removal, the Project is not anticipated to adversely affect the Northern Long-Eared Bat. Additionally, the PSC's tree and shrub mitigation specifications will include several requirements that will mitigate impacts to the Northern Long-Eared Bat, including leaving mature trees intact where practical and replacing removed trees over a specific size with two new tree saplings. No other unique or rare vegetative communities were identified within the Project Area. Those communities that are present are unsuitable habitats for other rare or unique wildlife species, including threatened and endangered species.

To the extent practicable, this Project will implement the measures described in the Buffers and Timing Restrictions (reference (33)) document, which the USFWS Bismarck Field Office provided to Cerilon in May 2023. These measures to be implemented include, but are not limited to:

- Removing trees between November 1 and March 31 each year when the Northern Long-Eared Bat is absent.
- Survey for Bald and Golden Eagles in the spring before leaf-out.
- If water cannot be appropriated from a third party, construct an intake structure consistent with the USFWS recommendations for Pallid Sturgeon.

In the event that a threatened and endangered species is identified on or near the Project Site, Cerilon will meet the USFWS recommendations on buffers and removal of the animals. Cerilon will coordinate such activities with the USFWS and North Dakota Game and Fish Department as needed.

## 8.11 Geologic Resources

### 8.11.1 Description of Resources

Surface geology within the Project Site is part of the Sentinel Butte and Bullion Creek Formation. The Project Site is primarily located within the Bullion Creek formation, comprised of Paleocene-age sediment with an average thickness of 600 feet. This formation consists of yellowish-brown silt, clay, sand sandstone, and interlayered lignite beds. These layers are typical of a river, lake, or swamp depositional environment.

The Project Site is located within the Williston Basin, an area rich in oil and gas deposits. There is one active oil and gas well and one plugged and abandoned oil and gas well within the Project Site

(reference (34)). The active well (AUNE 1-36) will remain active and accessible through the construction and operation of the Project.

Lignite beds are commonly found within the Bullion Creek formation, which underlies the Project Site. These lignite beds are often thin and too far from the surface to be of economic value. No active lignite mines are located within or near the Project Site. The Project will have minimal impact on potential access to lignite resources.

A review of the various geological datasets from the ND Geological Survey found no known areas of geological instability within the Project Site or Study Area (reference (35)). Sinkholes are commonly associated with historic mining activities in North Dakota. However, no evidence of mining activities is present on the Project Site. Earthquakes occurring at a magnitude to impact structural steel or steel piping have not been recorded in North Dakota history (reference (36)).

### 8.11.2 Impacts and Mitigative Measures

The Project would result in a minor amount of permanent terrain modification to construct the Project. However, impacts on the overall nature of geological resources are not anticipated.

The Project is not anticipated to adversely impact the active oil and gas well identified within the Project Site. Proper set-back and distance requirements will be followed for the processing facilities. The oil and gas well will remain active and accessible during and following construction of at least Phase 1 of the Project.

## 8.12 Sound Resources

### 8.12.1 Description of Resources

Noise levels are usually measured in units of decibels ("dB"). For applications where human hearing is the prime consideration, A-weighting is applied to yield A-weighted decibels ("dBA"). This weighting serves to better replicate the way the human ear perceives sound. A level of 0 dBA is nominally the threshold of hearing, below which a healthy human ear cannot detect the sound. Most situations never yield levels this low, with a quiet bedroom falling around 40 dBA. Decibels are on a logarithmic scale. Thus, an increase in dB of 10 is perceived as a doubling of the noise level. The smallest perceptible change is typically 3 dB.

Existing conditions in and around the Study Area are those of a predominantly rural environment. Potential sources of noise in the area include vegetation, agricultural activity, rail activity, traffic on local roads, and sounds from existing industrial sites to the west and southwest of the facility. Background noise levels in the Project Site's vicinity are likely to range from ~30-50 dBA, with variability depending on local activities, time of day, weather, and season. A new heavy industrial facility (SAFuelsX) is proposed to be constructed to the southwest of the Project Site. Another heavy industrial facility that plans to recycle produced water (Wellspring Hydro) is also proposed to be constructed near the Project Site.

### 8.12.2 Impacts and Mitigative Measures

Construction noise impacts are expected to be temporary and associated with the equipment operation during construction. Project construction will be limited to daytime operations as much as possible to minimize potential disturbances associated with construction equipment. Construction equipment required for installation of the facility is expected to be approximately 80 dbA at 50 feet from the equipment. The increase in noise during construction will be noticeable within a relatively short distance of construction activities. To mitigate these impacts during construction, Cerilon intends to typically conduct activities that are more likely to generate significant noise noticeable off-site only during daylight hours (e.g., the driving of piles for foundations).

After construction is complete, operation and maintenance activities will generate noise in the area. Sounds from the facility are expected to be largely composed of equipment handling liquids and gases (pumps, compressors, fans, etc.). Noise emissions will be minimized through routine maintenance of equipment and minimizing noise-generating sources where practical. Emergency flaring may result in short-term elevated impacts in an emergency but is not expected to be part of regular facility operation. To reduce the off-site impacts during night hours, Cerilon intends to typically conduct certain planned activities only during day shifts. For example, the loading of finished products will typically occur during the day shift, reducing truck and rail traffic during night hours. Activities that may increase background noise off-site (e.g., operating unusually loud equipment or operating equipment unusually close to residences) will also be conducted during day shifts to the extent practicable. However, extenuating circumstances due to process unit upsets, equipment availability, or other factors may require such activities during night hours.

A review of available regulations reveals no directly applicable federal, state, or local quantitative noise rules for the Project. Cerilon is working with residents to address concerns related to potential increases in background sound levels during the construction and operation of the Project. See Section 8.1.4 for more details on Cerilon's engagement with residents and other local stakeholders. Cerilon also plans to model the off-site noise impacts from the Project, the results of which will inform additional potential mitigative measures.

## 8.13 Visual Resources

A landscape's aesthetic and visual resources are defined as the existing natural and built features visible to the public that affect an area's visual quality and character. Section 8.13.1 discusses the existing aesthetic and visual resources visible from areas where the Project is likely to be within view, referred to as the "viewshed". Section 8.13.2 discusses the impacts to the viewshed from the Project.

### 8.13.1 Description of Resources

The viewshed for the Study Area consists of relatively flat topography that contains agricultural fields; grasslands/pasture; creeks/drainages; farmsteads; oil wells; and an industrial petroleum storage facility (i.e., the Savage terminal). The Project Site is bounded on two sides by rural county roads. These visual resources contribute to a largely rural landscape with industrial elements introduced.

As noted previously, the Project Site has been conditionally rezoned for heavy industrial use pending issuance of a Conditional Use Permit from Williams County. The parcels associated with the Savage terminal to the west have also been zoned for heavy industrial use. Five rural residential properties, representing existing farmsteads, also border the Project Site on the north, east, and south sides. A new heavy industrial facility (SAFuelsX) is proposed to be constructed to the southwest of the Project Site. A produced water recycling facility (Wellspring Hydro) is also proposed to be constructed near the Project Site.

Although the Study Area is generally located in a rural setting, the sky in and around the Project has a Class rating of 4 or 5 on the Bortle Dark Sky Scale (reference (37)), which is a qualitative index developed in 2001 to "provide a consistent standard for comparing observations with light pollution" (reference (38)). The Bortle Dark Sky Scale groups the visibility of stars, galaxies, and zodiacal light into nine classes (reference (38)). A Class rating of 4 describes visibility transitioning from rural to suburban in terms of darkness for stargazing. A Class rating of 5 describes a suburban sky. Under Class 4 skies, there are obvious domes of light pollution over population centers, the Milky Way is impressive overhead but lacks all but the most obvious structure, and clouds in the direction of the light pollution sources are slightly illuminated (reference (38)). Under Class 5 skies, light sources are evident in most directions, clouds are noticeably brighter than the sky itself, and the Milky Way, while visible, looks washed out overhead (reference (38)). The biggest source of light pollution near the Project appears to be the existing petroleum storage facility that forms the western boundary of the Project (reference (38)).

Assessing visual quality is subjective; some viewers may perceive the Project setting as having high quality, while others may perceive the area as having low quality. However, there are no protected visual resources (e.g., National Parks, Wilderness Areas), public recreation areas, scenic byways, or vistas within or adjacent to the Project Site.

### 8.13.2 Impacts and Mitigative Measures

The Project would introduce additional visual resources to the landscape in the form of new facilities including, but not limited to structures and buildings of varying heights, storage tanks, cooling towers, flares, security infrastructure, and other industrial equipment. The tallest structures are projected to exceed 200 ft in height. The facility will be well-lit during the night hours to facilitate continuous operation 24 hours per day and assist with monitoring the security of the site during the night hours. These features will impact the visual character of the Project viewshed from rural and lightly industrial to less rural and more developed and industrial. The impacts from the Project will be cumulative with the introduction of other industrial sites to the area, namely the SAFuelsX project.

The Project would be partially to fully visible during construction and operation to anyone traveling on the roadways adjacent to the Project Site. It may also be visible or partially visible to the five farmsteads adjacent to the Project, depending on the time of year, the persistence of tree cover over time, and the progress on installation of the tallest structures at the site.

Project-related visual impacts during construction would consist of large equipment and heavy machinery movement throughout the Project vicinity, as well as the introduction of new buildings and facilities within

the Project Site, as described in Section 4. Once constructed, the Project will operate 24 hours a day, seven days a week, 365 days a year.

During Project operation, visual impacts would consist of the presence and use of the above-mentioned facilities and buildings. Visual impacts would also consist of daily activities for the operation of the facility, as described in Section 7.

To minimize visual impacts, Cerilon is considering the creation of a screening barrier with vegetation along 143rd Ave NW and will maintain or create a screening buffer between their facilities and the five Rural Residential parcels that abut the Project. Cerilon may also implement a single-color paint treatment for their facilities in line with Bureau of Land Management (BLM) guidance (reference (39)) and the BLM Standard Environmental Color Chart (reference (40)).

Where feasible, Cerilon will also incorporate BLM guidance for lighting in the design of their facilities (reference (41)). As outlined by the BLM (reference (41)), some of the controls that may be incorporated into the design include but are not limited to aiming floodlights down, fully shielding light fixtures to emit light only below the horizon, using vegetation to screen light sources, using the minimum level of illumination necessary, using lighting controls such as motion sensors, and using wildlife-friendly light colors such as amber, orange or red lighting where possible.

As the Project Site has been rezoned for heavy industrial use, a "buffer strip," approved by the Williams County Planning and Zoning Official, will be required to provide a sight and sound barrier for the portions of the Project that abut the three Rural Residential parcels (reference (42)). Ordinance 2-8-7 requires that this buffer strip "be comprised of a combination of live mature berms, trees, stones, shrubs, and fences made of natural looking materials. Landscaping shall be indigenous to the area, require minimal irrigation, and be maintained throughout the life of the project/development/use" (reference (42), pp.38-39). Cerilon is working with the adjacent residents and Williams County to identify a solution that will provide a sight and sound barrier that meets the residents' needs and zoning requirements.

Cerilon is working with local landowners to address concerns related to changes to the visual resources of the Study Area.

## 8.14 Demographics

### 8.14.1 Description of Resources

The Project Site is within an agricultural, rural region of Williams County in northwestern North Dakota. The location is outside of any city limits, with the unincorporated community of Trenton located two and a half miles to the northeast of the Project Site. Based on the 2020 census data, the estimated population of Williams County is 40,950 people. However, Williston alone accounts for 27,029 people in Williams County. Outside of Williston, Williams County has a population of 13,921, with a density of approximately 6.87 people per square mile. The per capita income within Williams County is $41,200, and the median household income is $80,142 (reference (43)).

## 8.14.2 Impacts and Mitigative Measures

Overall, the Project will positively impact the region by adding infrastructure, increasing the county's tax base, and providing jobs. Cerilon anticipates that the Project will create over 2,000 direct jobs during construction, with a total of over 2,500 direct, indirect, and induced jobs during the construction phase. During operation, there will be approximately 100 direct employment opportunities with an additional 2,000+ indirect and induced jobs created by the Project (REMI Model). These estimates were created in 2021 using the State of North Dakota regional economic model (REMI), which will be updated in late 2023 with current project plans. Table 8-4 below provides additional REMI model results estimating the economic benefit of the Project. Cerilon plans to use local contractors and suppliers, where feasible, for portions of construction that will contribute to the economy of Williams County. Purchases of products to construct and operate the facility, such as fuel, equipment, services, and supplies will benefit the local businesses of Williams County as well as the State of North Dakota.

**Table 8-4 Projected Economic Impacts from the Project**

| Benefit | Development and Construction | Operation |
|---|---|---|
| Job Creation | 500 to 2,600 (1) | 1,700 to 2,800 (1) |
| Wages and Salaries | 100 MM Annual Average<br>580 MM 5-Year Impact | 135 MM Annual Average<br>680 MM 5-Year Impact |
| State GDP | 230 MM Annual Average<br>1,400 MM 5-Year Impact | 575 MM Annual Average<br>2,900 MM 5-Year Impact |
| State Output | 400 MM Annual Average<br>2,400 MM 5-Year Impact | 1,300 MM Annual Average<br>6,600 MM 5-Year Impact |
| State Tax Revenue (total) | 25 MM Annual Average<br>150 MM 5-Year Impact | 72 MM Annual Average<br>360 MM 5-Year Impact |
| (1)Total Direct, indirect, and induced employment within the State (varies by year). | | |

With an estimated construction schedule for Phase 1 extending over approximately three years, the estimated length of employment for construction contractors and workers will range from a few weeks to several months or years, depending on skill and/or specialty. Most construction contractors and workers would temporarily relocate to the area as construction of the Project will require a specialized workforce. A few local construction workers could be hired for more general activities such as grading and earthwork. However, due to the tight labor market in the region and low unemployment rates, it is anticipated that most of the construction workforce will come from outside the region. Gas stations, convenience stores, and restaurants in communities such as the City of Trenton and Williston may experience minimal increases in business during the construction period in response to activity from construction workers.

There would be short-term and minimal impacts on local housing. Many of the construction workers would seek temporary housing for varying time periods based on their individual roles in the Project. Generally, housing options for construction crews would consist of area hotels, existing crew camps, or RV camps. Arrangements for longer-term housing may be established by the construction contractor, with

crews rotating in and out as their assignments begin and are completed. Based on the information provided by Williams County staff, it is anticipated that there would be an adequate supply of temporary housing units available in the County for use by construction workers relocating to the area temporarily due to the relatively few workers necessary compared to the overall workforce in the area. Housing availability and the need for any Project-specific housing for construction will be evaluated further during construction planning.

Phase 1 of the Project would require 100 additional full-time employees to operate the facility, with phase 2 of the Project projected to have a similar level of employment. This will have a minimal impact and will not result in a large increase in the number of permanent residents in the nearby communities.

Expenditures made for equipment, fuel, operating supplies, and other products and services would benefit businesses in the cities, county, and State of North Dakota. Local governments could also experience short- and long-term benefits from tax revenue collected during construction and operation of the Project. Once the Project is completed, property taxes collected could benefit local and state governments and local projects. Businesses and oil/gas development near the site would not be significantly disrupted by the construction or operation of the Project.

## 8.15 Land Use

### 8.15.1 Description of Resources

The Project Site is in rural North Dakota in an area predominately comprised of cultivated cropland, native prairies, and rural communities. Most of the Project Site is located on cultivated cropland and pastureland. As such, much of the Project Site is agricultural land or herbaceous cover. There are no other lands of public interest within the Project Site.

The USACE has a flowage and saturation easement covering the 28.81 acres in the southwest corner of the Project Site between 42nd Street NW, 147th Ave NW, and the irrigation canal. This easement restricts development and construction of the land without written approval. The Buford-Trenton Irrigation District, manager of the irrigation canal, and the Bureau of Reclamation, owner of the canal, also have an easement permitting them access to and restricting development and construction that would impede either agency from maintaining the canal. One additional easement resides along the south end of the Project Site for a local electrical utility. The current design of the facility includes two guy wire foundations, which would require written authorization from the USACE and/or Irrigation District. Cerilon is evaluating options to eliminate these impacts on the easements.

The Project Site includes a total of 371.83 acres, the primary land use of which is agricultural. The largest land use is cultivated croplands of 238.97 acres. The second largest land use within the Project Site is herbaceous vegetation. Pastureland covers approximately 93 acres of the Project Site. A summary of land use within the Project Site is provided in Table 8-5. All of the Project Site is considered farmland of statewide importance (see Reference (25)).

**Table 8-5 Land Use within Project Site**

| Land Cover Type[1] | Acres |
|---|---|
| Cultivated Crops | 238.97 |
| Deciduous Forest | 2.22 |
| Developed, High Intensity | 0.35 |
| Developed, Low Intensity | 8.56 |
| Developed, Medium Intensity | 1.96 |
| Developed, Open Space | 5.13 |
| Emergent Herbaceous Wetlands | 4.56 |
| Herbaceous | 104.91 |
| Shrub/Scrub | 4.07 |
| Woody Wetlands | 1.10 |
| **Grand Total** | **371.83** |

([1]) See Reference (44).

### 8.15.2 Impacts and Mitigative Measures

The Project Site has been conditionally re-zoned from agricultural to heavy industrial pending approval of a Conditional Use Permit from the Williams County Planning and Zoning Committee. Mitigation measures will be taken in accordance with the Williams County Land Use Zoning requirements and Conditional Use Permit, which will be applied for soon after this application's submittal.

## 8.16 Public Services

### 8.16.1 Description of Resources

The Project Site is in rural northwestern North Dakota (Figure A.1). A network of roads and utilities provides access, electricity, water supply, and telephone services to rural residences, farmsteads, industry, and incorporated areas. The Williams County Sheriff, Williston Rural Fire, Williams County Emergency Management Department, and the City of Williston Fire Department provide public emergency services in the area. Other local services include a family medical center, public schools, and a local airport. The closest community to the Project Site is the unincorporated community of Trenton, which is 2.5 miles north of the Project Site. The closest city with a full fleet of emergency services is Williston, which is approximately 15 miles northeast of the Project Site. Williston currently provides emergency services, such as a fire department, ambulance service, and law enforcement to the Project Site. There are also hospitals, medical services, and local retail service facilities. Williston's local services also include recreation and parks, a community center, a golf course, a community pool, and a community library.

LYREC provides electrical services to the area. Approximately one (1) mile of overhead power lines run parallel to the Project Site boundary. Five operating underground gas pipelines run through the Project Site. These pipelines are owned by Hiland Crude [a subsidiary of Kinder-Morgan], Greyson Mills, OneOK,

and Plains Pipeline. One abandoned pipeline also runs through the site. There is also a power source that operates an irrigation system within the Project Site. Cerilon will work with contractors to identify any other underground utilities or buried infrastructure before beginning excavation at the Project Site.

Historically, most rural households in Williams County used private wells to obtain water. Today, almost three-quarters of all rural households use a public rural water system, and most new homes that are built opt to tie into the public rural water system. The public water system that serves Williams County is Northwest Rural Water District, and plans are in place to extend service to the Project Site. Most rural households use private septic systems for sewage treatment.

Northwest Communications Cooperative provides telecommunication services to homes and businesses in and near the Project area (NCC). The majority of Williams County has wireless coverage through the major cellular phone carriers (Verizon, AT&T).

There are eight radio station radio transmitters within 10 miles of the Project area. All these transmitters are located to the northeast of the Project Site, near Williston, ND (reference (45)).

The Project Site resides directly south of paved North Dakota Highway 1804. Two gravel county roads border the east and south sides of the Project Site. The primary route to the Project Site will be North Dakota Highway 1804, which travels east/west. Weight restrictions on the highway are not to exceed 105,500 lbs.

The average annual daily traffic for North Dakota Highway 1804 is 1,695 vehicles, with 300 being truck traffic (NDDOT). No data is currently available for the county roads. Oversize/overweight loads require permits from the North Dakota Highway Patrol on state-maintained roads. Counties, townships, and/or the NDDOT also require various permits for work associated with their respective roadways, including approach, haul road, oversize/overweight, utility, and/or right-of-way permits. Cerilon will comply with the applicable regulations regarding work on roadways and rights of way.

### 8.16.2 Impacts and Mitigative Measures

The primary impacts to public services from the Project will be fourfold:

- Increased vehicle traffic volume and weight on North Dakota Highway 1804 and the county roads connecting it to the Project Site.
- Potential increased demand for emergency services.
- Connection of electricity supply and production to the local electrical grid.
- Connection to potable water supply from the Northwest Rural Water District.

Construction of the Project will temporarily impact the public roads stated above due to the transportation of materials, personnel, and equipment to the work site. Some short-term traffic delays may occur during construction due to oversized loads being delivered to the Project Site. Upon beginning operation, haul trucks will frequently access the site to load and unload needed materials for the site.

Improvements may be necessary to the roads and/or intersections to support the increased traffic. Cerilon is working with local landowners and Williams County to address concerns with increased traffic on the rural roads and with the NDDOT on potential changes to the North Dakota Highway 1804 intersection.

The Project Site is approximately 25 minutes from fire, police, and hospital emergency services. Due to the time needed to travel to the site, the large workforce, and the types of operations proposed by the Project, Cerilon is developing plans to supply some on-site emergency services and to support existing services where possible and practical. Cerilon will have some on-site emergency fire service capability, first response, and private security, likely to be supported by a third-party safety contractor. Cerilon has been engaging with local emergency service providers to understand gaps and pressures on regional services so that a plan for the Project can be finalized. Cerilon has met with representatives from Williams County, City of Williston Fire and EMS, Williams County Emergency Management, Williston Rural Fire, and Trenton Rural Fire to inform them about the Project, understand existing emergency service capacity, and discuss how construction and operation of the Project may impact existing services. Cerilon has provided these agencies with requested Project information to support their capacity, personnel, and training planning. Cerilon will continue to work with these agencies as Project plans develop.

As described in Section 4.2, the Project will generate electricity, some of which will be provided to the grid. This connection is not projected to negatively impact the reliability of electric power provided to the local community and will require various evaluations and approvals to connect to the grid. Similarly, the connection of the site to the Northwest Rural Water District will only be for potable water use at the site and is not projected to negatively impact the supply of water to the local community. As noted previously, process and cooling water will be supplied via separate arrangements. See Section 4.4.3 for additional details on water appropriation.

The Project will impact the underground gas pipelines that pass through the Project Site. Cerilon is determining which lines will need to be rerouted to proceed with construction and will coordinate this rerouting with the relevant owners and operators of the pipelines.

Other impacts on existing services and infrastructure are projected to be minimal. The Project may indirectly impact local services via increased business and traffic associated with the Project's workforce. However, impacts would not exceed capacity and will be economically beneficial.

The Project will not impact telephone or internet services. If inadvertent impacts to the system occur during or after construction, Cerilon will address these impacts on a case-by-case basis. Underground communication lines will be located, and Cerilon will coordinate with the local telecommunications providers to identify routes that avoid impacts. All radio station towers are at a distance where no impacts should occur.

## 8.17 Cultural and Archaeological Impacts

Cultural resources consist of archaeological resources, historic architectural resources, and traditional cultural properties. To determine whether significant cultural resources would be impacted by the Project, a Class I Literature Review and a Class III Intensive Pedestrian Cultural Resources Inventory were

completed in Fall 2022. Sections 8.17.1 and 8.17.2 summarize the results of these evaluations. The full report for the Class I and Class III inventories is provided in Appendix F.

### 8.17.1 Description of Resources

The Class I Literature Review noted 27 previously recorded cultural resources and 32 previous cultural resource investigations within the Study Area. Two of the previously recorded resources lie within or overlap the Project Site, including Isolated Find 32WIx754 and Site 32WI1367.

The Class III Intensive Pedestrian Cultural Resources Inventory resulted in the identification of one new Isolated Find and two historic period farmstead sites within the Project Site. Isolated Find 32WIx754 and Site 32WI1367 were also revisited during this investigation.

Site 32WI1367 is the Buford-Trenton Irrigation Canal, which has been previously recommended *eligible* for the National Register of Historic Places (NRHP) and lies along the southern boundary of the Project. The canal is still in operation and irrigates thousands of acres near the Project Site. The irrigation system was first constructed in the early 1900s and then improved between 1940 and 1943 by the Bureau of Reclamation, with labor provided by the Works Progress Administration, the Civilian Conservation Corps, and Civilian Public Service. The irrigation system, as well as some individual features therein, have been recommended eligible for the NRHP. The portion of the irrigation system within the Project Site is in good condition and appears to be in a similar condition as when it was first recorded. The irrigation system remains eligible for the NRHP. However, it will be avoided by Project activities due to an easement with the Bureau of Reclamation and Buford-Trenton Irrigation District requiring access to the canal to conduct routine maintenance and repairs. As a result, no mitigative work is recommended.

Isolated Find 32WIx754, a bullet, was previously recommended *not eligible* for the NRHP. No cultural material was encountered at or near the Isolated Find during the Class III inventory.

Newly recorded Isolated Find 32WIx834 consists of a single chert flake recommended *not eligible* for the NRHP. Sites 32WI2473 and 32WI2474 are historic-period farmsteads recommended *not eligible* for the NRHP, with no mitigative or avoidance measures recommended.

### 8.17.2 Impacts and Mitigative Measures

Most of the cultural resources identified within the Project Site are recommended not eligible for the NRHP; therefore, no further work or avoidance measures are recommended for these sites. Cerilon will implement an Unanticipated Discoveries Plan to provide guidance if previously unidentified cultural resources (i.e., archeological sites or human remains) are discovered during construction. Training will be provided to construction personnel on unanticipated discovery procedures and notification protocols.

It is anticipated that the measures described above will effectively avoid and minimize impacts such that the Project will not cause adverse impacts to significant cultural resources. Consultation with the North Dakota State Historic Preservation Office regarding the Class III results and recommendations is currently ongoing. A copy of the office's findings will be provided to the PSC once it is received.

## 8.18 Recreational Resources

### 8.18.1 Description of Resources

The Project Site is located within Williams County, North Dakota. The region provides a variety of recreational activities and opportunities, such as the following:

- Hiking
- Fishing
- Hunting
- Camping
- Nature Viewing
- Boating
- Water Sports
- Golfing

The Study Area is predominantly agricultural and sparsely populated. As mentioned in Section 8.15, there are no private lands open to sportsmen, wildlife management areas, national wildlife refuges, or waterfowl production areas within the Project Site. Additionally, there are no public parks or campgrounds within the Project Site. The Project Site is approximately 1.5 miles from the Missouri River and 1 mile from Lake Trenton, both of which provide various opportunities for recreation.

The Study Area partially encroaches on the Trenton Wildlife Management Area. This area permits various types of recreational activities, including hiking, fishing, hunting, and camping.

### 8.18.2 Impacts and Mitigative Measures

The Project will not directly impact recreational areas open to the public because none exist within the Project Site. All land within the Study Area is privately held or otherwise not suitable for recreational activities except for the Trenton Wildlife Management Area. No impacts are anticipated to the Trenton Wildlife Management Area, and any unanticipated impacts would be mitigated by the measures noted elsewhere in Section 8. There will be impacts to the Missouri River and Lake Trenton downriver due to the discharge of process wastewater to it, but these are not anticipated to impact these water bodies as recreational resources. See Section 8.4 for a discussion of the impacts and mitigative measures to surface water from the Project.

# 9 Identification of Potential Permits/Approvals

The federal and state permits or approvals that the Project will require are identified in Table 9-1, which also identifies what activities the permit would approve and when the permit will need to be received (e.g., prior to beginning construction). Cerilon will obtain all required permits prior to beginning activities that are prohibited before a relevant permit is issued.

**Table 9-1 Permits and Approvals**

| Agency | Permit or Approval Type | At What Stage of the Project Will the Permit Be Required? |
|---|---|---|
| **Federal Permits** | | |
| U.S Army Corps of Engineers of Engineers | Clean Water Act – Section 404 Permit | Prior to construction |
| U.S Fish and Wildlife Service | Section 7 Threatened and Endangered Species Consultation and Clearance | Prior to construction |
| U.S Fish and Wildlife Service | Migratory Bird Treaty Act / Bald and Golden Eagle Protection Act Compliance | Prior to construction |
| Federal Aviation Administration | Notice of Proposed Construction | Prior to construction |
| U.S. Environmental Protection Agency | SPCC Plan Amendment | Prior to operation |
| U.S. Environmental Protection Agency | Facility Response Plan (FRP) | Prior to operation |
| **State Permits** | | |
| PSC | Certificate of Site Compatibility | Subject of this Application |
| PSC | Order | Prior to construction |
| NDDEQ, Division of Air Quality | Major Air Permit to Construct (PTC) | Prior to construction |
| NDDEQ, Division of Water Quality | NDPDES Permit: General Construction Stormwater | Would be acquired by Owners' Contactor |
| NDDEQ, Division of Air Quality | Title V Air Operating Permit | Needs to be applied for within 1 year of commencing operation |
| NDDEQ, Division of Water Quality | Section 401 Water Quality Certification | Prior to construction |
| NDDEQ, Division of Water Quality | NDPDES Operational Discharge Permit | Prior to Construction |
| NDDEQ, Division of Water Quality | NDPDES Temporary Discharge Permit | During Construction as needed |
| North Dakota Department of Water Resources | Conditional Water Permit | Prior to construction[1] |
| North Dakota Department of Water Resources | Water Appropriation Permit | Prior to construction[1] |
| State Historical Society of North Dakota | National Historic Preservation Act – Section 106 Clearance | Prior to construction |

| Agency | Permit or Approval Type | At What Stage of the Project Will the Permit Be Required? |
|---|---|---|
| North Dakota State Fire Marshal, Office of Attorney General | Aboveground Fuel Storage Pre-Installation Approval for Fuel Dispending Sites | Prior to installation |
| North Dakota Highway Patrol | Overweight/Overweight Permit | Contractors would obtain as necessary, prior to transporting equipment |
| **Other Permits** | | |
| Williams County | Industrial Zoning | Prior to construction |
| Williams County | Building Permit | Prior to construction |
| Williams County | Floodplain Permit | Prior to construction |
| Williams County | Development/Zoning Permit | Prior to construction |
| Williams County | Grading Permit | Prior to construction |
| Williams County | Driveway Permit | Prior to Construction |
| Williams County | Flammable/Combustible Bulk Storage Permit | Prior to construction |
| Williams County | Conditional Use Permit | Prior to construction |

[1] Permit or approval will be obtained if required.

# 10 Public and Agency Coordination

Barr sent letters to numerous federal, state, and local agencies and entities requesting input on the Project. These agencies include those identified in NDAC 69-06-01-05, as well as some additional agencies that could have relevant input related to the Project. Table 10-1 identifies all agencies that were sent a letter, if the agency responded to the letter, and a summary of the responses received. An example of the letters that were sent and the full responses received from these agencies are included in Appendix B.

**Table 10-1 Public Agency Coordination**

| Agency | Response Received? | Summary of Agency Response |
|---|---|---|
| **Federal Agencies** | | |
| Regulatory Program Manager<br>U.S. Army Corps of Engineers | No | N/A |
| U.S. Department of Agriculture<br>Natural Resources Conservation Service<br>State Conservationist | Yes | Confirmed that since the Project is not supported by federal funding, the Farmland Protection Policy Act does not apply, and no further action is needed. |
| Bureau of Land Management North Dakota Field Office | No | N/A |
| Bureau of Reclamation<br>Area Office Manager<br>Dakotas Area Office | Yes | Bureau noted that a Letter of Consent would be required to cross any easements, including those associated with the Buford-Trenton Irrigation District, and provided a contact to request the Letter of Consent, if needed. |
| U.S. Federal Aviation Administration | No | N/A |
| U.S. Fish and Wildlife Service North Dakota Ecological Services Field Office | No | N/A |
| Trenton Indian Service Area | No | N/A |
| U.S. Department of Defense Public Affairs | No | N/A |
| Military Aviation and Installation Assurance Siting Clearinghouse | Yes | The agency requested additional information, including a .kmz file of the project site, facility structures and their heights, power pole height, rated voltage of power lines, and grid point of interconnection to the electricity grid. This information was provided as requested. |
| Grand Forks Air Force Base | No | N/A |

| Agency | Response Received? | Summary of Agency Response |
|---|---|---|
| Minot Air Force Base | Yes | Confirmed no assets, airspace, or other interests in the Project area. |
| Twentieth Airforce Ninety-First Missile Wing | No | N/A |
| **State Agencies** | | |
| Attorney General of North Dakota | No | N/A |
| Industrial Commission of North Dakota | No | N/A |
| Job Service North Dakota | No | N/A |
| North Dakota Aeronautics Commission | No | N/A |
| North Dakota Department of Agriculture | No | N/A |
| North Dakota Department of Career and Technical Education | No | N/A |
| North Dakota Department of Commerce | No | N/A |
| North Dakota Department of Environmental Quality | Yes | Response identified three permits/approvals that the Department projects that the Project will require:<br>• An Air Permit to Construct (see section 8.3.2.2).<br>• A Stormwater Construction Permit (see section 8.4.2.2).<br>A National Pollutant Discharge Elimination System Permit (see section 8.4.2.4). |
| North Dakota Department of Health and Human Services | No | N/A |
| North Dakota Department of Labor and Human Rights | No | N/A |
| North Dakota Department of Mineral Resources | Yes | Requested additional information about the Project's proposed use of carbon capture and sequestration and confirmed the need to coordinate permitting of the sequestration site with the Department. See section 4.3.2 for further details on the sequestration of carbon proposed by the Project. |

| Agency | Response Received? | Summary of Agency Response |
|---|---|---|
| North Dakota Department of Transportation | No | N/A |
| North Dakota Department of Trust Lands | Yes | Confirmed the Department does not manage any surface acreage within the project boundary. |
| North Dakota Department of Water Resources | No | N/A |
| North Dakota Forest Service | No | N/A |
| North Dakota Game and Fish Department | No | N/A |
| North Dakota Geological Survey | No | N/A |
| North Dakota Governor's Office | No | N/A |
| North Dakota Indian Affairs Commission | No | N/A |
| North Dakota Industrial Commission | No | N/A |
| North Dakota Parks and Recreation Department | Yes | The Department identified the following:<br>• The Project does not appear to affect the Department's properties that it owns, leases, or manages.<br>• The Project does not appear to affect properties protected by Section 6(f) of the Land and Water Conservation Fund.<br>No known plant and animal species of concern or significant ecological communities are documented within or immediately adjacent to the Project Site. |
| North Dakota Soil Conservation Committee, North Dakota State University Dept. 7390 | No | N/A |
| North Dakota Transmission Authority | No | N/A |
| State Historical Society of North Dakota | No | N/A |
| **County Agencies** | | |
| McKenzie County Board of Commissioners | Yes | McKenzie County expressed general support for the Project, with no concerns identified. |

| Agency | Response Received? | Summary of Agency Response |
|---|---|---|
| Williams County Board of Commissioners | No | N/A |
| Williams County Soil Conservation District | No | N/A |
| Williams County Weed Control Board | No | N/A |
| **Other Agencies** | | |
| Buford-Trenton Irrigation District | Yes | Confirmed minimal concerns with the Project. The District's primary need is access to the right-of-way for the irrigation canal with sufficient buffer to conduct maintenance. This includes the ability to periodically mow vegetation on both sides of the canal and clear debris and sediment build-up within the canal using an excavator. Cerilon confirmed that access will be provided to the District as needed, as well as potential agreements to maintain the vegetation on both sides of the canal. |

# 11 List of Preparers

In accordance with NDAC Section 69-06-04-01(2)(j) , Table 11-1 identifies the qualifications of each person involved in the development of this application.

**Table 11-1 List of Preparers and Qualifications**

| Name, Role, and Company | Education and Professional Experience |
|---|---|
| Rochelle Harding, M.Sc., P.Eng.<br>Director, Sustainability and Engagement<br>Cerilon Inc. | B.Sc. Chemical Engineering<br>M.Sc. Biochemical Engineering<br>23 years experience |
| Peter Barry<br>Engineering Manager<br>Cerilon Inc. | B.Sc Civil Structural Engineering<br>50 years experience |
| Andrew Nagy, P.Eng, B.Sc.<br>Process Engineering Manager<br>Cerilon Inc. | P.Eng, B.Sc. Chemical Engineering<br><br>27 yrs experience |
| Graham Lea<br>Lead, Water Quality<br>Cerilon Inc. | BSc Marine Biology, MSc Water Pollution Control Technology (Cranfield School of Water Sciences).<br>32 years' experience. |
| Holger Maul<br>Operations<br>Cerilon Inc. | B.Sc. Mechanical Engineering (P. Eng)<br><br>M Business Administration<br><br>30 years' experience |
| Beau Thurman<br>Senior Chemical Engineer<br>Barr Engineering Co. | B.S. Chemical Engineering<br>13 years' experience |
| Kevin L. Solie, PE<br>Senior Environmental Engineer<br>Barr Engineering Co. | B.S. Geological Engineering<br>M.S. Geology<br>32 years' experience |
| Andrew Skoglund<br>Senior Environmental Engineer<br>Barr Engineering Co. | B.S. Engineering Science<br>18 years' experience |
| David S. Haar<br>Senior Environmental Scientist<br>Barr Engineering Co. | B.S. Ecology & Field Biology<br>13 years' experience |
| Veronica A. Parsell<br>Senior Cultural Resources Specialist<br>Barr Engineering Co. | B.A. Anthropology<br>M.A. Anthropology with Archaeological Science Emphasis<br>15 years' experience |
| Stefanie L. Scherbenske<br>Environmental Scientist<br>Barr Engineering Co. | B.S. Natural Resource Management<br>M.S. Range Science<br>7 years' experience |
| Anna L. Nieuwsma<br>Geologist<br>Barr Engineering Co. | B.S. Geology<br>1 year experience |

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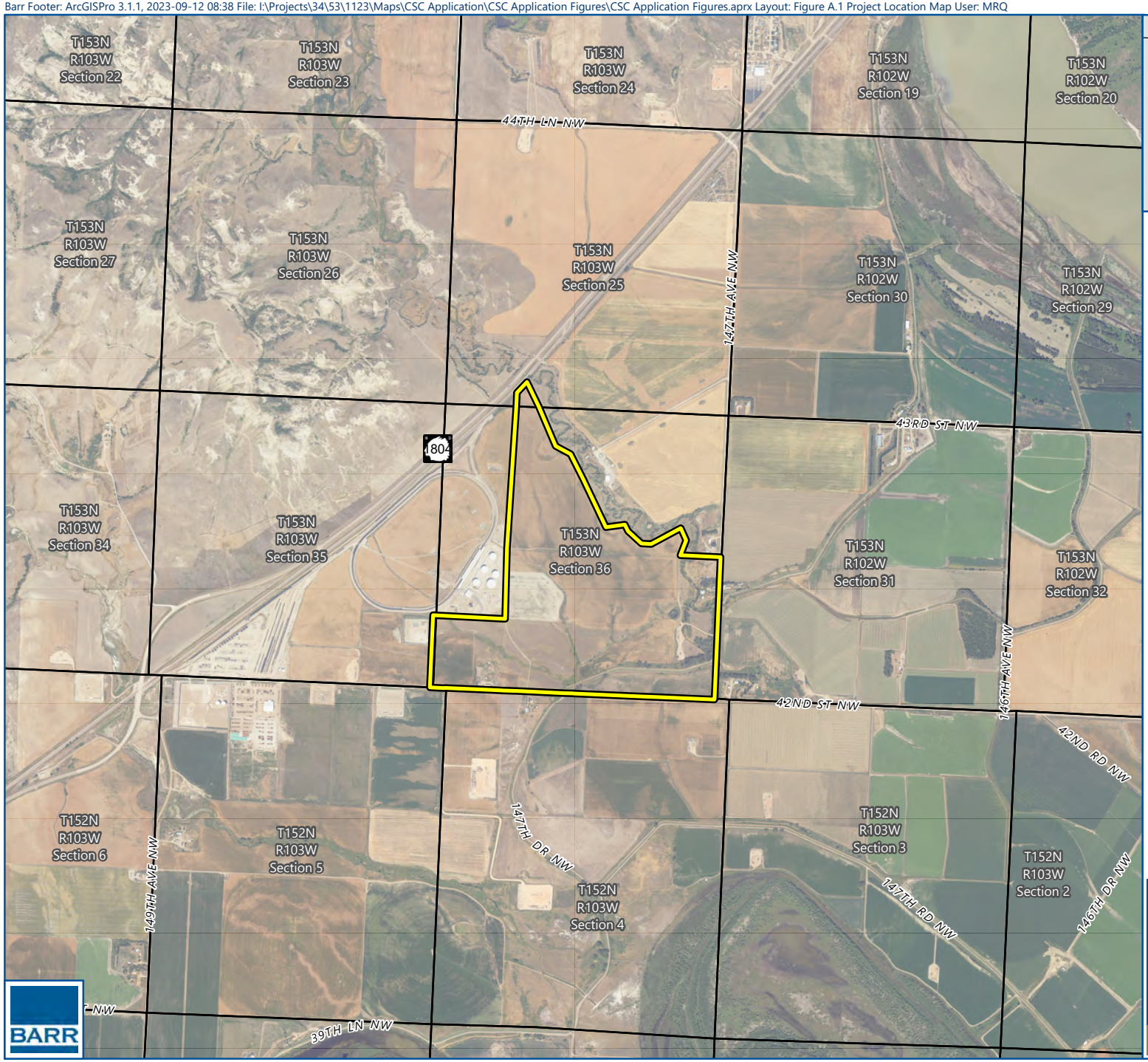
# Appendices

# Appendix A

## Figures





Property Boundary

Public Land Survey Section

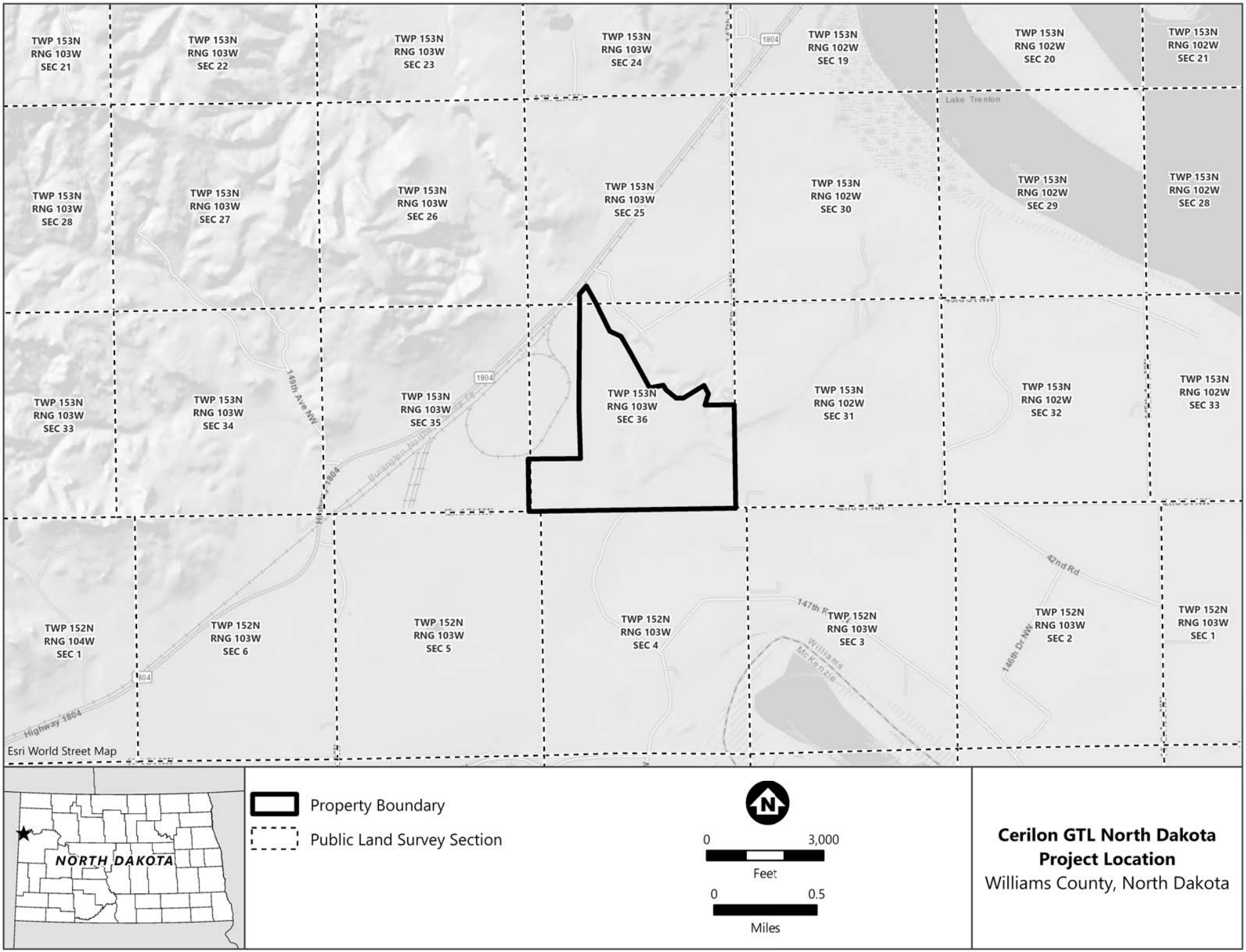
0 2,500

Feet

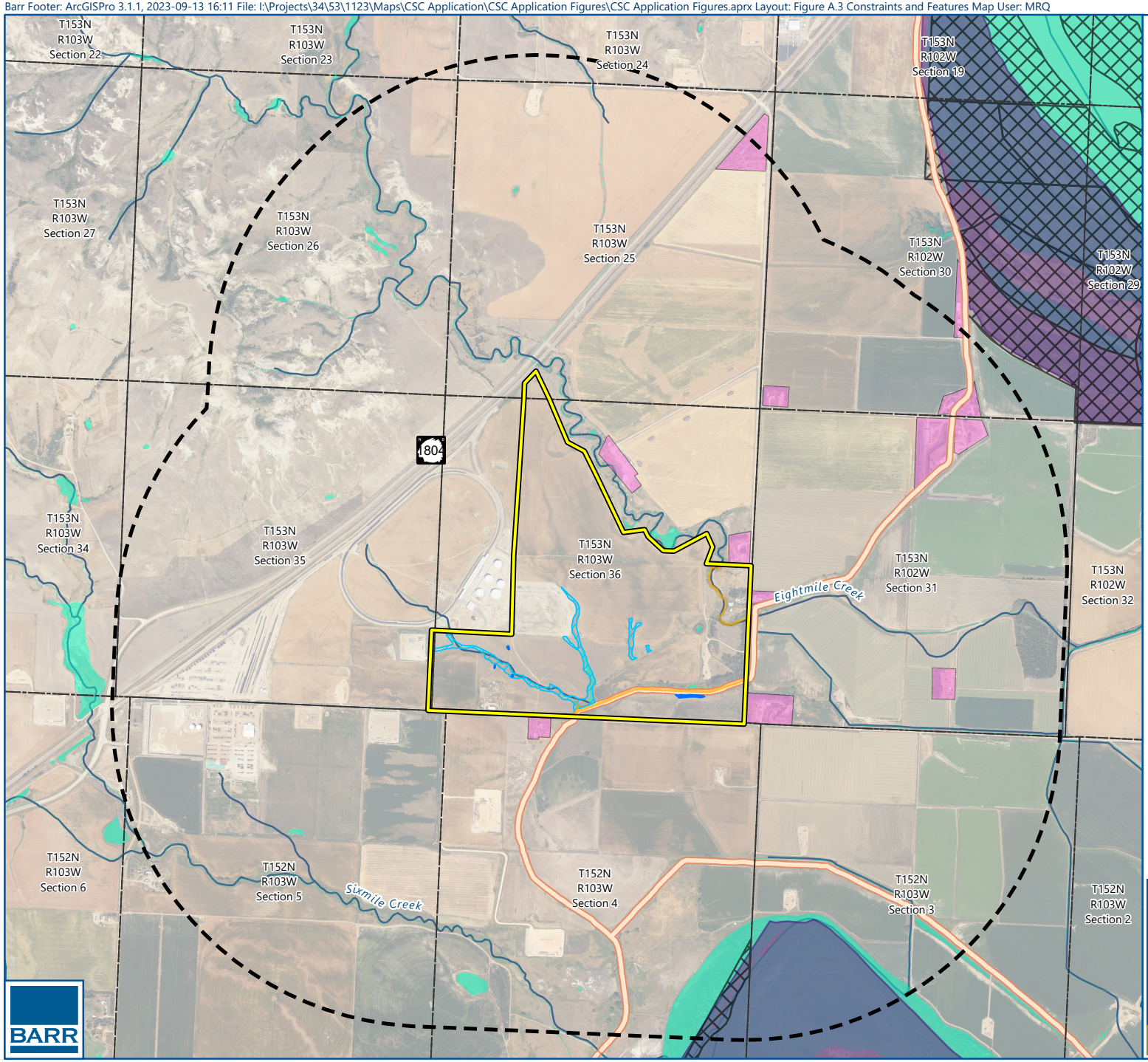
*Imagery: USDA NAIP (2022)*

PROJECT LOCATION
Williams County, ND

FIGURE A.1




**Cerilon GTL North Dakota**
**Project Location**
Williams County, North Dakota




- Property Boundary
- Study Area
- Stream (USGS NHD)
- Buford-Trenton Irrigation Canal[2]
- Delineated Drainage[2]
- Delineated Other Water[2]
- Delineated Wetlands[2]
- Wetlands (NWI)[2]
- 100-yr Floodplain[1, 2]
- Residence
- State Wildlife Management Area[3]
- U.S. Army Corp of Engineers Land
- Public Land Survey Section

Notes:
[1] Flood risk base level engineering comparison data is made available from the North Dakota Department of Resources through the North Dakota Risk Assessment MapService.
Available online at: https://ndram.dwr.nd.gov/
[2] Avoidance area.
[3] Exclusion area.

N

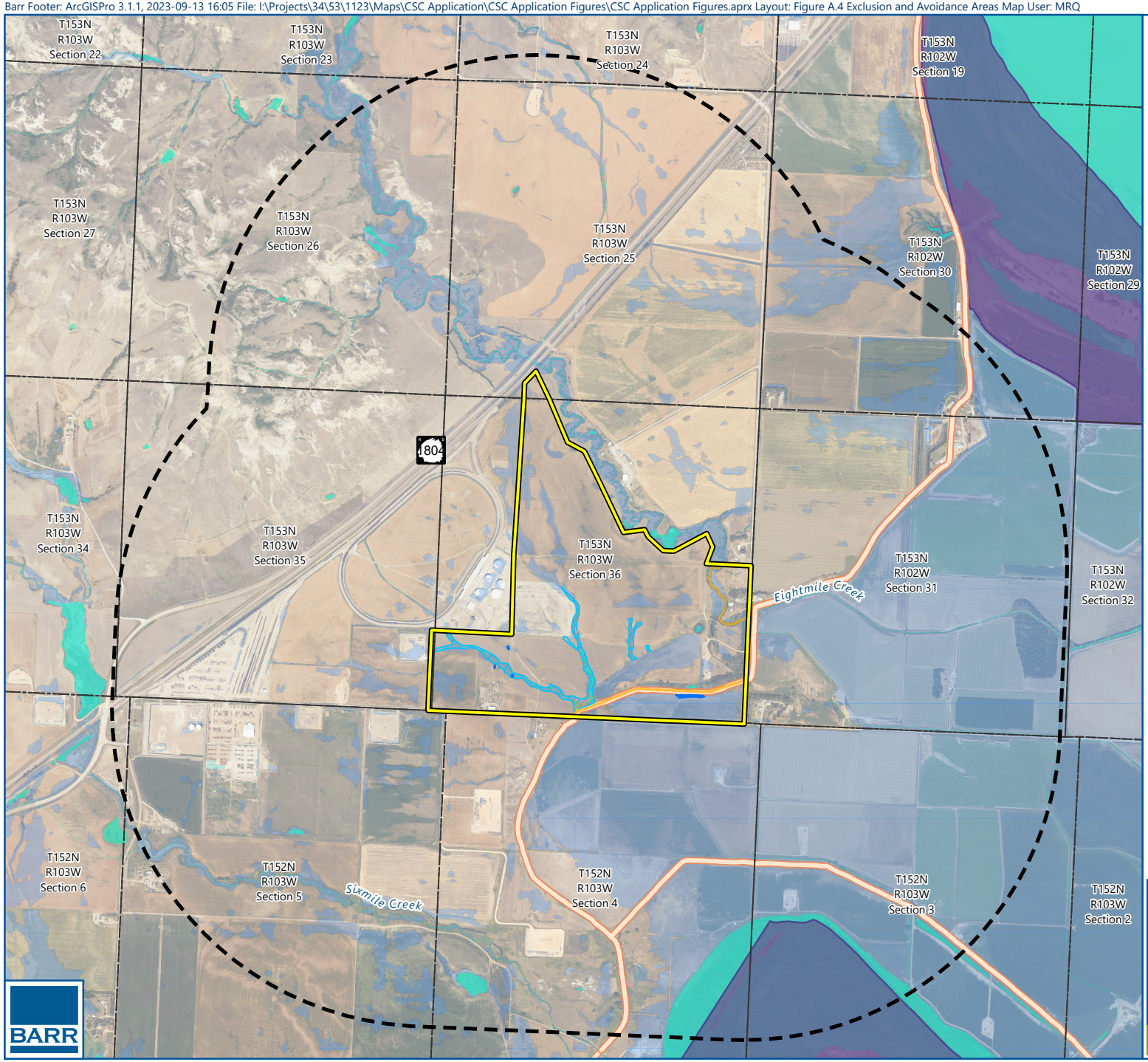
0 2,000
Feet

*Imagery: USDA NAIP (2022)*

BARR

CONTRAINTS AND FEATURES MAP
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE A.3




- Property Boundary
- Study Area
- Buford-Trenton Irrigation Canal[2]
- Delineated Wetlands[2]
- Delineated Other Water[2]
- Delineated Drainage[2]
- Wetlands (NWI)[2]
- 100-yr Floodplain[1, 2]
- State Wildlife Management Area[3]
- Public Land Survey Section

Notes:
[1] Flood risk base level engineering comparison data is made available from the North Dakota Department of Resources through the North Dakota Risk Assessment MapService.
Available online at: https://ndram.dwr.nd.gov/
[2] Avoidance area.
[3] Exclusion area.

N

0 2,000
Feet

*Imagery: USDA NAIP (2022)*

BARR

# EXCLUSION AND AVOIDANCE AREAS MAP
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE A.4

TRUE NORTH

PLANT NORTH

PREVAILING WIND

PREVAILING WIND

PREVAILING WIND

N. 55000

N. 54500

N. 54000

N. 53500

N. 53000

N. 52500

N. 52000

N. 51500

N. 51000

N. 50500

N. 50000

E. 9500

E. 10000

E. 10500

E. 11000

E. 11500

E. 12000

E. 12500

E. 13000

E. 13500

E. 14000

E. 14500

E. 15000

E. 15500

Highway 1804

STOCKPILE

RESIDENTIAL HOMES

RESIDENTIAL HOMES

RESIDENTIAL HOMES

Windrose Plot for [ISN] WILLISTON
Obs Between: 01 Jan 1970 03:00 AM - 18 Sep 2019 03:52 AM America/Chicago

Calm values are < 2.0 mph
Arrows indicate wind direction
Generated: 14 Dec 2022

Summary
Obs Used: 410075
Obs Without Wind: 6017
Avg Speed: 9.5 mph

Wind Speed [mph]
2 - 4.9 | 5 - 6.9 | 7 - 9.9 | 10 - 14.9 | 15 - 19.9 | 20+

STORAGE TANK AREA

PUMPS

RAIL SIDING TRACKS

SAVAGE STORAGE TANK AREA

ASU (AIR SEPARATION UNIT)
350FT x 198FT
107M x 60M

COOLING TOWER
148FT x 242FT
45M x 74M

BOILER/STG
540FT x 450FT
165M x 138M

UTILITIES
150FT x 150FT
46M x 46M

PROPOSED 3M WIDE UNDERGROUND R.O.W

WT
528FT x 180FT
161M x 55M

DIESEL STORAGE TANK

FIRE WATER DIESEL PUMP BUILDING

FIRE WATER ELECTRIC PUMP BUILDING

FIRE WATER TANK

OWS - OILY WATER
229FT x 350FT
69M x 107M

THERMAL OXIDIZER

PUMPS

PLANT 1

CARBON CAPTURE
213FT x 328FT
65M x 100M

Co2 COMPRESSOR AND DEHYDRATION

Co2 TO SEQUESTRATION

Co2 EXPORT
100FT x 35FT
30M x 11M

EXISTING ENGINE SHOP

EXISTING WATER WELL

BUILDING

PROPOSED ENTRANCE

PHILLIPS NATURAL GAS COMPANY PIPELINE RIGHT-OF-WAY TO BE REROUTED

BRIGHAM OIL & GAS 75' WIDE PIPELINE RIGHT-OF-WAY

EXISTING TYM OPERATING ANE 11-36 WELL

ROW PIPELINE TO BE REROUTED

POWER LINE

147TH AVENUE NW

PUBLIC ACCESS ROW (66')

ROW PIPELINE TO BE REROUTED

HILAND CRUDE, LLC. 7.5'WIDE PIPELINE RIGHT-OF-WAY

BRIGHAM OIL & GAS 75' WIDE PIPELINE RIGHT-OF-WAY

PROPOSED 3M WIDE UNDERGROUND R.O.W

SUB-STATION
250FT x 150FT
87M x 46M

E-HOUSE-01
400FT x 210FT
122M x 64M

MAINTENANCE / WAREHOUSE
250FT x 250FT
78M x 76M

ADMIN / CONTROL ROOM/
500FT x 200FT
152M x 61M

FUTURE MAINTENANCE / WAREHOUSE
250FT x 250FT
78M x 76M

FIRE HALL/ERT
100FT x 200FT
31M x 61M

STORM WATER POND
1181FT x 328FT
360M x 100M

50 FT ZONE RESERVED FOR IRRIGATION CANAL MAINTENANCE

GREYSON MILLS PIPELINE

SAVAGE-BAKKEN PIPELINE

LOWER YELLOWSTONE RURAL ELECTRIC ASSOCIATION INC. 100' ELECTRIC LINE ROW

NATURAL GAS

RAW WATER

TREATED WASTE WATER

PROPOSED UNDERGROUND ROW (100FT)

PLANT ENTRANCE 40FT WIDE

ADMIN ENTRANCE

8328 FT

FLARE

BUFORD-TRENTON MAIN CANAL SOUTH ROW

FLOWAGE AND SATURATION EASEMENT

BUFORD-TRENTON IRRIGATION DISTRICT MAIN CANAL

LOWER YELLOWSTONE RURAL ELECTRIC ASSOCIATION INC. 100' ELECTRIC LINE ROW

42ND STREET NW

42ND STREET NW

NOTE :
1. ALL DIMENSIONS AND COORDINATES ARE IN IMPERIAL UNITS.

0 100FT 200FT 500FT 1000FT

SCALE: 1"=300FT

| REV | DATE | REVISION DESCRIPTION | DRAWN | DRAFT CHK | DESIGNED | ENG CHK | APPROVED | CUSTOMER | REF DRAWING No | REFERENCE DRAWING TITLE |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DS AG | DS MZ | DS CG | DS TM | DS TC | | | |
| B | 23.07.25 | ISSUED FOR HAZID | AG | MZ | CG | TM | TC | | UEL2103-0000-3114-PLP01-0001.01 | CERILON GTL ND SITE |
| A | 23.06.27 | ISSUED FOR ESTIMATE | AG | MZ | CG | TM | TC | | UEL2103-0000-3114-PLP01-0001.02 | CERILON GTL ND SITE |

D SHEET | SCALE 1":300FT

Worley
energy | chemicals | resources

WORLEY PROJECT No.
417011-00541

ENGINEERING AND PERMIT STAMPS (As Required)

THIS DRAWING IS PREPARED FOR THE USE OF THE CONTRACTUAL CUSTOMER OF WORLEY CANADA SERVICES LTD (WORLEY) AND WORLEY ASSUMES NO LIABILITY TO ANY OTHER PARTY FOR ANY REPRESENTATIONS CONTAINED IN THIS DRAWING

CUSTOMER

CERILON

417011-00541-00-PI-DAL-0001-03

DRG TITLE

CERILON GTL ND PROJECT
PLANT 1
PLOT PLAN

DRG No
WOR2103-1000-3040-PLP01-0001-03

REV
B

Worley_D

PLOT DATE & TIME 26/7/2023 3:31:06 PM
SAVE DATE & TIME 26/7/2023 3:05:26 PM
USER NAME amadeo.giron
LOCATION \\CACDKWPFL03\LARGEPROJ\CERILON\417011-00541\11_DRAWINGS\06_PIPING\DPP_PLOT PLAN\WORKING\WOR2103-1000-3040-PLP01-0001-03_RB.DWG


| REV | DATE | REVISION DESCRIPTION | DRAWN | DRAFT CHK | DESIGNED | ENG CHK | APPROVED | CUSTOMER | REF DRAWING No | REFERENCE DRAWING TITLE |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | DS AG | DS MZ | DS CG | DS TM | DS TC | | | |
| B | 23.07.25 | ISSUED FOR HAZID | AG | MZ | CG | TM | TC | | UEL2103-0000-3114-PLP01-0001.01 | CERILON GTL ND SITE |
| A | 23.06.27 | ISSUED FOR ESTIMATE | AG | MZ | CG | TM | TC | | UEL2103-0000-3114-PLP01-0001.02 | CERILON GTL ND SITE |

D SHEET | SCALE 1":300FT

Worley
energy | chemicals | resources

WORLEY PROJECT No.
417011-00541

ENGINEERING AND PERMIT STAMPS (As Required)

THIS DRAWING IS PREPARED FOR THE USE OF THE CONTRACTUAL CUSTOMER OF WORLEY CANADA SERVICES LTD (WORLEY) AND WORLEY ASSUMES NO LIABILITY TO ANY OTHER PARTY FOR ANY REPRESENTATIONS CONTAINED IN THIS DRAWING

CUSTOMER
CERILON

417011-00541-00-PI-DAL-0001-01

DRG TITLE
CERILON GTL ND PROJECT
PLANT 1 & 2
PLOT PLAN

DRG No
WOR2103-1000-3040-PLP01-0001-01

REV
B

Worley_D

PLOT DATE & TIME 26/7/2023 3:35:37 PM
SAVE DATE & TIME 26/7/2023 3:34:00 PM
USER NAME amadeo.giron
LOCATION \\VCADCWPFIL03\LARGEPRO\CERILON\417011-00541\11_DRAWINGS\06_PIPING\DPP_PLOT PLAN\WORKING\WOR2103-1000-3040-PLP01-0001-01_RB.DWG

# Appendix B

## Responses from Regulatory Agencies to Notification Letters

resourceful. naturally.
engineering and environmental consultants

BARR

June 9, 2023

NOTE: This is an example of the letters submitted to the list of agencies identified in Section 10 of this application's narrative. All letters contained the same text, with only the address changing.

North Dakota Dept of Environmental Quality
4201 Normandy Street
Bismarck, ND 58505

**Re: Proposed Energy Conversion Facility – Request for Comments**

To Whom It May Concern:

Barr Engineering Co. (Barr) is supporting Cerilon GTL ND Inc. (Cerilon) in preparing an application to the North Dakota Public Service Commission (ND PSC) for a Certificate of Site Compatibility for a greenfield industrial facility near Trenton, ND (Project). The Project is located on approximately 370 acres in Sections 25 and 36, Township 153 North, Range 103 West in Williams County. See attached Figure 1 for a map of Cerilon's property where the project is proposed to be constructed.

The proposed Project will contain two primary operations:

- **Conversion of Natural Gas to Liquids**: Cerilon intends to construct two gas-to-liquids (GTL) facilities (Phase 1 and Phase 2) to convert natural gas into low-carbon, high-value synthetic hydrocarbon liquids. Phase 1 will convert 240 million standard cubic feet per day (MMscf/day) of natural gas into 24,000 barrels per day (bpd) of liquid products, including approximately 14,600 bpd of ultra-low sulfur diesel, 3,600 bpd of naphtha, and 5,800 bpd of base oils. Phase 2 will be constructed with the same capacity, but the specific product slate may be altered based on future market conditions.

- **Electric Energy Generation**: The GTL process will contain several high-temperature and exothermic processes. Cerilon intends to recover this energy to generate steam which will be routed to steam turbines to generate electricity. Additional steam will be generated by a battery of package boilers combusting excess gases unable to be converted to saleable liquid products. Cerilon's preliminary estimate is that each project phase will generate approximately 100 megawatts (MW) of electricity. Most of this electricity will be used on-site, with any excess exported to the electrical grid.

Additional processes will be conducted at the site to support these primary operations. These include but are not limited to raw material and product storage, product loading to tanker trucks and railcars, wastewater treatment, flares to eliminate process upset gases, and other shared utilities. Cerilon also proposes installing a carbon capture system on the GTL facilities, which will reduce the project's carbon dioxide ($CO_2$) emissions. The captured carbon will be routed by a third-party to an off-site location for geological sequestration by a third-party.

Phase 1 of the project is proposed to begin construction in mid-2025 and begin commercial operation in 2028. Phase 2 will begin construction after Phase 1 begins commercial operation, but the specific timing is still being evaluated. The Project will apply for all required local, state, and federal permits and approvals.

Cerilon requests your input to identify any concerns your agency may have regarding the Project's potential impacts that fall within the purview of your agency and any potential permits or approvals your agency may require. Your agency's input will be incorporated into the Project's application for a Certificate of Site Compatibility that Barr and Cerilon are developing for submittal to the ND PSC. The ND PSC will also evaluate your input via their approval process.

Please refer to Chapter 69-06-08 of the North Dakota Administrative Code for a complete list of the criteria that will be considered in the siting application.

We would appreciate receiving your response by July 24, 2023. Please send your comments to cerilon@barr.com or 234 West Century Avenue, Bismarck, ND 58503. If no reply is received, it will be assumed that your agency has no comment on the Project. If you require further information or have questions, please do not hesitate to send an email to the previously provided email address or contact me via phone at 701.221.5424.

Sincerely,

Amanda Gravseth
Project Manager, Senior Chemical Engineer

Attachment: Figure 1 – Project Location Map

cc: Nico Duursema (Cerilon)
Rochelle Harding (Cerilon)
Joel Trinkle (Barr)
Casey Furey (Crowley-Fleck)

USDA
United States Department of Agriculture

Natural Resources
Conservation Service

Bismarck State Office
PO Box 1458
Bismarck, ND
58502-1458

Voice 701.530.2000
Fax 855-813-7556

June 20, 2023

Amanda Gravseth
Barr Engineering Company
234 West Century Avenue
Bismarck, ND 58503

Dear Ms. Gravseth:

The Natural Resources Conservation Service (NRCS) has reviewed your letter dated June 9, 2023 concerning the Proposed Energy Conversion Facility near Trenton, North Dakota.

NRCS has a major responsibility with the Farmland Protection Policy Act (FPPA) in documenting conversion of farmland (i.e., Prime, Statewide Importance and/or Local Importance) to non-agricultural use. It appears your proposed project is not supported by federal funding; therefore, FPPA does not apply and no further action is needed.

If you have additional questions pertaining to FPPA, please contact Wade Bott, State Soil Scientist, NRCS, Bismarck, North Dakota, at (701) 530-2021.

Sincerely,

WADE BOTT

Digitally signed by WADE BOTT
Date: 2023.06.20 15:55:12 -05'00'

WADE D. BOTT
State Soil Scientist

## Bria W. Kask

**From:** JOHNSON, BRUCE A CIV USAF AFGSC 5 CES/CENP <bruce.johnson.25@us.af.mil>
**Sent:** Wednesday, June 28, 2023 11:19 AM
**To:** Cerilon Agency Communications
**Cc:** ALBRIGHT, TREV A CIV USAF AFGSC 5 CES/CEN; KINKER, LAUREN K CIV USAF AFGSC 5 CES/CENM; WARREN, SAMUELE M CIV USAF AFGSC 5 CES/CENP
**Subject:** Cerilon GTL ND Inc.
**Attachments:** 5 CES -Barr Ebg Memo 20230627 signed.pdf



Good morning Ms. Gravseth,

Please see the attached memorandum.

Respectfully,
Bruce

**Bruce Johnson**
Chief of Portfolio Optimization
DSN: 453-4693
Comm: 701-723-4693

**DEPARTMENT OF THE AIR FORCE**
**5TH CIVIL ENGINEER SQUADRON (AFGSC)**
**MINOT AIR FORCE BASE NORTH DAKOTA**

27 June 2023

MEMORANDUM FOR Barr Engineering Co.

FROM: Ms. Lauren K. Kinker

SUBJECT: Cerilon GTL ND Inc.

Minot AFB has no assets, airspace or other interests in the area (Figure 1 of Barr's June 9, 2023 letter) proposed for the two gas-to-liquids (GTL) facilities southwest of Trenton, ND.

Lauren K. Kinker, GS-13,
Deputy, 5th Civil Engineer Squadron

| | |
|---|---|
| **From:** | Persinger, Ashley C |
| **To:** | Cerilon Agency Communications |
| **Cc:** | Gue, Andrea N; Hall, Jacob M; Brown, Angela K |
| **Subject:** | Request for Comment Regarding the Proposed Energy Conversion Facility by Cerilon GTL in Williams County, North Dakota. |
| **Date:** | Monday, July 24, 2023 4:01:54 PM |
| **Attachments:** | image001.jpg<br>Aquisitions BOR.jpg |



Dear Ms. Gravseth:

On behalf of the Dakotas Area Manager, Joe Hall, this acknowledges receipt of your June 9, 2023 scoping letter. Your proposed action includes, but is not limited to, the construction of two gas-to-liquids (GTL) facilities to convert natural gas into low carbon hydrocarbon liquids.

Reclamation has identified that the Project enters the Buford Trenton Irrigation District and crosses several BOR easements. See BOR Acquisitions Map attached. A Letter of Consent (LOC) is needed from Reclamation to cross these easements. Please contact Natural Resource Specialist Mr. Jacob Hall at 701- 221- 1230 or jmhall@usbr.gov to request an LOC for the Project.

Thank you,

Ashley Persinger
Environmental Coordinator
Bureau of Reclamation- Dakotas Area Office
304 E Broadway Avenue
Bismarck, ND 58501
Ph: (701) 221-1282


Legend
MBART Acquisitions
Acquisitions
MBART Withdrawals
Withdrawals
PLSS National (BLM, CadNSDI)
PLSS Township
PLSS Section
PLSS Intersected
153N 103W
153N 102W
152N 103W
1000ft
-103.896 48.028 Degrees
Compiled by the Bureau of Land Management (BLM), National Operations Center (NOC), OC-530. | La
esri

**Bria W. Kask**

**From:** -Info-Land Dept. ROW <landrow@nd.gov>
**Sent:** Monday, June 19, 2023 2:50 PM
**To:** Cerilon Agency Communications
**Subject:** Proposed Energy Conversion Facility - Request for Comments
**Attachments:** SCAN_23061412170.pdf



To Whom it May Concern,

The North Dakota Department of Trust Lands (NDDTL) does not manage any surface acreage within this proposed project boundary of the attached letter.

Any proposed projects (ie, pipelines, electric lines, roads, etc.) crossing NDDTL managed property would need to apply for a Rights of Way and would be subject to review and approval by the Board of University and School Lands.

If you have any questions, please contact the Department via emailing landrow@nd.gov or calling 701-328-2800.

Sincerely,

North Dakota Department of Trust Lands

resourceful. naturally.
engineering and environmental consultants

BARR



June 9, 2023

North Dakota Department of Trust Lands
1707 N 9th ST
Bismarck, ND 58501-5523

**Re: Proposed Energy Conversion Facility – Request for Comments**

To Whom It May Concern:

Barr Engineering Co. (Barr) is supporting Cerilon GTL ND Inc. (Cerilon) in preparing an application to the North Dakota Public Service Commission (ND PSC) for a Certificate of Site Compatibility for a greenfield industrial facility near Trenton, ND (Project). The Project is located on approximately 370 acres in Sections 25 and 36, Township 153 North, Range 103 West in Williams County. See attached Figure 1 for a map of Cerilon's property where the project is proposed to be constructed.

The proposed Project will contain two primary operations:

- **Conversion of Natural Gas to Liquids**: Cerilon intends to construct two gas-to-liquids (GTL) facilities (Phase 1 and Phase 2) to convert natural gas into low-carbon, high-value synthetic hydrocarbon liquids. Phase 1 will convert 240 million standard cubic feet per day (MMscf/day) of natural gas into 24,000 barrels per day (bpd) of liquid products, including approximately 14,600 bpd of ultra-low sulfur diesel, 3,600 bpd of naphtha, and 5,800 bpd of base oils. Phase 2 will be constructed with the same capacity, but the specific product slate may be altered based on future market conditions.

- **Electric Energy Generation**: The GTL process will contain several high-temperature and exothermic processes. Cerilon intends to recover this energy to generate steam which will be routed to steam turbines to generate electricity. Additional steam will be generated by a battery of package boilers combusting excess gases unable to be converted to saleable liquid products. Cerilon's preliminary estimate is that each project phase will generate approximately 100 megawatts (MW) of electricity. Most of this electricity will be used on-site, with any excess exported to the electrical grid.

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Phase 1 of the project is proposed to begin construction in mid-2025 and begin commercial operation in 2028. Phase 2 will begin construction after Phase 1 begins commercial operation, but the specific timing is still being evaluated. The Project will apply for all required local, state, and federal permits and approvals.

Cerilon requests your input to identify any concerns your agency may have regarding the Project's potential impacts that fall within the purview of your agency and any potential permits or approvals your agency may require. Your agency's input will be incorporated into the Project's application for a Certificate of Site Compatibility that Barr and Cerilon are developing for submittal to the ND PSC. The ND PSC will also evaluate your input via their approval process.

Please refer to Chapter 69-06-08 of the North Dakota Administrative Code for a complete list of the criteria that will be considered in the siting application.

We would appreciate receiving your response by July 24, 2023. Please send your comments to cerilon@barr.com or 234 West Century Avenue, Bismarck, ND 58503. If no reply is received, it will be assumed that your agency has no comment on the Project. If you require further information or have questions, please do not hesitate to send an email to the previously provided email address or contact me via phone at 701.221.5424.

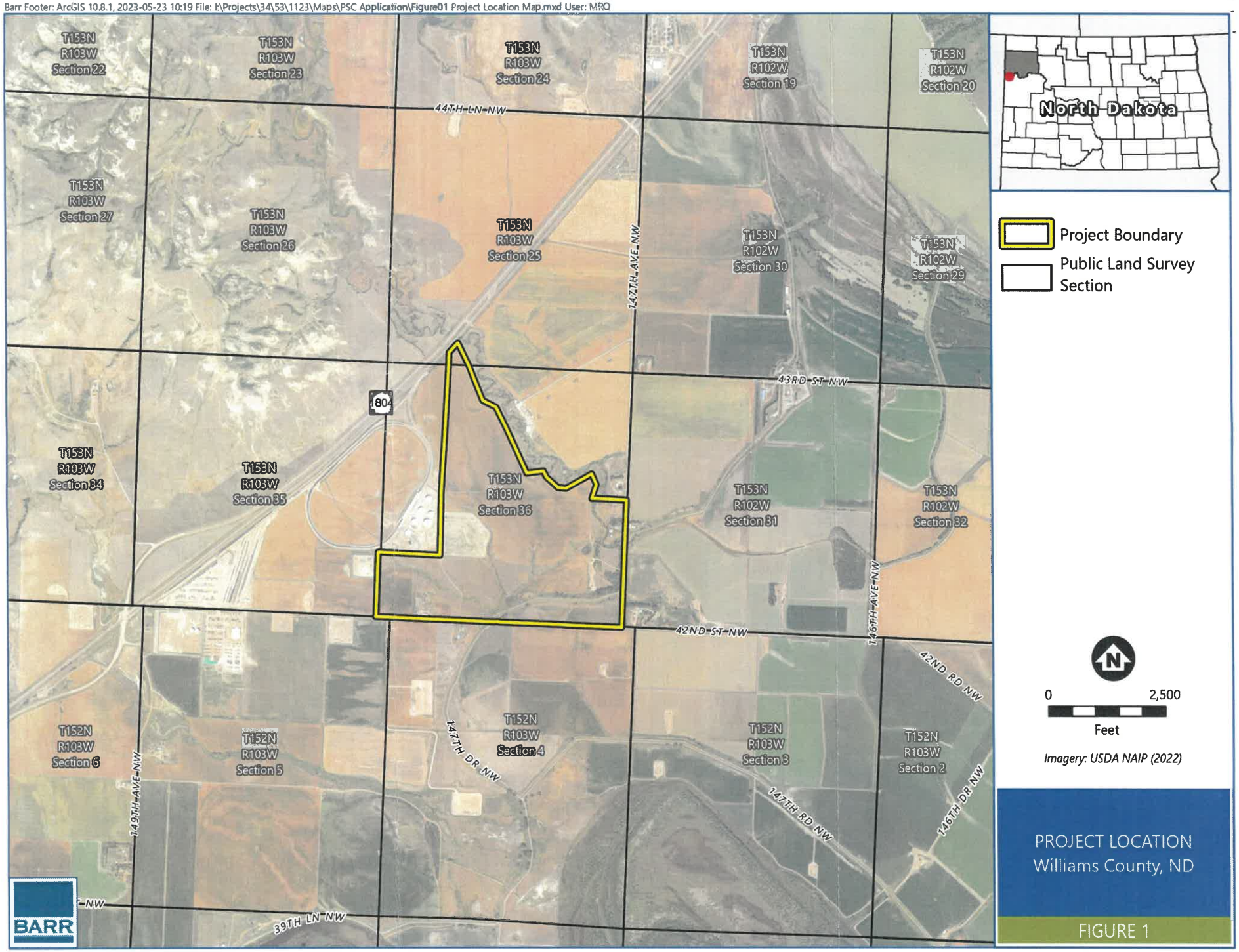
Sincerely,

Amanda Gravseth
Project Manager, Senior Chemical Engineer

Attachment: Figure 1 – Project Location Map

cc: Nico Duursema (Cerilon)
Rochelle Harding (Cerilon)
Joel Trinkle (Barr)
Casey Furey (Crowley-Fleck)

Barr Footer: ArcGIS 10.8.1, 2023-05-23 10:19 File: I:\Projects\34\53\1123\Maps\PSC Application\Figure01 Project Location Map.mxd User: MRQ




Cerilon 000123

**From:** Duttenhefner, Kathleen G.
**To:** Cerilon Agency Communications
**Subject:** Proposed Energy Conversion Facility – Cerilon GTL ND Inc.- Trenton, ND
**Date:** Monday, July 17, 2023 3:38:40 PM
**Attachments:** image001.jpg
Barr_Cerilon_GTL_ND_INC_Energy_Conversion_Facility_Trenton_ND_KD_Responce_Letter_D7.19.2023.pdf

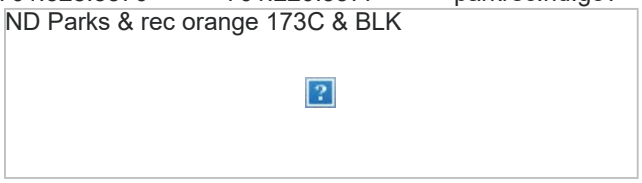
---



Proposed Energy Conversion Facility – Cerlon GTL ND Inc.- Trenton, ND

North Dakota Parks and Recreation Department's Environmental Review Response letter is attached.

Kathy Duttenhefner
*Natural Resources Division Chief*
701.328.5370 • 701.220.3377 • parkrec.nd.gov



NORTH Dakota | Parks & Recreation
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July 17, 2023

Barr Engineering
Amanda Gravseth
234 West Century Ave.
Bismarck, ND 58503

Re: Proposed Energy Conversion Facility – Cerilon GTL ND Inc.- Trenton, ND

Dear Amanda,

The North Dakota Parks and Recreation Department (NDPRD) has reviewed the above proposed Energy Conversion Facility – Cerilon GTL ND Inc. located near Trenton, ND

NDPRD's scope of authority and expertise covers properties that NDPRD owns, leases, or manages; properties protected under Section 6(f) of the Land and Water Conservation Fund (LWCF); rare plants; and ecological communities established through the Natural Heritage Program.

The project does not appear to affect properties NDPRD owns, leases, or manages.

The project does not appear to affect properties protected under Section 6(f) of the LWCF.

A North Dakota Natural Heritage biological conservation database query determines if any current or historical plant or animal species of concern or other significant ecological communities are known to occur within an approximate one-mile radius of the project area. Based on this review, no known plant and animal species of concern or significant ecological communities are documented within or immediately adjacent to the project site.

We appreciate your commitment to rare plant, animal, and ecological community conservation, management, and inter-agency cooperation. For additional information, please contact Kathy Duttenhefner at 701-328-5370, 701-220-3377 (cell), or kgduttenhefner@nd.gov.

Thank you for the opportunity to comment on the proposed project.

Sincerely,

Kathy Duttenhefner

Kathy Duttenhefner, Chief Natural Resources Division

604 E Boulevard Ave Dept. 750 | Bismarck, ND 58505

PHONE: 701-328-5357 | FAX: 701-328-5363 | EMAIL: parkrec@nd.gov | WEBSITE: www.parkrec.nd.gov

NORTH Dakota | Environmental Quality
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July 10, 2023

Ms. Amanda Gravseth
Barr Engineering Co.
234 West Century Avenue
Bismarck, ND 58503

Re: Cerilon GTL ND Inc. Facility

Dear Ms. Gravseth:

The Department of Environmental Quality (DEQ) has received your letter dated June 9, 2023, regarding the Cerilon GTL ND Inc. (Cerilon) facility proposed to be constructed near Trenton, ND.

Your letter requests that the DEQ identify any permits/approvals required for the Cerilon facility. The permits/approvals required by the DEQ are outlined below:

1. An Air Pollution Control Permit to Construct must be obtained prior to construction of the facility. The air quality construction permitting process is outlined at https://deq.nd.gov/AQ/permitting/Construction.aspx.

   Questions regarding air quality permitting may be addressed to David Stroh at 701-328-5229 or destroh@nd.gov.

2. A Stormwater Construction Permit for this facility will be required. This coverage can be obtained through the following link https://deq.nd.gov/WQ/2_NDPDES_Permits/7_Stormwater/StW.aspx

3. A National Pollutant Discharge Elimination System Permit will also be required for any wastewater discharge covered under the Clean Water Act. This coverage can be obtained through the following link https://deq.nd.gov/WQ/2_NDPDES_Permits/3_Municipal_Industrial/MI.aspx

   Please contact Marty Haroldson at mharolds@nd.gov or by calling (701)328-5234 so the appropriate application is selected for the NDPDES permit.

If you should have any questions, feel free to contact us.

Sincerely,

L. David Glatt, P.E.
Director
Department of Environmental Quality

**Bria W. Kask**

**From:** Madche, Tamara J. <tjmadche@nd.gov>
**Sent:** Wednesday, June 21, 2023 9:16 AM
**To:** Amanda Gravseth
**Cc:** Cerilon Agency Communications
**Subject:** RE: Trenton Energy Conversion Facility



Hi Amanda,

Thank you for the additional information.

Tammy Madche
*Geologist*

**From:** Amanda Gravseth <AGravseth@barr.com>
**Sent:** Wednesday, June 21, 2023 8:40 AM
**To:** Madche, Tamara J. <tjmadche@nd.gov>
**Cc:** Cerilon Agency Communications <cerilon@barr.com>
**Subject:** RE: Trenton Energy Conversion Facility



Hi Tammy,

Cerilon will incorporate carbon capture technology at the facility and will transfer CO2 to a third-party sequestration site via pipeline. Total capture volumes will be confirmed as engineering progresses; however, at this time, we are anticipating capture and sequestration of approximately 450,000 metric tons of carbon per year from the first phase, reducing projected CO2 emissions by approximately 33%. Capture and sequestration components will be in place prior to facility start up. Negotiations with potential third-party partners are underway.

Cerilon has been actively involved in the planning of the full CCS solution for the facility. Cerilon conducted a CCS pre-feasibility study with the Energy & Environmental Research Center (EERC) to develop a geologic CO2 storage site. The EERC report analyzed four potential sites for CO2 storage within a 40-mile radius of the facility, considering factors like well density, proximity to existing infrastructure, topography, and more. All four sites were deemed to be appropriate for sequestration, and additional evaluation is underway to select a final site.

As part of the scope of work conducted with the EERC, a permitting and monitoring assessment was completed to support Cerilon's understanding of regulatory requirements for the sequestration component. The EERC permitting and monitoring assessment includes a full analysis of all regulatory and permitting requirements associated with geologic storage of CO2 and identifies the information required to complete the applications required. The EERC has carbon sequestration permitting experience in North Dakota and is expected to support the permitting process for Cerilon's CCS solution.

Thank you,

Amanda Gravseth
She/her/hers

Senior Chemical Engineer
Bismarck, ND office: 701.221.5424
AGravseth@barr.com
www.barr.com




---

**From:** Madche, Tamara J. <tjmadche@nd.gov>
**Sent:** Monday, June 12, 2023 2:55 PM
**To:** Cerilon Agency Communications <cerilon@barr.com>
**Subject:** Trenton Energy Conversion Facility



Hello Amanda,

I received a copy of your June 9, 2023 letter, seeking input for Cerilon GTL ND Inc.'s application for ND PSC Certificate of Site Compatibility for an industrial facility near Trenton ND. I noticed the letter indicated plans to install a carbon capture system, where the captured CO2 stream would be transferred to a third-party for geological sequestration. At this stage of the project is any additional information available on who the geological sequestration party will be, what volumes are being considered, or what the timing will be for the sequestration component?

I'm a geologist for the North Dakota's Oil & Gas Division that works in our CCUS program, so my goal is just to ensure that the third-party taking on the sequestration component of the project is aware of our permitting requirements, as required by North Dakota Century Code Chapter 38-22 and North Dakota Administrative Code Chapter 43-05-01.

Thanks,

Tammy Madche
*Geologist*

701.328.8020 (o) • tjmadche@nd.gov • www.dmr.nd.gov

NORTH Dakota | Mineral Resources
Be Legendary.

**From:** Sandee Kimpel
**To:** Cerilon Agency Communications
**Subject:** Cerilon Letter of Support
**Date:** Tuesday, July 25, 2023 11:30:44 AM
**Attachments:** Cerilon Letter of Support.pdf

---



*Greetings,*

*Please find attached a letter of support from McKenzie County for the Proposed Energy Conversion Facility, located near Trenton, ND, Sections 25 and 36, T-153N, R-103W in Williams County. Please let me know if you have any questions.*

*Thanks and Have a Great Day!*
*Sandee Kimpel*
*Director*
*McKenzie County Planning & Zoning*
*O – 701-444-7176*
*C – 701-580-4183*

July 18, 2023

Barr Engineering Co
234 West Century Avenue
Bismarck, ND 58503

RE: Proposed Energy Conversion Facility
Sections 25 and 36, T-153N, R-103W
Williams County

To Whom it May Concern:

The McKenzie County Board of County Commissioners has been informed of the Cerilon GTL ND. Inc. project for a proposed energy conversion facility located in Williams County. North Dakota sorely needs such facilities to handle the unprecedented amounts of natural gas coming from one of the nation's largest continuous oilfields. McKenzie County feels that this is an excellent project that will bring substantial economic benefits to the northwestern part of the state and the gas-to-liquids project has the full support of the Board. The Cerilon facility also makes a wider range of future projects possible, which will benefit citizens across North Dakota and indeed the entire upper Midwest. We hope that you will take this letter as a measure of strong support for this project.

Sincerely,

Howdy Lawlar, Chair
McKenzie County Board of
County Commissioners

Cc: North Dakota Public Service Commission

## Bria W. Kask

**From:** Beau Thurman
**Sent:** Thursday, June 22, 2023 3:40 PM
**To:** Ken Kjos
**Cc:** Cerilon Agency Communications; Rochelle Harding
**Subject:** RE: Williams County Project

Ken,

Thank you for reaching out on the letter. Cerilon does not intend to physically change or alter the irrigation canal in any way as part of the project. However, we agree it would be beneficial to set up a meeting between Cerilon, you and anyone else at the Buford-Trenton Irrigation District, and Barr Engineering to review the project, it's impacts to the canal, and the District's input on the right-of-way as it pertains to the project. The following times work within Cerilon and Barr Engineering's schedules after the 4th of July holiday. Please let us know which of the options listed work best for you and your team (all times CDT):

- July 6: 12:00 to 1:00 PM
- July 7: 10:30 to 11:30 AM, and after 2:00 PM
- July 10: 12:30 to 3:00
- July 11: 9:00 to 10:30, 12:00 to 2:00, and after 3:30
- July 12: after 3:00 PM
- July 13: No availability
- July 14: after 11:00 AM

We look forward to speaking with you about the project.

Beau Thurman

Senior Chemical Engineer
Duluth, MN office: 218.529.7123
bthurman@barr.com
www.barr.com




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**From:** Ken Kjos <btid@nemont.net>
**Sent:** Thursday, June 22, 2023 11:24 AM
**To:** Cerilon Agency Communications <cerilon@barr.com>
**Subject:** Williams County Project



To Whom it May Concern,

Buford Trenton Irrigation District has a right-of-way for an irrigation canal on the newly acquired land you have in Williams County. This right-of-way was first secured by the U.S. Bureau of Reclamation.

We have no problem with you building of Plants to process gas in Williams County as long as it does not impede us from operating and up keeping our ditch in the right-of-way.

We would like to keep a line of communication open between you and the District to make sure we both understand how the right-of-way works.

Please contact me at 701-770-7256 anytime or email this address with any questions or concerns.

Ken Kjos
btid@nemont.net
Manager
Buford Trenton Irrigation District

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY, INSTALLATIONS
AND ENVIRONMENT

August 14, 2023

Amanda Gravseth
Barr Engineering Co
234 West Century Avenue
Bismarck, ND 58503

Dear Ms. Gravseth,

Recently, the Military Aviation and Installation Assurance Siting Clearinghouse (Clearinghouse) received a request to review Cerilon GTL ND Inc.'s Greenfield Industrial Facility Project in Trenton, ND. As a follow up to our previous e-mail, the project information contained in the request is insufficient to complete the Department of Defense's (DoD) Mission Compatibility Evaluation.

In addition to the provided information, the following information is needed:

- A .kmz file (for mapping the project)
- Facility/structure Heights
- Maximum Pole Heights for excess electricity exported to the electrical grid (if applicable)
- Grid Point of Interconnection Coordinates
- Rated Voltage (in kV) of Line

Please submit all project information for DoD Mission Compatibility Evaluation requests directly to the Clearinghouse (osd.dod-siting-clearinghouse@mail.mil), as we are the dedicated public entry for DoD review requests. If you have any questions, please contact me at robbin.e.beard.civ@mail.mil.

Sincerely,

Robbin Beard
Deputy Director
Military Aviation and Installation
Assurance Siting Clearinghouse

# Appendix C

## Phase I Report

# Phase I Environmental Site Assessment

## *Cerilon GTL ND Inc. Project*
## *Williams County, North Dakota*

Prepared for
Cerilon GTL ND Inc.

December 2022

234 West Century Ave
Bismarck, ND 58503
Phone: 701-255-5460

# Phase I Environmental Site Assessment

## Cerilon GTL ND Inc.
## Williams County, North Dakota
## December 2022

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# Executive Summary

Barr Engineering Co. (Barr) was retained by Cerilon GTL ND Inc. (Cerilon) to perform a Phase I Environmental Site Assessment (ESA) of a 371-acre study area located between 143rd Ave NW and 42nd Street Northwest in Section 36, Township 153 North, Range 103 West, Williams County, North Dakota (Property; Figure 1) in accordance with the requirements of 40 CFR Part 312 (*Standards and Practices for All Appropriate Inquiries*) and the American Society for Testing and Materials International Method E1527-21 (*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*); and ASTM E2247-16 (*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property)* which is appropriate for large tracts of land that do not require detailed site reconnaissance.

This assessment has revealed the following information about the Property described below.

## Property Use

The Property consists of several parcels that are currently owned by Dwight Aune (as Shadow Industries, LLC), and Paulette and Steve Oster. The entire northern section of the Property is used as cropland and the majority of the southern portion is used as pasture. The Oster farmstead is located on the southwestern section of the Property and the Aune farmstead is located on the eastern edge of the Property. The Property is primarily used for agricultural purposes with two farmsteads. An oil and gas production well (Aune 1-36) and associated tank battery is located in the southeast portion of the Aune parcel. The well pad is located on the eastern edge of the Property, just south of the Aune farmstead. A tank farm and active pump jack are located within the well pad. An unused Underground Storage Tank (UST) used for gasoline until 1995 is located at the Oster farmstead that is scheduled for removal in the spring of 2023. An approximately 500 gallon Above ground Storage Tank (AST) is also located on the Oster farmstead. The Aune/Shadow Industries farmstead reportedly also has a former UST that was decommissioned in place during the 1970s. Property layout with existing features is shown on Figure 2.

Historically, the Property has primarily been used for agricultural practices, including a mix of cropland and pasture. Several crude oil, water supply, and salt water (brine) pipelines traverse the property along the eastern and western property boundaries. Saltwater pipelines convey water produced during oil and gas production to a saltwater disposal well, also known as a SWD.

## Physical Setting

The Property is located in rural North Dakota, approximately 14 miles southwest of Williston, ND. Adjoining and surrounding site uses include agricultural, residential, and industrial. The Savage Services Facility crude oil terminal is a major industrial facility located directly adjacent to the Property to the west. The terminal is also associated with a SWD owned by Henry Hill Company. Several oil and gas production wells are located south of the Oster farmstead. Adjoining properties to the south, east, and north are primarily agricultural with some small residential homesteads.

Topography of the Property is generally flat with some gentle slopes adjacent to drainages within the Property. In general, drainage flows to the south toward the Missouri River bottoms. Soils on the Property are primarily post glacial sand and silt deposits. Bedrock in the area consists of the he Sentinel Butte Formation and Bullion Creek Formation shale and siltstone. The Missouri River is approximately 3.5 miles feet to the southeast. Groundwater depth is approximately 10 to 15 feet below ground surface and flows to the south-southeast across the Property, discharging at the Missouri River.

## Environmental Site Assessment Results

Barr identified the following findings, recognized environmental conditions (RECs), business environmental risk (BER), in connection with the Property (ranked in order of apparent degree of environmental concern):

| Finding ID # | Description of Finding | Opinion with Respect to Finding |
|---|---|---|
| 1 | Adjoining property to west bulk petroleum terminal | A large fuel and rail terminal owned by Savage Petroleum and associated Burlington Northern Santa Fe rail loop and yard. Based on presence of large capacity storage tanks very near the property boundary, presumed upgradient position for groundwater and surface drainage, a documented history of releases, and the presence of high-volume petroleum transfer and storage activities, this finding **is a REC**. |
| 2 | Active oil and gas tank battery and Aune-1-36 production well; associated chemical storage | Based on the evidence of leakage and spillage on and around the tanks, potential for contamination to soil, surface water, and groundwater due to corrosion and improper storage of chemicals (methanol) next to battery, and lack of adequate containment berm surrounding the area, as well as length of operations, this finding **is a REC**. |
| 3 | UST and AST, and small quantity hydraulic fluid storage at Oster farmstead | Based on the age of the UST (1970), the potential for contamination to soil and groundwater, lack of adequate containment for AST, and visible evidence of corrosion to the AST, this finding **is a REC**. |
| 4 | Former UST and small quantity petroleum storage at Aune farmstead | UST was closed in place in 1996, but the condition of the tank and piping at closure is unknown therefore this finding **is a REC**, based on the potential for contamination to soil and groundwater. The small quantity petroleum and fluids stored in and near barns could contribute to impacts to soil or groundwater. |
| 5 | Former (plugged) Trenton State #1 production well, and on-site fire and associated ONEOK abandoned gas/liquids gathering line. | Based on the potential for spills, piping, or mud pits, and the potential for release of petroleum and potential for PFAS from firefighting foam due to historical fire at this location, this finding **is a REC**. The presence of remaining steel casing in the shallow subsurface is also a **BER**. |
| 6 | Adjoining site Henry Hill Bearce #1 SWD well pad and tank battery | Based on spill history and potential upgradient groundwater position relative to subject Property, this finding **is a REC**. |

| Finding ID # | Description of Finding | Opinion with Respect to Finding |
|---|---|---|
| 7 | Water supply wells onsite and at adjoining farmsteads and large diameter water well near Aune 1-36 production well | Water wells generally cannot be RECs, unless they are a source of a release, however, the wells may pose a potential **BER** if they are near sources of contamination, represent a risk to off-site receptors, require sealing, and/or if remaining well casing materials require facility design modifications. |
| 8 | High-capacity pipelines for crude oil, gas and salt water cross large areas of Property | This finding represents a potential source of contamination or effects on water supplies, however there is no evidence of a release and therefore these findings are not a REC. The pipelines are considered **a BER** because they require planning in design and management of the proposed facility to avoid conflicts. A portion of the pipelines were being repaired during our site visit to replace insulation around the pipelines. |
| 9 | Septic tanks, miscellaneous farm machinery, laydown yard, and repair barns | While minor amounts of contamination may be present from these areas, these findings are considered de minimis, and are not considered to be RECs. |
| 10 | Concrete in ditch on south end of property | This is likely nuisance dumping and is considered de minimis, therefore this finding is not a REC. |
| 11 | Past agricultural pesticide use | Because there is no evidence of bulk pesticide storage or use inconsistent with labeled practice, the residual presence of pesticides in soil are considered de minimis and therefore, this finding is not a REC. |

Definitions of terms used to describe the findings and conclusions of this report are included in Appendix A.

# 1.0 Introduction and Scope of Work

Barr was retained by Cerilon (User) to complete a Phase I ESA of a property located between 143rd Ave NW and 42nd Street Northwest in Section 36, Township 153 North, Range 103 West, Williams County, North Dakota (Property). The Property is currently owned as separate parcels by Shadow Industries, LLP (operated by Dwight Aune) and Paulette and Steve Oster. The Property is primarily used for agricultural practices with two farmsteads and for crude oil production on the Shadow Industries parcel. The entire northern section of the Property is used as cropland and the majority of the southern portion is used as pasture. The Oster farmstead is located on the southwestern section of the Property and the Aune farmstead is located on the eastern edge of the Property. The Property location is shown on Figure 1 and the Property layout is shown on Figure 2.

This report includes detailed descriptions of the Property setting, utility information, land-use history, regulatory history, and current Property conditions and features, and summarizes the findings, opinions, and conclusions of the ESA. Informational resources are described in Section 5.0 of this report and are assigned unique reference numbers, which are used throughout the report.

Barr has performed this ESA in conformance with American Society for Testing and Materials International (ASTM) E1527-13 and ASTM E1527-21 , *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (Practice) and ASTM E2247-16 (*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property)* which is appropriate for large tracts of land that make detailed site reconnaissance difficult to complete using the E1527-13 standard.

No intentional deviations from the Practice were made in performing this ESA except as described in Section 1.4. In following the Practice, this ESA also complies with the U.S. Environmental Protection Agency (EPA) 40 CFR Part 312, *Standards and Practices for All Appropriate Inquiries (AAI); Final Rule*. Although ASTM E1527-21 is the current standard Practice, only ASTM E1527-13 is currently approved for compliance with AAI. This ESA was performed in general conformance with both the older and new versions of the Practice.

## 1.1 Purpose

The purpose of this ESA is to identify RECs in connection with the Property as defined by the Practice prior to potential acquisition and to satisfy one of the requirements for the User to qualify for a landowner liability protection defense under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

## 1.2 Scope of Services

The ESA involved completing the following five components described in Section 7 of the Practice: records review, site reconnaissance, interviews, reporting, and file reviews. A detailed list of tasks completed during the ESA is presented below and in the following sections of the report.

**Records Review**

- Obtained a regulatory database report and reviewed federal, state, and readily available tribal records databases.
- Reviewed United States Geologic Survey (USGS) topographic maps to determine physical setting information.
- Reviewed discretionary physical setting sources including published geological reports to determine physical setting information.
- Reviewed historical aerial photographs; historical topographic maps; and city directories for the Property and surrounding land.
- Conducted a fire insurance map search but no maps were available for this Property.
- Conducted current property review using the Williams County Geographic Information System (GIS) website and title information provided by User.

**Site Reconnaissance**

- Conducted a visual inspection of building's exterior features on the Property. Documented current conditions with respect to land use; chemical and waste storage, use, and disposal; facility operations and equipment; utilities; and evidence of potential releases of petroleum products or hazardous substances, if observed. Documented evidence of historical uses or conditions, if encountered. Also documented current land-use and occupants of neighboring properties.

**Interviews**

- Conducted interviews with three property owners, Dwight Aune, and Paulette and Steve Oster. Interview details are referenced throughout this report, and individuals interviewed are listed in Section 8.0.

**Evaluation and Report Preparation**

- Prepared this report to document the resources used during completion of the ESA and to describe the findings, opinions, and conclusions of the ESA.

## 1.3 Significant Assumptions

The following significant assumptions were made to complete the ESA:

- The detailed history of ownership and land-use to satisfy the requirements and purpose of the ESA was determined from the activities listed in Section 1.2, Scope of Services.
- Groundwater flow direction was determined based on site geotechnical report, surrounding area investigation results, nearest surface water body, and regional groundwater flow.

- User provided knowledge of potential future use was provided. The proposed future use of the Property will involve the reforming of natural gas to manufacture a fuel containing petroleum and including large bulk storage tanks. This information was material to the determination of RECs at the Property because the current or historical presence of petroleum could be mistakenly associated with future land use.

## 1.4 Deviations / Limitations / Non-scope Items

The following deviations from the Practice and limiting conditions associated with the ESA are listed below. Opinions on the significance of the limitations are included in the report sections where the limitations apply.

- Vegetation was generally dormant, or snow covered due to seasonal conditions; therefore, vegetative stress could not be determined.
- Not all structures were available for visual inspection on the Aune property and not all the materials stored or stacked in the barns that were visible on Oster and Aune farmsteads at the time of our field visits.
- A large portion of the Property was not planted in 2022 due to pipeline right of way work. The area appeared to have been sprayed with pesticides to manage weeds, per typical agricultural practices and confirmed by landowner Ref. 4a.

These limitations did not affect Barr's ability to make determinations regarding the presence of RECs on the Property.

## 1.5 Special Terms and Conditions

Barr conducted the ESA pursuant to an agreement between Cerilon and Barr.

The ESA includes only those items and services expressly and specifically identified in the ESA. Except as otherwise expressly and specifically set forth in the ESA, the scope of the ESA did not involve sampling, analysis, activities or items that are not included in the Practice, including but not limited to, the collection and analysis of any type of sample, completion of any surveys or the offering of any opinions or advice with respect to structural engineering matters, asbestos-containing materials, radon, lead-based paint, lead in drinking water, wetlands, compliance with environmental regulations, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, biological agents, mold, or other conditions that are beyond the scope of the Practice.

Barr has performed its work in a manner consistent with the care and skill ordinarily exercised by members of the environmental profession under similar budget and time constraints. Within this context, Barr assumes responsibility for its own observations, along with its interpretation of the information gathered. No warranty is made or intended.

Because Barr was not retained to verify information, Barr assumes no responsibility for the accuracy of information that it obtained from other sources including, without limitation, regulatory and government

agencies, persons interviewed about the Property, and vendors of public data. Performance of the Practice is intended to reduce, but not eliminate, uncertainty regarding the presence of recognized environmental conditions on the Property. To the extent that Barr does not identify recognized environmental conditions on the Property, Barr's opinions in the report are not representations that the Property is free of such conditions. Under no circumstances can Barr represent or warrant that releases of hazardous substances or petroleum products do not exist on the Property.

## 1.6 User Reliance

The ESA has been prepared for the exclusive use of Cerilon herein referred to as the "User." No others may rely on the ESA without obtaining a formal authorization in the form of a reliance letter from Barr. Barr will provide reliance letters for additional parties only if authorized by the User.

If a future user is identified within the shelf life of this ESA (generally 180 days from final publication date), that party may, subject to the reliance restrictions stated above and the user responsibilities in Section 3.0, use the ESA to help satisfy one of the requirements for such a user to qualify for a landowner liability protection defense to liability under CERCLA.

# 2.0 Site Description and Setting

## 2.1 General Property Information

The Property is located in Williams County, ND approximately 14 miles southwest of Williston, ND. The 371-acre study area is located between 143rd Ave NW and 42nd Street Northwest in Section 36, Township 153 North, Range 103 West. The Property location is shown on Figure 1.

## 2.2 Property Use and Features

The Property consists of several parcels owned separately by Shadow Industries, LLP (operated by Dwight Aune) and Paulette and Steve Oster. The Property is primarily used for agricultural practices with two farmsteads and an oil production well pad. The entire northern section of the Property is used as cropland and the majority of the southern portion is used as pasture. The Oster farmstead is located on the southwestern section of the Property and the Aune farmstead is located on the eastern edge of the Property. The well pad is located on the southeastern edge of the Property, just south of the Aune farmstead and east of the Oster farmstead as shown on Figure 2.

A tank battery, heater treater, flare, and active pump jack are located within the well pad. The farmsteads both have unused USTs, and the Oster farmstead has an AST.

## 2.3 Surrounding Area and Adjoining Property Uses

The Property is in rural Williams County, ND, which contains primarily agricultural land with mixed industrial and residential uses. The Savage Services Facility adjoins the Property to the west, Eight Mile Creek runs the northeastern boundary of the Property, and agricultural land borders the remainder of the Property. The Missouri River is located approximately 3.5 miles southeast of the Property. Adjoining properties to the south, east, and west are primarily agricultural, industrial, and residential.

The current use of adjoining properties includes the following:

- **North –** Agricultural land, BNSF rail line, Eight Mile Creek, farmsteads.
- **South –** Agricultural land, farmsteads.
- **East –** Agricultural land, farmsteads.
- **West –** Savage Services Bulk Terminal Facility and associated rail loop, BNSF railway lines, and Henry Hill Company Bearce #1 SWD are located generally west and northwest of the Property as well as open agricultural land.

## 2.4 Physical Setting

**Surface elevation:** 1,892 feet above mean sea level (MSL) (Ref. 3a).

**Topographic conditions of Property:** Generally flat with gently slopes around drainage on the Property, drainages are gently sloping to the south-southeast (Ref. 5a).

**Stratigraphy:** Soils on the Property are primarily glaciofluvial sand and silt deposits (Ref. 2c) overlying the Paleocene-aged Sentinel Butte Formation. These bedrock deposits generally consist of greyish to yellowish brown siltstone, claystone, sandstone with lesser amounts of and lignite and freshwater limestone. The depositional environment is interpreted as generally terrestrial fluvial with backwater lakes and swamps generally up to 600 feet thick (Ref. 2b, 2d).

**Nearest surface water body:** Eight Mile Creek crosses on the northern and eastern edge of the Property.

**Anticipated groundwater depth/flow direction:** Groundwater flows to the south-southeast across the Property, likely discharging locally to Eight Mile Creek and the southern drainage ditch based on site drilling data (Ref. 2c). Regionally groundwater flow is toward the Missouri River. Depth to groundwater is between 5 and 40 feet below ground surface (bgs) depending on surface topography and proximity to surface water features (Ref. 2a, 2c, and 5a).

# 3.0 User-Provided Information

As detailed in Section 6 of the Practice, the User has responsibilities associated with identifying possible RECs in connection with the Property. Barr provided a User Questionnaire to facilitate gathering information required by the Practice, and the User provided the following information (Appendix B):

- The User stated that the purpose of this ESA is to satisfy one of the requirements for the User to qualify for a landowner liability protection defense under CERCLA.
- No environmental liens or activity and use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls were identified by the User for the Property.
- The User has no actual knowledge of any environmental liens or AULs encumbering the Property or in connection with the Property.
- The User has no specialized knowledge or experience that would identify conditions indicative of releases or threatened releases to the Property.
- The User stated that the purchase price of the Property reflects the fair market value of an uncontaminated property.
- The User is not aware of any commonly known or reasonably ascertainable information about the Property that would help identify conditions indicative of releases or threatened releases.
- Based on the User's knowledge and experience with the Property, the User is not aware of obvious indicators of the presence or likely presence of releases or threatened releases at the Property.
- No pending, threatened, or past litigation, administrative proceedings, or government notices relevant to hazardous substances or petroleum products were identified by the User.
- The User provided a well plugging letter for Trenton State #1, a geotechnical report, a survey showing current and past site features, and a map showing wells, title abstract, and other features from property owners.

# 4.0 Environmental Records Review

This section summarizes the results of regulatory database and file and records review for the Property, adjoining properties, and surrounding properties. The regulatory database report is provided in Appendix C. Only information generated through searches of standard environmental record sources/databases within the approximate minimum search distances required by ASTM 1527-13 were reviewed. Tribal sites and orphan sites, if identified, are also discussed.

## 4.1 Property and Adjoining Property Regulatory Status

The following table provides a summary of database listings identified on the Property and adjoining properties.

**Table 4-1 Property and Adjoining Property Regulatory Status**

| Regulatory Listing | Name / Address | Listing Status | Potential or Documented Release to Environment | Regulatory File Review Completed? |
|---|---|---|---|---|
| **Property Listings** | | | | |
| TIER 2, AST | AUNE 1-36 (NDIC 9738), ID number 2116 | -- | No historical listings indicative of a release to the environment. | No |
| TIER 2, AST/NDIC | Savage Station, ID number 7577 (associated with Hiland Crude release) | -- | A 500 Bbl. release of crude was reported to NDIC by Hiland Crude at a location corresponding to the same location as Savage Station on 11/13/2013. | Yes |
| NDIC | Trenton State #1 | | No reported spills from 1988 to 1992. | Yes |
| NDIC | Henry Hill Co, Bearce #1 SWD | | 10 Bbl. HHA chemical spill on 11/1/2020 and 1 Bbl. oil spill on 2/4 2020; 20-gal brine in 2021; appx 4 Bbl. brine in 2022 (1 Bbl. not contained); and 2 Bbl. of crude oil in 2022. | Yes |

Regulatory Database Definitions:
AST – Aboveground Storage Tank

## 4.2 Surrounding Area Regulatory Status

No additional database listings were identified in the results of regulatory database and file and records review for the area surrounding the Property.

## 4.3 Tribal Sites

As part of the Environmental Database Report (EDR), locations of Native American reservations equal to or greater than 640 acres in size within the search area are reported. No reservations meeting this size criterion were identified within one mile of the Property (Ref. 3a).

## 4.4 Orphan Site Summary

No unmapped (orphan) sites were identified in the regulatory report for the Property.

# 5.0 Historical Use Information

Historical sources were reviewed to develop a history of the previous uses of the Property and surrounding area and to help identify the likelihood of past uses having led to RECs in connection with the Property. The obvious uses of the Property were identified from the present, back to the Property's first documented developed use. The term "developed use" includes agricultural uses and placement of fill. In accordance with Section 8.3.3 of ASTM E1527-13, historical use information for surrounding area properties was identified only to the extent that this information was revealed in the course of researching the Property.

## 5.1 Property and Surrounding Area Land Use History Summary

According to the historical sources reviewed, the entirety of the Property was used as agricultural land in 1949; the majority being utilized as cropland with a small central portion used as pasture. The Burlington Northern Santa Fe (BNSF) railroad line runs northeast to southwest adjacent to the north end of the Property. By 1958, two farmsteads were developed within the Property, one on the southern boundary and on the eastern boundary, with the reminder of the Property still be used as farmland. According to Steve Oster much of the land was granted by the federal government to returning veterans of war as part of the Buford-Trenton Irrigation Project. No additional changes in land use are observed through 1976 (Ref. 1a). Both Mr. Oster and Mr. Aune noted that the subject properties had been in their families for at least 2 generations which is consistent with findings from the title search by Diamond Title (Ref. 2e).

By 1983, a well pad is developed on the southeastern boundary of the Property, no other changes to land use are observed. An additional well pad is developed in 1988 and is visible in the 1995 aerial photograph in the south-central portion of the Property (Refs. 1a, 5b). A fire was reported on the heater treater at this well pad in February of 1990 and was extinguished by the Williston Rural Fire Department. By April of 1990, this well was abandoned and a well abandonment report was submitted to the NDIC (Ref. 5b). Plugging was initiated in 1992 and reclamation of this well pad was completed by 1996 as the site is no longer visible by 2006, is the site was returned to original agricultural land use. No additional changes in land use are observed through 2010 (Refs. 1a, 1b, 1c).

In 2014, the Savage Services Terminal Facility and adjoining rail loop have been developed on the land directly west of the Property. The Savage Services Terminal Facility includes multiple storage tanks along with several additional outbuildings within their property a containment berm is located around the storage tanks (Refs. 1a, 1b, 1c, 5a). the Savage Services Terminal Facility is associated with Yellowstone Ethanol and easements adjacent to the terminal are associated with Hiland Crude (Ref. 2e). Evidence of use of irrigation pivots are visible within central portion of cropland in 2014 and 2017. A berm located along the southern edge of the Savage Facility, at the Property boundary, is identified as being constructed in 2014 and 2017. No additional changes in land use are observed through 2017 (Ref. 1a).

In a 2021 Google Earth image, the Bearce #1 SWD is present to the west of the Property. In 2022, a portion of cropland had no growth other than the presence of weeds. Owner stated that section of the field was not planted due to pipeline work being completed in that location by the Savage Facility. The

owner stated that area was sprayed with an herbicide during the growing season as is customary to prevent the spread of invasive weeds (Refs. 4a, 5a).

The following sections provide details from the historical sources reviewed for the Property and surrounding properties.

### 5.1.1 Aerial Photographs

Historical aerial photographs showing the Property and surrounding area are located in Appendix D and a summary is provided in Table 5-1 below. Aerial photographs were provided by EDR for the following 10 years: 1949, 1958, 1967, 1976, 1983, 1995, 2006, 2010, 2014, 2017 (Ref. 1a).

**Table 5-1 Historical Aerial Photo Summary**

| Photo Year(s) | Property | Surrounding Area |
|---|---|---|
| 1949 | Entire Property is used for agricultural practices, no buildings or other signs of ground disturbance present. | The surrounding area is predominantly used for agricultural practices. |
| 1950 | Majority of the Property is used for agricultural practices, one farmstead is located on southern boundary of the Property, and one farmstead is located on eastern boundary of the Property. | The surrounding area is predominantly used for agricultural practices a few small farmsteads are now present. |
| 1976 | No significant changes other than expansion of southern farmstead to include additional barns/sheds. | No significant changes other than additional small farmsteads developed. |
| 1983 | Well pad is developed on the southeast edge of the Property. | Development of well pad south of the Property. |
| 1995, 2006, 2010 | No significant changes from 1983. | No significant changes from 1983. |
| 2014 | No significant changes from 2010. | Development of Savage Services Property, including a tank farm and rail loop, located directly adjacent to the Property to the west. |
| 2017 | No significant changes from 2014. | No significant changes from 2014. |
| 2021 | No significant changes since 2014 | Bearce #1 SWD present on adjoining property to west. |

### 5.1.2 Fire Insurance Maps

No Fire Insurance Maps (FIMs) were available for this Property.

### 5.1.3 Topographic Maps

Historical topographic maps showing the Property and surrounding area are located in Appendix D, and a summary is provided in Table 5-3 below. Historical topographic maps were provided by EDR for the following 6 years: 1968, 1969, 1976, 2014, 2017, 2020 (Ref. 1b).

**Table 5-2 Topographic Map Summary**

| Topographic Map Year(s) | Property | Surrounding Area |
|---|---|---|
| 1968, 1969, 1976, 2014 | No features or structures are shown on the Property other than waterbodies. | No features or structures other than roads, railroads, and waterbodies are shown in the surrounding area. |
| 2017, 2020 | No features or structures are shown on the Property other than waterbodies and roads. | No features or structures other than roads, railroads, and waterbodies are shown in the surrounding area. Additional roads and a rail loop are present. |

### 5.1.4 Local Street Directories

Local street directories for the Property and surrounding streets are located in Appendix D. A summary of the Property uses and notable uses in the surrounding area are provided in Table 5-4 and Table 5-5 below. Local street directories were provided by EDR for the following 12 years: 1964, 1970, 1975, 1979, 1984, 1989, 1994, 2000, 2005, 2010, 2014, 2017 (Ref. 1c).

**Table 5-3 Property Street Directories Summary**

| Year(s) | Property | |
|---|---|---|
| | Address | Occupant / Use |
| 2017 | 14781 42nd St NW | Vernon Oster |
| | 4237 147th Ave NW | Ryan Aune |
| 2014 | 14781 42nd St NW | Vernon Oster |
| | 4247 147th Ave NW | Dwight Aune |
| 2010 | 14781 42nd St NW | Vernon Oster, Vernon Oster Farms |
| | 4237 147th Ave NW | Ryan Aune |
| 2005 | 14781 42nd St NW | Vernon Oster |
| | 4237 147th Ave NW | Ryan Aune, Shadow Industries |
| 2000 | 4237 147th Ave NW | Dwight Aune |

**Table 5-4 Notable Adjoining Sites Street Directories Summary**

| Year(s) | Notable Adjoining Sites | |
|---|---|---|
| | Address | Occupant / Use |
| 2017 | 42nd St NW | Merna Patch (14772) |
| | | Savage (14891) |
| | 147th Ave NW | Melissa Lee (4236) |
| | | Jill Bearce (4253) |
| | | Gerald Robertus (4307) |
| | | Painted Pony Casino (4418) |
| | | Caterpillar Clubhouse (4428) |
| 2014 | 42nd St NW | Mary Kjorstad (12906) |
| | | Susan Wright (14695) |
| | | Merna Patch (14772) |
| | | Stephen Pulver, Savage Services (14891) |
| | 147th Ave NW | Paul Johnson and Keith Johnsrud (4236) |
| | | Daniel Bearce (4253) |
| | | Marty Bearce (4307) |
| | | Roger Bearce (4314) |
| | | Kevin Hurley (4377) |
| | | Painted Pony Casino (4418) |
| | | Caterpillar Clubhouse, Jennifer Schroeder (4428) |
| 2010 | 42nd St NW | Diane Kjorstad (12906) |
| | | Dennis Forthun (14211) |
| | | CE C Cope (14382) |
| | | Jerry Osterlund (14637) |
| | | Glenn Wright (14695) |
| | 147th Ave NW | Keith Johnsrud (4236) |
| | | Daniel Bearce (4253) |
| | | Elwyn Bearce (4307) |
| | | Roger Bearce (4314) |
| | | Kevin Hurley (4377) |
| | | Jennifer Schroeder, Justin Slater (4428) |
| 2005 | 42nd St NW | Selmer Kjorstad (12906) |

| Year(s) | Notable Adjoining Sites | |
|---|---|---|
| | Address | Occupant / Use |
| | | Dennis Forthun (14211) |
| | | CE E Cope (14382) |
| | | Chad Norpel (14501) |
| | | Susan Wright (14695) |
| | 147th Ave NW | Keith Johnsrud (4236) |
| | | Daniel Bearce (4253) |
| | | Elwyn Bearce (4307) |
| | | Roger Bearce (4314) |
| | | Kevin Hurley (4377) |
| | | Jomae Grile, Dustin Hove, Melvin Olson, Barbra Partridge (4428) |
| 2000 | 42nd St NW | Jerry Osterlund (14637) |
| | 147th Ave NW | Dan Bearce (4253) |
| | | Elwyn Bearce (4307) |

### 5.1.5 Interviews

Historical use information obtained through interviews of Property representatives is included below.

**Dwight Aune, Property Owner (Ref. 4a)** – Dwight Aune was interviewed about the Property via a phone call on October 17, 2022, as well as follow up call on November 21, 2022, to clarify barn contents, well and septic locations. Mr. Aune said that the Property is currently and historically used as an agricultural farmstead. Property was owned by his father and grandfather before him and is currently split ownership between his heirs. No known liens, clean-ups, or spills have occurred on the Property to his knowledge. Noted use of pesticides on field property adjacent Savage facility but has no knowledge of spills occurring there that might have migrated onto the Property. Agricultural chemicals have been used consistent with their labeled directions. Mr. Aune noted a UST was located on the farmstead but was closed in 1995 due to its lack of use. Mr. Aune provided maps to Cerilon depicting locations of water wells, a commercial well, and the old UST location. In a follow up discussion on November 21, Mr. Aune provided more specific details on the location of the UST, the contents of the barns (mostly dry storage), the location of the septic tank (under slab by shed near house). The septic tank has a legal (nonconforming prior use) overflow pipe that daylights in bank of Eight Mile Creek located west of the farmstead. The white PVC pipes to the north of the house were for a water supply line that ran to a camper parked north of the farmstead. Additional details from the interview are included throughout the report. Mr. Aune mentioned that he had installed a high-capacity water well in the southeast portion of the Property for use as a water depot and his plans were to sell it to the local rural water supplier.

**Paulette and Steve Oster, Property Owners (Ref. 4b) –** Paulette and Steve Oster were interviewed via a phone call on October 17, 2022, and at the farmstead on November 22, 2022, to view barns and clarify location of well and septic system The majority of their land has been used as an agricultural farmstead historically and that is currently the use of all the land. A portion of the land was previously owned by the State of ND and was bought in an auction, that land had been used as an oil pad when owned by the State in 1991. Property was previously owned by Steve Oster's father and grandfather. No known liens, clean-ups, or spills have occurred on the Property. Noted a saltwater injection well located south of the Property but does not know of any spills occurring there. One UST is currently located on the Property, there is no indication of leaking. It was installed in the 1970's and has not been used for 10-12 years. A 500-gallon portable AST is located on the Property adjacent to the UST that is currently being used. Pipeline easements are located on their property. Additional details from the interview are included throughout the report. Mr. Oster reported in a follow up visit on November 22, that the UST was planned to be removed in the spring of 2023 and that the equipment and contents of the barns would likely go to auction in summer or fall of 2023.

### 5.1.6 Data Gaps and Data Failure

Data failures in the historical information which resulted in data gaps were evaluated to determine if they are significant enough to affect the environmental professional's ability to identify RECs for the Property, as summarized in the paragraphs below. See Appendix A for definitions of data gap and data failure.

The reasonably ascertainable standard historical sources likely to be useful were searched, however the following data gaps were encountered:

- Lack of FIRMs and Sanborn Maps.
- Historical aerial photos from 1949-2017; some aerial photographs lacked sufficient resolution to discern details and there was up to 9-year gap between historical photographs.
- No spill records for the historical Trenton Well pad through the NDIC spill site.

The data gaps were assessed and determined to not be significant due to the presence of other resources such as title records, interviews, and site reconnaissance information.

# 6.0 Site Reconnaissance

A site visit and interview(s) with key site personnel identified below were conducted to obtain information indicating the likelihood of identifying recognized environmental conditions in connection with the Property. Existing Property features are shown in the Property Layout on Figure 2. Photographs obtained during the Property inspection are in Appendix E.

**Date of inspection**: September 27, 2022; supplemental field visit on November 21 and 22, 2022.

**Name of individual conducting site visit**: Anna Nieuwsma (September 27, 2022) and Jim Aiken (November 21 and 22, 2022), Barr.

**Weather information**: 60-70 degrees F, sunny, and windy in September; 30 degrees F, sunny, and calm in November. About 2 to 3 inches of snow cover present during the November 2022 visit.

## 6.1 Interior Observations

During the initial site visit, interior structures were found to be locked and were unable to be accessed. Subsequent inspection of the buildings indicated miscellaneous scrap metal, equipment, and machinery. Some small quantity drums containing lubricants or hydraulic fluid were noted in both the Aune and Oster farmsteads. There were seven small outbuildings located on the Oster Farmstead and one larger shop located adjacent to their UST and AST. There were four small outbuildings located on the Aune farmstead along with one large barn and one large shop. Based on the interview with the corresponding property owners, there were no spills or concerns associated with any buildings located on their properties.

## 6.2 Exterior Observations

Significant exterior features of the Property are labeled on Figure 2 and discussed below.

**Methodology used to observe the Property**: On foot.

**Access to the Property (vehicular access and restrictions to public access)**: Vehicle access on public roadways and section line road on western boundary of the Property.

**Periphery of the Property (roads, streets, and parking facilities, etc.)**: 147th Ave NW and 42nd St NW. Section line roadway branches off of 42nd St NW, at the south edge of the Property and was used to travel north.

**Table 6-1 Property Exterior Observations**

| Property Exterior | |
|---|---|
| Ground surface cover | Ground surface in good condition for majority of Property. No vegetative growth in section of agricultural field. No signs of contamination. |

| Property Exterior | |
|---|---|
| Visible evidence of vegetative stress | None observed. |
| Stained soil or pavement | No staining observed except at on and at base of tanks in Aune 1-36 tank battery. |
| Visible evidence of filling, excavation, solid waste disposal, or burned areas | Several small piles of tires and old farm parts stored in piles on Oster farmstead. Large concrete debris noted on the southwest corner of the Aune property in the drainage ditch north of 142nd Street. |
| Wastewater, stormwater, and other liquid discharge points into a pipe, drain, pond, ditch, underground injection system, or stream on or adjoining the Property | None observed. A yellow 4-inch PVC riser pipe located next to pipeline easement in southwest Steve Oster said he believes that it belongs to the ND DEQ. The white PVC standpipes north of the Aune house were described by Dwight Aune as drainpipes for a water line that runs from the house to the north woods to supply a camper parked that his son used to live in. |
| Pits, ponds, lagoons | None observed. Gas flare has a small depression, but no containment. |
| Odors | Strong sulfide ($H_2S$) odor noted downwind of flare at Aune 1-36. |
| Potable/process water supply | Rural water, based on interviews. Both sites have private water supply wells located northeast of the house at Oster and southwest of the house at Aune; a high-capacity capable well is present east of the well pad at Aune and was intended as a commercial supply well. |
| Non-potable/process wells | One well located between well pad and 147th Ave NW, in an open field. A high-capacity irrigation well was noted on an adjoining property east of the Aune farmstead. |
| Sanitary service | Both properties have septic systems including a septic tank. Oster tank is located north of the house and Aune's was located west. Aune has a drain line running to the bank of Eight Mile Creek. Mr. Aune noted that this was a pre-existing nonconforming (grandfathered) use. |
| Stormwater drains, storm sewers, ponds, or drainage ditches | Culverts located along roadway for stormwater drainage and runoff. |
| Pipelines across or into Property | Grayson Mills crude and saltwater pipeline enters from southeast onto Aune property and crosses to northwest toward savage terminal. Kinder Morgan pipeline enters from the south and joins into easement on Aune property also running toward the Terminal. A ONEOK abandoned gas line is noted on the plat survey running toward the decommissioned Trento State #1 well. Irrigation water pipelines were noted at the parcel boundaries. |
| Rail lines | None observed on Property. The Savage Terminal is served by a Burlington Northern rail loop. |

| Property Exterior | |
|---|---|
| Transformers/PCB containing equipment | Two pole mounted transformers located on south side of property. Two pole mounted transformers were also noted on or adjacent to Aune property. Condition of the transformers was good. No evidence that the transformers contain PCBs. |
| Chemical or Waste Storage Areas/Drums | Several empty drums of irrigation hydraulic fluid observed on Oster farmstead. Two drums of lubricant observed southwest of Aune garage. Several partially full containers labeled 'methanol' were observed near the tank battery as well as a damaged fiberglass tank of approximately 2,000-gallon capacity. |
| USTs/ASTs | One, abandoned in place, UST located north of shed on Oster farmstead. One AST located north of large pole barn adjacent to abandoned UST on Oster Farmstead.<br>An UST and former pump island located near light pole in driveway of the Aune farmstead. The pump for the tank was in the middle area which was a turn-around loop in the driveway.<br>Tank battery with three tanks on well pad, located on eastern edge of Aune Property. Two tanks in poor condition with corrosion and obvious evidence of spills on and at base of tanks. Strong hydrogen sulfide odor from gas flare at battery near heater treater.<br>One propane tank located on Aune property, located northwest of residential home. |
| Observations or information indicating past uses of the Property that are likely to have involved the use, treatment, storage, disposal or generation of hazardous substances or petroleum products | Well pad, including a tank battery and an active pump jack located on eastern edge of Property uphill and approximately 30-50 feet east of a drainage ditch that flows to Eight Mile Creek. Stains observed on and at base of tanks. Totes of methanol and damaged fiberglass tank noted near tank battery. The methanol containers were not stored on containment, and several appeared to be structurally compromised. The damaged tank did not have contents visible but had a large opening that suggests that any contents would have discharged to ground surface I the breach occurred on site. A gas flare was operating and had a strong sulfide odor. |
| Evidence of Use, Production, or Disposal of Controlled Substances (as defined by 21 CFR Part 802) | None observed. |

# 7.0 Findings, Opinions, and Conclusions

This section summarizes the results of the ESA and provides an opinion as to whether or not RECs have been identified for the Property. A REC is defined by the Practice as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions." Additional discussion and definitions of finding, REC, controlled REC (CREC), historical REC (HREC), de minimis condition, and BER are included in Appendix A.

## 7.1 Findings and Opinions

Barr has identified the following findings and developed the following opinions regarding these findings, as summarized in the following table.

**Table 7-1 Findings and Opinions**

| Finding ID # | Description of Finding | Opinion with Respect to Finding |
|---|---|---|
| 1 | Adjoining site bulk petroleum terminal with spill history | A large fuel terminal owned by Savage Petroleum is located to the west of the study area. Based on presence of storage tanks on this property and the activities being performed this finding **is a REC**. |
| 2 | Oil and Gas tank battery and Aune 1-36 active production well | Based on the potential for contamination to soil and groundwater due to the poor condition of the tanks, lack of containment surrounding tank and chemicals this finding **is a REC**. |
| 3 | UST and AST, and hydraulic fluid storage at Oster farmstead | Based on the potential for contamination to soil and groundwater in the adjacent area due to leaking or damaged tanks and visible tanks being in poor condition, this finding **is a REC**. |
| 4 | Former UST and potential petroleum storage at Aune farmstead | Based on the potential for contamination to soil and groundwater in the adjacent area due to historical leaking or damaged tanks, this finding **is a REC**. |
| 5 | Abandoned oil well pad and on-site fire (Trenton State #1) | Based on the potential of the well casing that was abandoned in place to impact construction of facility and potential for PFAS due to historical fire at this location, this finding **is a BER**. |
| 6 | Adjoining site Bearce #1 SWD facility | A saltwater well facility with history of releases of crude oil and brine. Based on history of releases and position upgradient of Property, this finding **is a REC**. |
| 7 | Water Wells at Farmsteads | **De minimis,** this finding is a not a REC. |
| 8 | Large concrete debris dumped in drainage ditch | **De minimis**, this finding is not a REC. |
| 9 | Past agricultural pesticide use | **De minimis,** this finding is not a REC. |

| Finding ID # | Description of Finding | Opinion with Respect to Finding |
|---|---|---|
| 10 | High-capacity pipelines for crude oil, gas and salt water cross large areas of Property | This finding represents a potential source of contamination or effects on water supplies, however there is no evidence of a release and therefore these findings are not a REC. The pipelines are considered **a BER** because their presence requires attention for planning and management of the proposed facility to avoid conflicts. A portion of the pipelines were being repaired during our site visit to replace insulation around the pipelines, but no odors or staining was observed. |
| 11 | Miscellaneous Farm Machinery, laydown yard, and repair barn | **De minimis,** this finding is not a REC. |

## 7.2 Significant Data Gaps

There were no significant data gaps associated with the ESA of the Property.

## 7.3 Conclusions

Barr performed a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of Section 36, Township 153 North, Range 103 West, Williams County, North Dakota, the Property. Exceptions to, or deletions from, this Practice are described in Section 1.4 of this report. This ESA has revealed no evidence of recognized environmental conditions in connection with the Property except for the following:

- **REC # 1** – Adjoining site Savage Services bulk petroleum terminal which has a documented spill history near the southwestern property boundary in potential upgradient position relative to groundwater flow.
- **REC #2** – Aune 1-36 oil and gas active production well with associated tank battery, methanol chemical storage, lack of containment and obvious evidence of release to ground located near surface water.
- **REC #3** – Former UST and AST and hydraulic fluid storage at Oster farmstead.
- **REC #4** – Former UST and petroleum storage at Aune farmstead.
- **REC #5** – Former Trenton State #1 oil well and abandoned ONEOK liquids pipeline terminus.
- **REC #6** – Adjoining site and Henry Hill Bearce #1 SWD with spill history located near to western property boundary in upgradient position relative to groundwater flow.

# 8.0 References

The following resources are numbered for use as references.

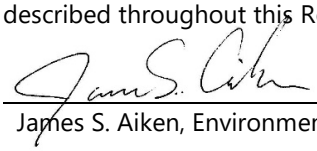
| Ref. # | Resource | Years Covered or Item Date |
|---|---|---|
| **Standard Historical Resources** | | |
| 1a | Aerial Photographs | 1949, 1958, 1967, 1976, 1983, 1995, 2006, 2010, 2014, 2017 |
| 1b | USGS Topographic Maps | 1968, 1969, 1976, 2014, 2017, 2020 |
| 1c | Local Street Directories | 1964, 1970, 1975, 1979, 1984, 1989, 1994, 2000, 2005, 2010, 2014, 2017 |
| **Discretionary and Non-Standard Physical Setting Sources** | | |
| 2a | North Dakota Department of Water Resources – MapService Well Drillers Logs:<br>ND Department of Water Resources MapService | Accessed October 31, 2022 |
| 2b | Published Geologic Report – Geology Maps:<br>Bluemle, John P. 1985. *Geologic and Topographic Bedrock Map of North Dakota.* North Dakota Geological Survey. | 1985 |
| 2c | Preliminary Geotechnical Exploration Report<br>American Engineering Testing, November 14, 2022. | 2022 |
| 2d | Peck, Wesley D., "The stratigraphy and sedimentology of the Sentinel Butte Formation (Paleocene) in south-central Williams County, North Dakota" (1992). *Theses and Dissertations*. 221.<br>https://commons.und.edu/theses/221 | 1992 |
| 2e | Diamond Resources Surface Title Report | 2022 |
| **Standard Environmental Record Sources** | | |
| 3a | EDR Report (Appendix C) | September 8, 2022 |
| **Interviews** | | |
| 4a | Dwight Aune | October 17, 2022 |
| 4b | Paulette and Steve Oster | October 17, 2022 |
| **Supplemental Resources** | | |
| 5a | Site Visit<br>Anna Nieuwsma, Barr, 701-255-5476 | September 27, 2022 |
| 5b | NDIC, Oil and Gas Division. Well File 12352, Well Report Files. | Accessed September 2022 |
| 5c | NDIC, Oil and Gas Division. Well Files for Henry Hill SWD and EOG Hardscrabble. | Accessed December 5, 2022 |

| Ref. # | Resource | Years Covered or Item Date |
|---|---|---|
| 5d | Follow up Site Visit and discussions with property owners. Jim Aiken, Barr, 701-595-4155 | November 22, 2022 |

# 9.0 Signature and Qualifications of Environmental Professional

I declare that, to the best of my professional knowledge and belief, I meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject Property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Barr performed this Environmental Site Assessment in conformance with the ASTM, International (ASTM) Practice E1527-13. Special terms, conditions, limitations, and exceptions that apply to the ESA are described throughout this Report and in the Appendices.

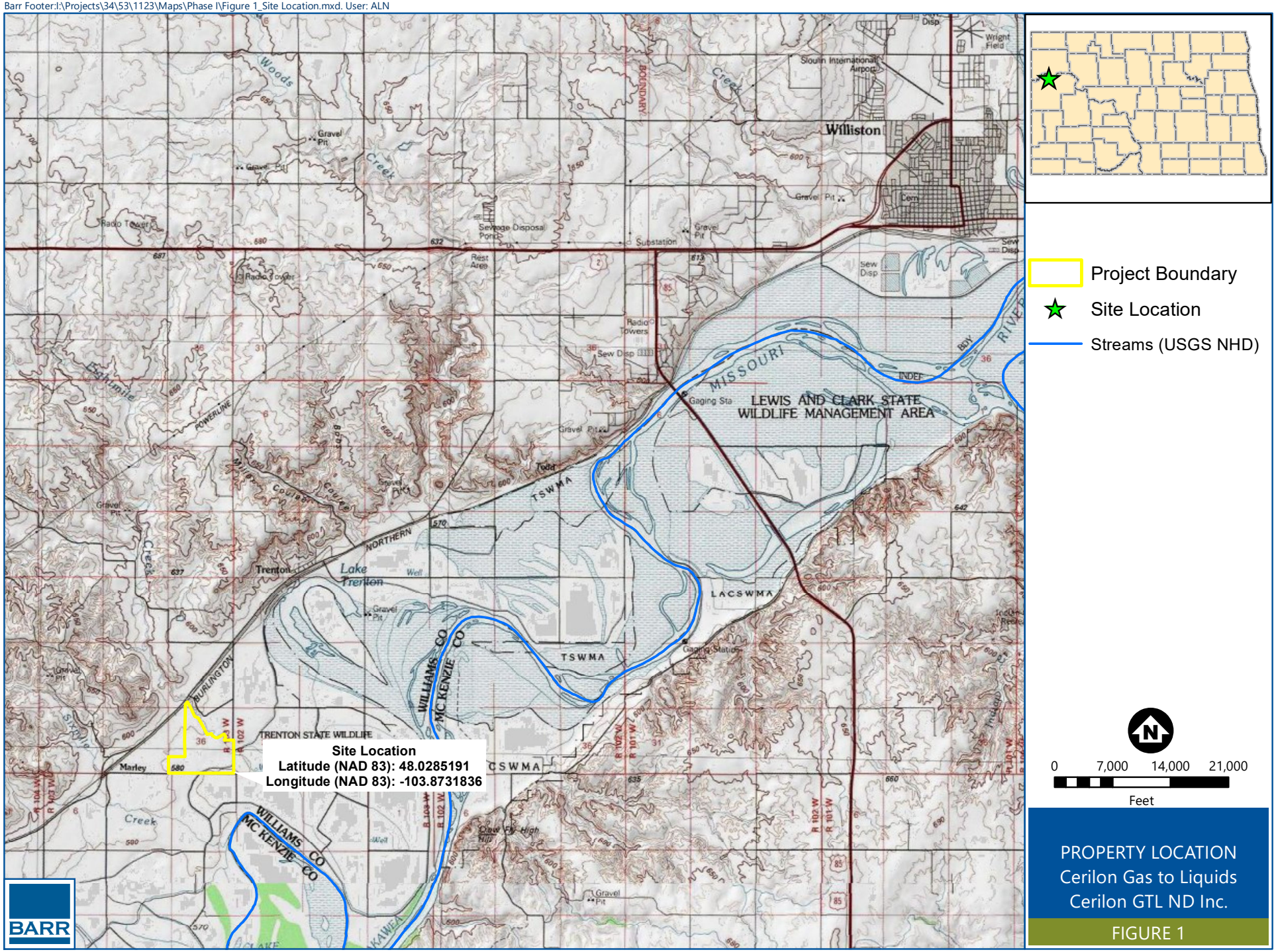


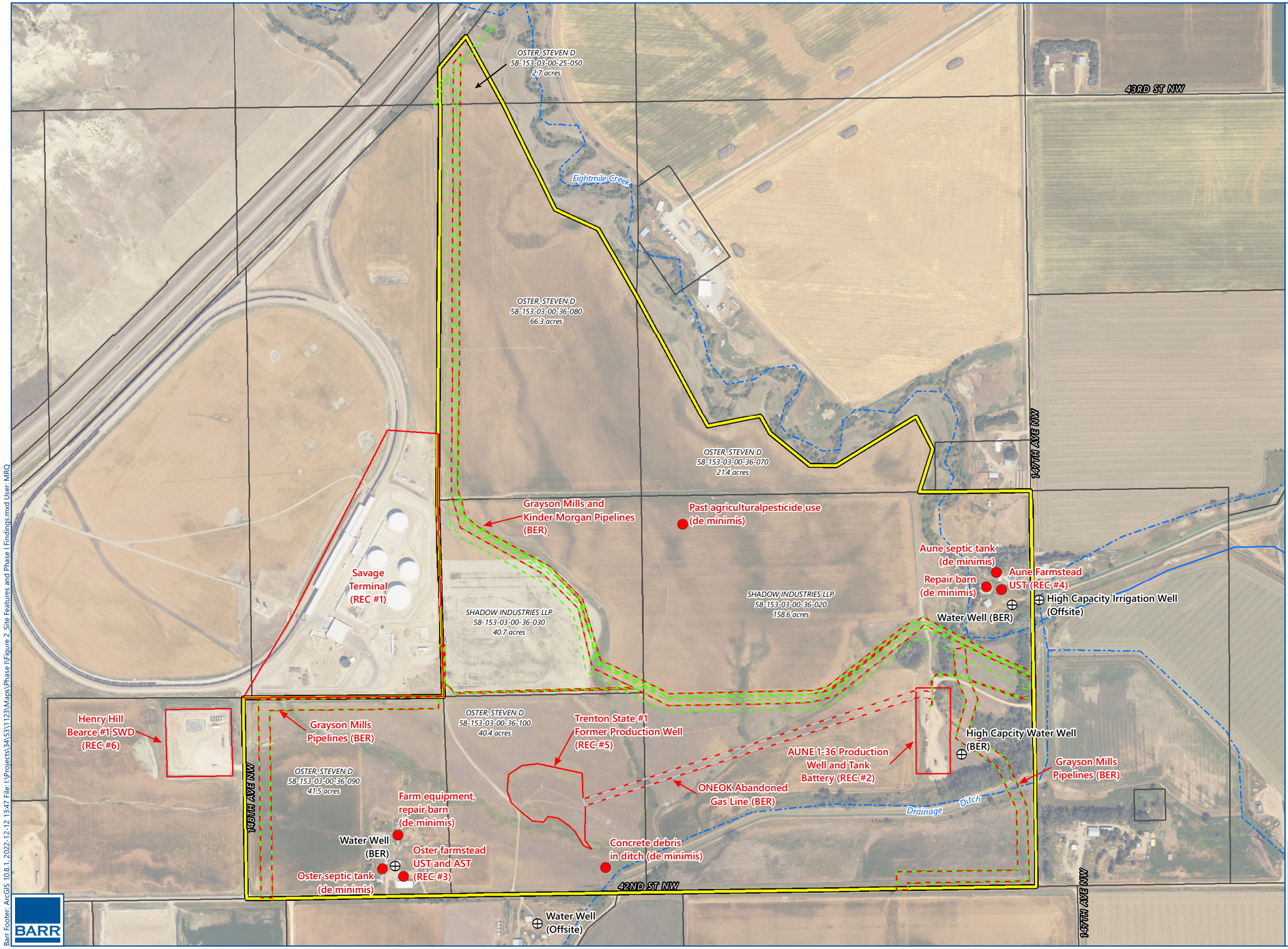
James S. Aiken, Environmental Professional (December 22, 2022)

Qualifications of the Environmental Professional are summarized in Appendix F.

# Figures

Barr Footer:I:\Projects\34\53\1123\Maps\Phase I\Figure 1_Site Location.mxd. User: ALN






Summary of Finding Location or Area

Water Well

Stream, Intermittent

Stream, Perennial

Project Boundary

Abandoned Pipeline Easement

Existing Pipeline Easement

Parcel Boundary

Note:
Finding locations are approximate and for illustration purposes only.

REC - Recognized environmental condition
BER - Business environmental risk
De minimis - De minimis conditions

| REC ID | Description |
|---|---|
| REC #1 | Adjoining site Savage Services bulk petroleum terminal |
| REC #2 | Aune 1-36 oil and gas active production well with associated tank battery and chemical storage. |
| REC #3 | Former UST and AST and hydraulic fluid storage at Oster farmstead. |
| REC #4 | Former UST and petroleum storage at Aune farmstead. |
| REC #5 | Former Trenton State #1 oil and gas well and associated ONEOK gas liquids pipeline. |
| REC #6 | Adjoining site Henry Hill Bearce #1 SWD. |

0 300 600
Feet

*Imagery Source: USDA NAIP 2022*

SITE FEATURES AND PHASE I FINDINGS
Cerilon Gas to Liquids
Cerilon GTL ND Inc.

FIGURE 2

Barr Footer: ArcGIS 10.8.1, 2022-12-12 13:47 File: I:\Projects\34\53\1123\Maps\Phase I\Figure 2_Site Features and Phase I Findings.mxd User: MRQ

BARR

# Appendices

# Appendix A

## Definitions

## Definitions

*Data Gap* – A lack of or inability to obtain information required by the Practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in the activities required by the Practice, including, but not limited to the site reconnaissance and interviews.

*Data Failure* – A failure to achieve the historical research objectives even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

*Finding* – For the purpose of this ESA, a finding is an observation regarding the presence of hazardous substances or petroleum products on the Property which may be considered a recognized environmental condition, a historical recognized environmental condition, or de minimis condition.

*Recognized environmental condition (REC)* – A REC is defined by the Practice as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions." For ESAs performed as part of an EPA Brownfields Assessment and Characterization Grant awarded under CERCLA 42 U.S.C. §9604(k)(2)(B), pollutants and contaminants as defined in CERCLA 42 U.S.C. §9601 101(33) and controlled substances as defined in the Controlled Substances Act (21 U.S.C. §802) are included in the scope of the assessment to the extent directed in the terms and conditions of the specific grant or cooperative agreement.

*Historical recognized environmental condition (HREC)* – An HREC is defined by the Practice as "a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release a historical recognized environmental condition, the environmental professional must determine whether the past release is a recognized environmental condition at the time the Phase I Environmental Site Assessment is conducted (for example, if there has been a change in the regulatory criteria). If the EP considers the past release to be a recognized environmental condition at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as a recognized environmental condition."

*Controlled recognized environmental condition (CREC)* – A CREC is defined by the Practice as "a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). A condition considered by the

environmental professional to be a controlled recognized environmental condition shall be listed in the findings section of the Phase I Environmental Site Assessment report, and as a recognized environmental condition in the conclusions section of the Phase I Environmental Site Assessment report."

*De minimis conditions* – As defined by the Practice, conditions determined to be "de minimis" generally do not present a threat to human health or the environment and generally would not be subject of an enforcement action if brought to the attention of appropriate governmental agencies. De minimis conditions are not considered RECs.

*Business environmental risk (BER)* – A BER is defined by the Practice as "a risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of the [Property]." BERs are not considered RECs.

# Appendix B

## User Questionnaire

**PHASE I ENVIRONMENTAL SITE ASSESSMENT**
**USER QUESTIONNAIRE FORM**

**Property :** Cerilon GTL

**Project No.:** _____ **Date:** 10/17/2022

**User Information:**

| | | | |
|---|---|---|---|
| Name: | Rochelle Harding | Tel. No.: | +1 403 827 5844 |
| Position Title & Co. | Director, Sustainability and Engagement | Connection to Property: | Purchasing Company |

**Introduction**

In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"), the user must provide the following information (if available) to the environmental professional that will conduct the Environmental Site Assessment (ESA). Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete. If your goals include protections afforded by the Act, you should consult with legal counsel as to your responses.

**1.** Why is the Phase I required and who will rely on the Phase I report (please list lending institutions if they wish to rely on the Phase I ESA?

This Phase 1 is being conducted as part of due diligence for purchase of this land and subsequent use for the construction of a gas to liquids facility. Potential financiers will also be interested in this report as part of their due diligence review of an investment in the project.

**2.** Are you aware of any environmental cleanup liens against the Property that are filed or recorded under federal, tribal, state, or local law? If, yes, please describe.

Cerilon is not aware of any such liens.

**3.** Are you aware of any activity and use limitations*, such as engineering controls, land use restrictions or institutional controls that are in place at the Property or have been filed or recorded in a registry under federal, tribal, state or local law? If yes, please describe.

Part of the property is subject to a Flowage and Saturation Easement held by the United States Government for the benefit of the Buford-Trenton Irrigation District Garrison Dam Project. This easement, granted by the current landowner in 2004, prohibits the construction of structures for human habitation and prohibits the construction of any other structure, any excavation or any placement of any landfill except as approved by the representative of the United States responsible for the project. This easement covers the SE ¼ of Section 36 in

*activity and use limitations —legal or physical restrictions or limitations on the use of, or access to, a property: (1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or ground water on the property, or (2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls, are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or ground water on the property.

Township 153 North, Range 103 West of the Fifth Principal Meridian south of the Buford-Trenton Irrigation District Main Canal.

**4.** As the user of this ESA, do you have any knowledge or experience related to the Property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the Property or an adjoining property so that you would have knowledge of the chemicals and processes used by this type of business? If yes, please describe.

Current and past land use on the property is agricultural. Savage Services operates a rail transloading facility adjacent to the property with hydrocarbon storage tankage and a two-mile crude oil pipeline connecting the facility to the Dakota Access Pipeline. There is one abandoned oil well and one operating oil well and battery on the property. There are also operating and abandoned water, oil and gas pipelines on the property.

Cerilon intends to conduct a Phase 2 ESA to confirm that there has not been contamination from the Savage facility, the abandoned or operating well or the fuel tanks on the subject lands.

**5.** Does the purchase price being paid for this Property reasonably reflect the fair market value of an uncontaminated property? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the Property?

Yes.

**6.** Are you aware of information about the Property that would help the environmental professional to identify conditions indicative of releases or threatened releases or hazardous substances or petroleum products? For example, as user:

a. Do you know the past uses of the Property? If yes, please explain.

Current and past use of the property is for agricultural purposes. There has also been oil and gas activity on the property and a number of operating and abandoned oil, gas and water pipelines are present.

b. Do you know of specific chemicals that are present or once were present at the Property? If yes, please explain.

Diesel and other agricultural chemicals.

c. Do you know of spills or other chemical releases that have taken place the Property? If yes, please explain.

Cerilon is not aware of any spills or chemical releases that have taken place on the property.

d. Do you know of any environmental cleanups that have taken place at the Property? If yes, please explain.

Cerilon is not aware of any spills or chemical releases that have taken place on the property.

**7.** As the user of this ESA, based on your knowledge and experience related to the Property, are there any indicators that point to the presence or likely presence of contamination at the Property?

Cerilon is not aware of any indicators that point to the presence or likely presence of contamination on the property.

**8.** Do any of the following documents exist for the Property? If so, please provide a copy to Barr either prior to, or at the time of, the site reconnaissance.

| *Document type* | *Exists – yes or no* | *Comments* |
|---|---|---|
| Environmental site assessment reports | No | |
| Environmental compliance audit reports | No | |
| Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits) | No | |
| Registrations for underground and above-ground storage tanks | Unknown | |
| Registrations for underground injection systems | No | |
| Material safety data sheets for chemicals used onsite | Yes | MSDS for Diesel |
| Community right-to-know plan | No | |
| Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc. | No | |
| Reports regarding hydrogeologic conditions on the Property or surrounding area | Yes | Pump test on existing commercial well; geotechnical investigation with water level measurements in ten bore holes. |
| Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the Property or relating to environmental liens encumbering the Property | Yes | Letter from the ND Department of Mineral Resources regarding previous venting of casing gas on the Aune 1-36 well. |
| Hazardous waste generator notices or reports | No | |
| Geotechnical studies for building foundations, etc. | Yes | Preliminary geotechnical study has been provided to Barr Engineering |
| Risk assessments | No | |
| Title search | Yes | |
| Boundary survey of the Property | Yes | Surveys have been provided to Barr Engineering |

**9.** Do you know of:

i. Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the Property? If yes, please explain.

Cerilon is not aware of any litigation.

ii. Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the Property? If yes, please explain.

Cerilon is not aware of any administrative proceedings.

iii. Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products associated with the Property? If yes, please explain.

Cerilon is not aware of any notices of violation.

# Appendix C

## Regulatory Database Report

**Cerilon Site**
4237 147th Ave. NW
Williston, ND  58801

Inquiry Number: 07111665.2r
September 08, 2022

# The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# TABLE OF CONTENTS



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

## TARGET PROPERTY INFORMATION

### ADDRESS

4237 147TH AVE. NW
WILLISTON, ND 58801

### COORDINATES

| | |
|---|---|
| Latitude (North): | 48.0285880 - 48ˆ 1' 42.91'' |
| Longitude (West): | 103.8734480 - 103ˆ 52' 24.41'' |
| Universal Tranverse Mercator: | Zone 13 |
| UTM X (Meters): | 583991.4 |
| UTM Y (Meters): | 5319872.5 |
| Elevation: | 1892 ft. above sea level |

## USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

| | |
|---|---|
| Target Property Map: | 15280950 TRENTON, ND |
| Version Date: | 2020 |
| Northwest Map: | 15280956 TRENTON SW, ND |
| Version Date: | 2020 |

## AERIAL PHOTOGRAPHY IN THIS REPORT

| | |
|---|---|
| Portions of Photo from: | 20150914 |
| Source: | USDA |

## MAPPED SITES SUMMARY

Target Property Address:
4237 147TH AVE. NW
WILLISTON, ND 58801

Click on Map ID to see full detail.

| MAP ID | SITE NAME | ADDRESS | DATABASE ACRONYMS | RELATIVE ELEVATION | DIST (ft. & mi.) DIRECTION |
|---|---|---|---|---|---|
| A1 | AUNE 1-36 (NDIC 9738 | WILLIAMS | TIER 2 | Lower | 1 ft. |
| A2 | AUNE 1-36 (NDIC 9738 | SEXSE SECTION 36 T15 | TIER 2 | Lower | 1 ft. |
| 3 | SAVAGE STATION | SEC 36 T153N R103W | TIER 2 | Lower | 1 ft. |

# EXECUTIVE SUMMARY

## TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

## DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

## STANDARD ENVIRONMENTAL RECORDS

### *Lists of Federal NPL (Superfund) sites*

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

### *Lists of Federal Delisted NPL sites*

Delisted NPL ---------- National Priority List Deletions

### *Lists of Federal sites subject to CERCLA removals and CERCLA orders*

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

### *Lists of Federal CERCLA sites with NFRAP*

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

### *Lists of Federal RCRA facilities undergoing Corrective Action*

CORRACTS ---------- Corrective Action Report

### *Lists of Federal RCRA TSD facilities*

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

### *Lists of Federal RCRA generators*

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

### *Federal institutional controls / engineering controls registries*

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

***Federal ERNS list***

ERNS ..... Emergency Response Notification System

***Lists of state- and tribal hazardous waste facilities***

SHWS ..... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF ..... Solid Waste Landfills/Special Use Landfills

***Lists of state and tribal leaking storage tanks***

LUST ..... Leaking Underground Storage Tank List
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

***Lists of state and tribal registered storage tanks***

FEMA UST ..... Underground Storage Tank Listing
UST ..... Underground Storage Tank Data
AST ..... Aboveground Storage Tank Listing
INDIAN UST ..... Underground Storage Tanks on Indian Land

***State and tribal institutional control / engineering control registries***

AUL ..... Land Use Controls Listing

***Lists of state and tribal voluntary cleanup sites***

INDIAN VCP ..... Voluntary Cleanup Priority Listing

***Lists of state and tribal brownfield sites***

BROWNFIELDS ..... List of Brownfields Sites

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS ..... A Listing of Brownfields Sites

***Local Lists of Landfill / Solid Waste Disposal Sites***

SWRCY ..... Recycling Centers
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL ..... Delisted National Clandestine Laboratory Register

| | |
|---|---|
| CDL | Clandestine Drug Lab Location Listing |
| US CDL | National Clandestine Laboratory Register |
| PFAS | PFAS Report Listing |

***Local Land Records***

| | |
|---|---|
| LIENS 2 | CERCLA Lien Information |

***Records of Emergency Release Reports***

| | |
|---|---|
| HMIRS | Hazardous Materials Information Reporting System |
| SPILLS | State Spills |

***Other Ascertainable Records***

| | |
|---|---|
| RCRA NonGen / NLR | RCRA - Non Generators / No Longer Regulated |
| FUDS | Formerly Used Defense Sites |
| DOD | Department of Defense Sites |
| SCRD DRYCLEANERS | State Coalition for Remediation of Drycleaners Listing |
| US FIN ASSUR | Financial Assurance Information |
| EPA WATCH LIST | EPA WATCH LIST |
| 2020 COR ACTION | 2020 Corrective Action Program List |
| TSCA | Toxic Substances Control Act |
| TRIS | Toxic Chemical Release Inventory System |
| SSTS | Section 7 Tracking Systems |
| ROD | Records Of Decision |
| RMP | Risk Management Plans |
| RAATS | RCRA Administrative Action Tracking System |
| PRP | Potentially Responsible Parties |
| PADS | PCB Activity Database System |
| ICIS | Integrated Compliance Information System |
| FTTS | FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act) |
| MLTS | Material Licensing Tracking System |
| COAL ASH DOE | Steam-Electric Plant Operation Data |
| COAL ASH EPA | Coal Combustion Residues Surface Impoundments List |
| PCB TRANSFORMER | PCB Transformer Registration Database |
| RADINFO | Radiation Information Database |
| HIST FTTS | FIFRA/TSCA Tracking System Administrative Case Listing |
| DOT OPS | Incident and Accident Data |
| CONSENT | Superfund (CERCLA) Consent Decrees |
| INDIAN RESERV | Indian Reservations |
| FUSRAP | Formerly Utilized Sites Remedial Action Program |
| UMTRA | Uranium Mill Tailings Sites |
| LEAD SMELTERS | Lead Smelter Sites |
| US AIRS | Aerometric Information Retrieval System Facility Subsystem |
| US MINES | Mines Master Index File |
| ABANDONED MINES | Abandoned Mines |
| FINDS | Facility Index System/Facility Registry System |
| DOCKET HWC | Hazardous Waste Compliance Docket Listing |
| ECHO | Enforcement & Compliance History Information |
| UXO | Unexploded Ordnance Sites |
| FUELS PROGRAM | EPA Fuels Program Registered Listing |
| AIRS | Permitted Airs Facility Listing |
| ASBESTOS | Asbestos Notification Listing |

DRYCLEANERS..... Drycleaner Facility Listing
NPDES..... Wastewater Facility Listing
UIC..... Underground Injection Wells
MINES MRDS..... Mineral Resources Data System
LEAD..... Lead Inspection Data

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

**SURROUNDING SITES: SEARCH RESULTS**

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Other Ascertainable Records***

TIER 2: Tier 2 information listing.

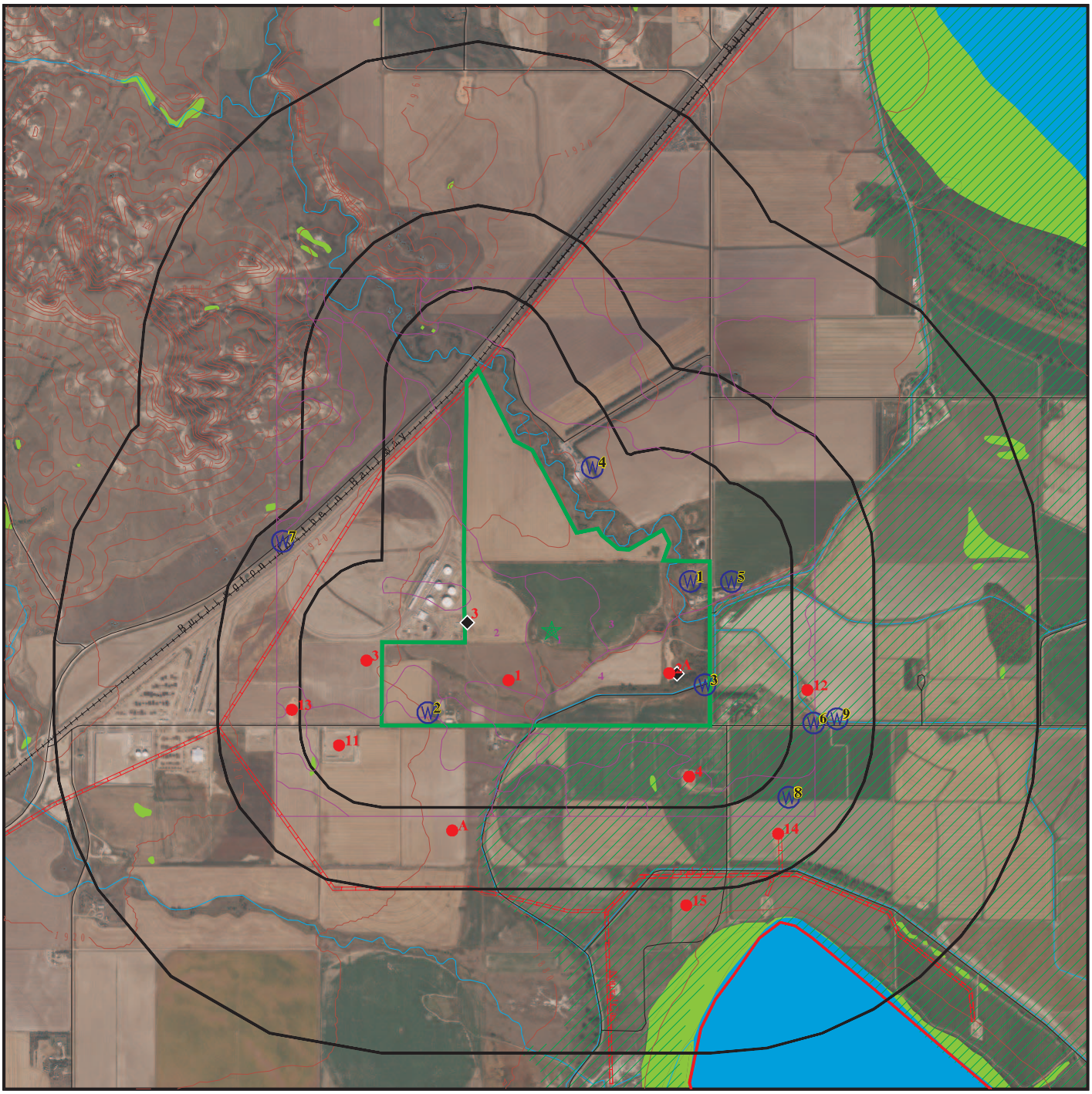
A review of the TIER 2 list, as provided by EDR, and dated 12/31/2016 has revealed that there are 3 TIER 2 sites within approximately 0.001 miles of the target property.

| Lower Elevation | Address | Direction / Distance | Map ID | Page |
|---|---|---|---|---|
| AUNE 1-36 (NDIC 9738<br>Id Number: 2116 | WILLIAMS | 0 - 1/8 (0.000 mi.) | A1 | 8 |
| AUNE 1-36 (NDIC 9738<br>Id Number: 2116 | SEXSE SECTION 36 T15 | 0 - 1/8 (0.000 mi.) | A2 | 11 |
| SAVAGE STATION<br>Id Number: 7577 | SEC 36 T153N R103W | 0 - 1/8 (0.000 mi.) | 3 | 23 |

# EXECUTIVE SUMMARY

There were no unmapped sites in this report.

# OVERVIEW MAP - 07111665.2R

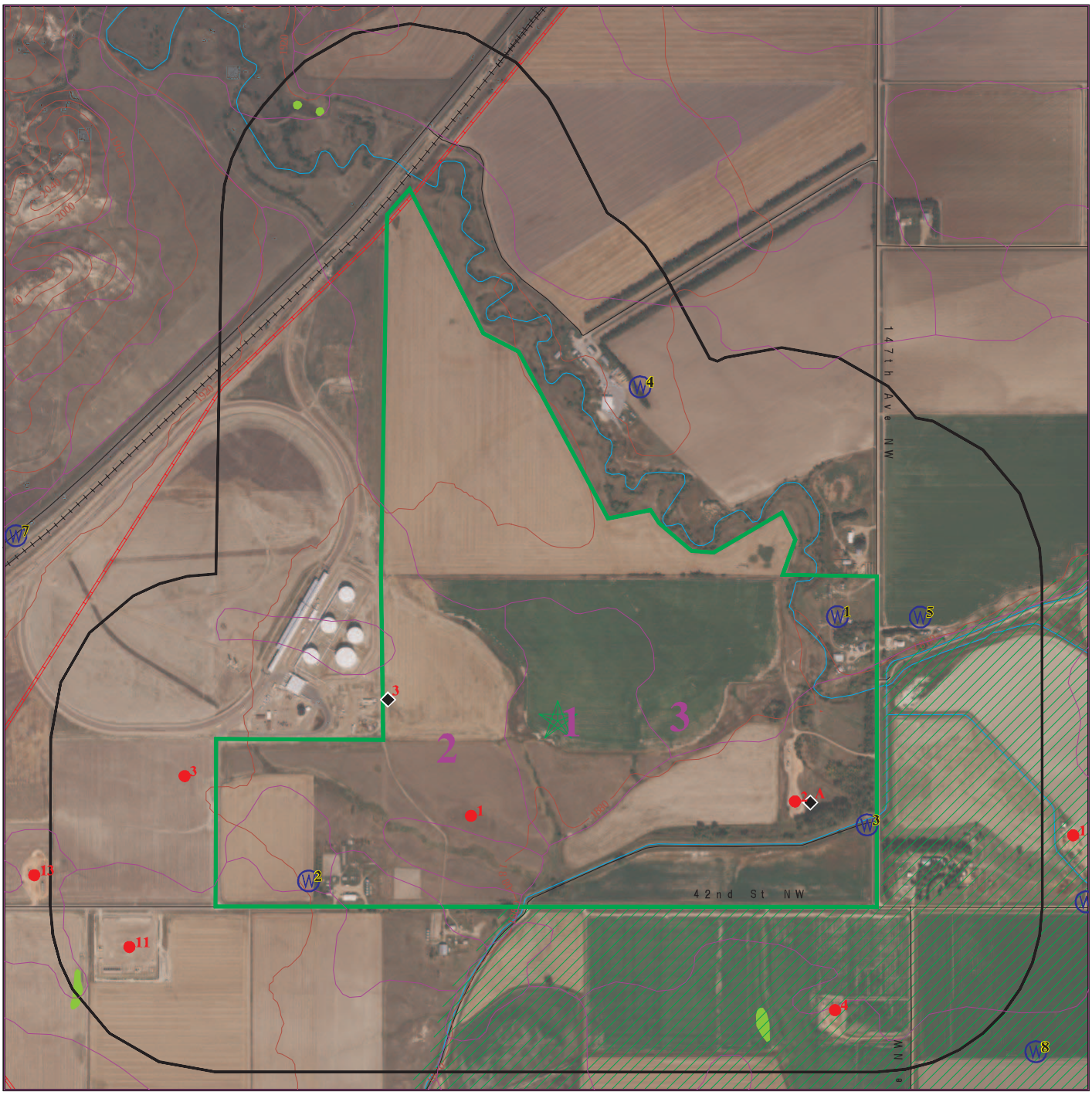



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Pipelines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | | | |
|---|---|---|---|
| SITE NAME: | Cerilon Site | CLIENT: | Barr Engineering |
| ADDRESS: | 4237 147th Ave. NW<br>Williston ND 58801 | CONTACT: | Liz Maher |
| | | INQUIRY #: | 07111665.2r |
| LAT/LONG: | 48.028588 / 103.873448 | DATE: | September 08, 2022 2:06 pm |

# DETAIL MAP - 07111665.2R




Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

0 1/8 1/4 1/2 Miles

Indian Reservations BIA
Pipelines
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

| | | | |
|---|---|---|---|
| SITE NAME: | Cerilon Site | CLIENT: | Barr Engineering |
| ADDRESS: | 4237 147th Ave. NW<br>Williston ND 58801 | CONTACT: | Liz Maher |
| | | INQUIRY #: | 07111665.2r |
| LAT/LONG: | 48.028588 / 103.873448 | DATE: | September 08, 2022 2:07 pm |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| **STANDARD ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Lists of Federal NPL (Superfund) sites*** | | | | | | | | |
| NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| Proposed NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| NPL LIENS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal Delisted NPL sites*** | | | | | | | | |
| Delisted NPL | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal sites subject to CERCLA removals and CERCLA orders*** | | | | | | | | |
| FEDERAL FACILITY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| SEMS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal CERCLA sites with NFRAP*** | | | | | | | | |
| SEMS-ARCHIVE | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal RCRA facilities undergoing Corrective Action*** | | | | | | | | |
| CORRACTS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| ***Lists of Federal RCRA TSD facilities*** | | | | | | | | |
| RCRA-TSDF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of Federal RCRA generators*** | | | | | | | | |
| RCRA-LQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-SQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| RCRA-VSQG | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***Federal institutional controls / engineering controls registries*** | | | | | | | | |
| LUCIS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US ENG CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| US INST CONTROLS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Federal ERNS list*** | | | | | | | | |
| ERNS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Lists of state- and tribal hazardous waste facilities*** | | | | | | | | |
| SHWS | N/A | | N/A | N/A | N/A | N/A | N/A | N/A |
| ***Lists of state and tribal landfills and solid waste disposal facilities*** | | | | | | | | |
| SWF/LF | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal leaking storage tanks*** | | | | | | | | |
| LUST | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| INDIAN LUST | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal registered storage tanks*** | | | | | | | | |
| FEMA UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| AST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| INDIAN UST | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ***State and tribal institutional control / engineering control registries*** | | | | | | | | |
| AUL | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal voluntary cleanup sites*** | | | | | | | | |
| INDIAN VCP | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Lists of state and tribal brownfield sites*** | | | | | | | | |
| BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| **ADDITIONAL ENVIRONMENTAL RECORDS** | | | | | | | | |
| ***Local Brownfield lists*** | | | | | | | | |
| US BROWNFIELDS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Landfill / Solid Waste Disposal Sites*** | | | | | | | | |
| SWRCY | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| INDIAN ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| DEBRIS REGION 9 | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ODI | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| IHS OPEN DUMPS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Lists of Hazardous waste / Contaminated Sites*** | | | | | | | | |
| US HIST CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US CDL | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PFAS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| ***Local Land Records*** | | | | | | | | |
| LIENS 2 | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Records of Emergency Release Reports*** | | | | | | | | |
| HMIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SPILLS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ***Other Ascertainable Records*** | | | | | | | | |
| RCRA NonGen / NLR | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FUDS | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| DOD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| SCRD DRYCLEANERS | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|
| US FIN ASSUR | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| EPA WATCH LIST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| 2020 COR ACTION | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| TSCA | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| TRIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| SSTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ROD | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| RMP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RAATS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PRP | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| PADS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ICIS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MLTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH DOE | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| COAL ASH EPA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| PCB TRANSFORMER | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| RADINFO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| HIST FTTS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DOT OPS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| CONSENT | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| INDIAN RESERV | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| FUSRAP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| UMTRA | 0.500 | | 0 | 0 | 0 | NR | NR | 0 |
| LEAD SMELTERS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US AIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| US MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| ABANDONED MINES | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| FINDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DOCKET HWC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ECHO | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| UXO | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| FUELS PROGRAM | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| AIRS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| ASBESTOS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| DRYCLEANERS | 0.250 | | 0 | 0 | NR | NR | NR | 0 |
| NPDES | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| TIER 2 | 0.001 | | 3 | NR | NR | NR | NR | 3 |
| UIC | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| MINES MRDS | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| LEAD | TP | | NR | NR | NR | NR | NR | 0 |
| **EDR HIGH RISK HISTORICAL RECORDS** | | | | | | | | |
| ***EDR Exclusive Records*** | | | | | | | | |
| EDR MGP | 1.000 | | 0 | 0 | 0 | 0 | NR | 0 |
| EDR Hist Auto | 0.125 | | 0 | NR | NR | NR | NR | 0 |
| EDR Hist Cleaner | 0.125 | | 0 | NR | NR | NR | NR | 0 |
| **EDR RECOVERED GOVERNMENT ARCHIVES** | | | | | | | | |
| ***Exclusive Recovered Govt. Archives*** | | | | | | | | |
| RGA LUST | 0.001 | | 0 | NR | NR | NR | NR | 0 |
| - Totals -- | | 0 | 3 | 0 | 0 | 0 | 0 | 3 |

# MAP FINDINGS SUMMARY

| Database | Search Distance (Miles) | Target Property | < 1/8 | 1/8 - 1/4 | 1/4 - 1/2 | 1/2 - 1 | > 1 | Total Plotted |
|---|---|---|---|---|---|---|---|---|

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

**A1** **AUNE 1-36 (NDIC 9738)** **TIER 2** **S120914466**
**WILLIAMS** **N/A**
**< 1/8** **WILLISTON, ND 58801**
**1 ft.**

**Site 1 of 2 in cluster A**

**Relative:** TIER 2:
**Lower**

**Actual:**
**1874 ft.**

| | |
|---|---|
| Report Year: | 2015 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | Not reported |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Russ Unruh |
| 2nd Emergency Contact Title: | Contract Pumper |
| 2nd Emergency Contact Phone: | 406-742-3545 |
| 2nd Emergency 24 Phone: | 701-770-7078 |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Crude Oil, Saltwater and Natural Gas in Treater |
| Storage Conditions0: | Ambient Pressure/nAmbient Temperature |
| Confidential0: | Not reported |
| Storage Conditions1: | Above Ambient Pressure/nAbove Ambient Temperature |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 300000 |
| Average Daily Amount Code: | 10 |
| Average Daily Amount Ounds: | 150000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S120914466**

| | |
|---|---|
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | John Broschat |
| Tier II Contact title: | President |
| Tier II Contact EMail: | bems@nemont.net |
| Tier II Contact phone: | 701-572-8075 |
| Tier II Contact 24 hour phone: | 701-570-0983 |
| Manned: | unmanned |
| Max occupancy: | 2 |
| 302: | no |
| 112: | no |
| TRI Facility ID: | N/A |
| RMP Facility ID: | N/A |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |

| | |
|---|---|
| Report Year: | 2015 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | Not reported |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Russ Unruh |
| 2nd Emergency Contact Title: | Contract Pumper |
| 2nd Emergency Contact Phone: | 406-742-3545 |
| 2nd Emergency 24 Phone: | 701-770-7078 |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |

**AUNE 1-36 (NDIC 9738) (Continued)** **S120914466**

| | |
|---|---|
| CHS Name: | Not reported |
| CAS: | 7647-14-5 |
| Chemical Name: | Produced Salt Water |
| Chemical Mixture Decription: | Crude Oil, Saltwater and Natural Gas in Treater |
| Storage Conditions0: | Ambient Pressure/nAmbient Temperature |
| Confidential0: | Not reported |
| Storage Conditions1: | Above Ambient Pressure/nAbove Ambient Temperature |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | Not reported |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 150000 |
| Average Daily Amount Code: | 9 |
| Average Daily Amount Ounds: | 80000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | John Broschat |
| Tier II Contact title: | President |
| Tier II Contact EMail: | bems@nemont.net |
| Tier II Contact phone: | 701-572-8075 |
| Tier II Contact 24 hour phone: | 701-570-0983 |
| Manned: | unmanned |
| Max occupancy: | 2 |

**AUNE 1-36 (NDIC 9738) (Continued)** **S120914466**

| | |
|---|---|
| 302: | no |
| 112: | no |
| TRI Facility ID: | N/A |
| RMP Facility ID: | N/A |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |

---

**A2** **AUNE 1-36 (NDIC 9738)** **TIER 2** **S111706987**
**SEXSE SECTION 36 T153N - R103W** **N/A**
**< 1/8** **N/A, ND N/A**
**1 ft.**

**Site 2 of 2 in cluster A**

**Relative:** TIER 2:
**Lower**

| | |
|---|---|
| **Actual:** Report Year: | 2013 |
| **1874 ft.** Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 300000 |
| Average Daily Amount Code: | 10 |
| Average Daily Amount Ounds: | 150000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2014 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 300000 |
| Average Daily Amount Code: | 10 |
| Average Daily Amount Ounds: | 150000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2014 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 7647-14-5 |
| Chemical Name: | Produced Salt Water |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | Not reported |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 150000 |
| Average Daily Amount Code: | 9 |
| Average Daily Amount Ounds: | 80000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Report Year: | 2012 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 5 |
| Max Daily Amount Pounds: | 138600 |
| Average Daily Amount Code: | 4 |
| Average Daily Amount Ounds: | 69300 |
| Days On Site: | 365 |
| Type Storage: | A |
| Type Storage2: | A |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | 1 |
| Pressure-Storage2: | 2 |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Temp - Storage: | 4 |
| Temp - Storage2: | 5 |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2015 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 7647-14-5 |
| Chemical Name: | Produced Salt Water |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | Not reported |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 150000 |
| Average Daily Amount Code: | 9 |
| Average Daily Amount Ounds: | 80000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2015 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | X |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 300000 |
| Average Daily Amount Code: | 10 |
| Average Daily Amount Ounds: | 150000 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Type Storage2: | ABOVE GROUND TANK |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2011 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | 09-595-1414 |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 5 |
| Max Daily Amount Pounds: | 138600 |
| Average Daily Amount Code: | 4 |
| Average Daily Amount Ounds: | 69300 |
| Days On Site: | 365 |
| Type Storage: | A |
| Type Storage2: | A |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | 1 |
| Pressure-Storage2: | 2 |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | 4 |
| Temp - Storage2: | 5 |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |
| | |
| Report Year: | 2010 |
| Id Number: | 2116 |
| Dun and Bradstreet Number: | Not reported |
| Company Name: | Broschat Engineering & Management Services, Inc. |
| Submitted By: | John Broschat |
| Owner Name: | Broschat Engineering & Management Services, Inc. |
| Phone: | 701-572-8075 |
| EMail: | bems@nemont.net |
| Owner/Operator address: | P.O. Box 399 |
| Owner/Operator City/State/Zip: | Williston, ND 58802-0399 |
| 1st Emergency Contact Name: | John Broschat |
| 1st Emergency Contact Title: | President |
| 1st Emergency Contact Phone: | 701-572-8075 |
| 1st Emergency 24 Phone: | 701-570-0983 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211111 |
| SIC Code: | 1311 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | Not reported |
| Mix: | X |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | X |
| Reactivity: | Not reported |
| Immediate (Acute): | X |

**AUNE 1-36 (NDIC 9738) (Continued)** **S111706987**

| | |
|---|---|
| Delayed (Chronic): | X |
| Max Daily Amount Code: | 5 |
| Max Daily Amount Pounds: | 138600 |
| Average Daily Amount Code: | 4 |
| Average Daily Amount Ounds: | 69300 |
| Days On Site: | 365 |
| Type Storage: | A |
| Type Storage2: | A |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | 1 |
| Pressure-Storage2: | 2 |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | 4 |
| Temp - Storage2: | 5 |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | Tank Battery |
| Location Of Storage2: | Treater Vessel |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.026745 |
| Longitude: | -103.865201 |

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**3** **SAVAGE STATION** **TIER 2** **S113723109**
**SEC 36 T153N R103W** **N/A**
**< 1/8** **TRENTON, ND 58853**
**1 ft.**

TIER 2:

**Relative:** **Lower**

**Actual:** **1891 ft.**

| | |
|---|---|
| Report Year: | 2012 |
| Id Number: | 7577 |
| Dun and Bradstreet Number: | 78 680 3531 |
| Company Name: | Hiland Crude |
| Submitted By: | Kent Sales |
| Owner Name: | Hiland Crude |

**SAVAGE STATION (Continued)** **S113723109**

| | |
|---|---|
| Phone: | 580-242-6040 |
| EMail: | jsober@rfsconsulting.com |
| Owner/Operator address: | P. O. Box 3886 |
| Owner/Operator City/State/Zip: | Enid, OK 73702 |
| 1st Emergency Contact Name: | Mike Hein |
| 1st Emergency Contact Title: | Supervisor |
| 1st Emergency Contact Phone: | 406-480-3954 |
| 1st Emergency 24 Phone: | 406-480-3954 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211112 |
| SIC Code: | 1321 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | X |
| Mix: | Not reported |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 5 |
| Max Daily Amount Pounds: | 560448 |
| Average Daily Amount Code: | 5 |
| Average Daily Amount Ounds: | 560448 |
| Days On Site: | 365 |
| Type Storage: | A |
| Type Storage2: | Not reported |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | 1 |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | 4 |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | On Site - Four 40 Bbl Tanks |
| Location Of Storage2: | Not reported |

**SAVAGE STATION (Continued)** **S113723109**

| | |
|---|---|
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.029 |
| Longitude: | -103.879 |

| | |
|---|---|
| Report Year: | 2014 |
| Id Number: | 7577 |
| Dun and Bradstreet Number: | 78 680 3531 |
| Company Name: | HILAND CRUDE |
| Submitted By: | Austin Schneider |
| Owner Name: | HILAND CRUDE |
| Phone: | 580-242-6040 |
| EMail: | jsober@rfsconsulting.com |
| Owner/Operator address: | P. O. Box 3886 |
| Owner/Operator City/State/Zip: | Enid, OK 73703-3886 |
| 1st Emergency Contact Name: | Mike Hein |
| 1st Emergency Contact Title: | Area Operation Manager |
| 1st Emergency Contact Phone: | 406-480-3954 |
| 1st Emergency 24 Phone: | 406-480-3954 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211112 |
| SIC Code: | 1321 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |

**SAVAGE STATION (Continued)** **S113723109**

| | |
|---|---|
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | X |
| Mix: | Not reported |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 10 |
| Max Daily Amount Pounds: | 280224 |
| Average Daily Amount Code: | 10 |
| Average Daily Amount Ounds: | 280224 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | Not reported |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | On Site - Two 400 Bbl Tanks |
| Location Of Storage2: | Not reported |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.029000 |
| Longitude: | -103.879000 |

**SAVAGE STATION (Continued)** **S113723109**

| | |
|---|---|
| Report Year: | 2013 |
| Id Number: | 7577 |
| Dun and Bradstreet Number: | 78 680 3531 |
| Company Name: | HILAND CRUDE |
| Submitted By: | Austin Schneider |
| Owner Name: | HILAND CRUDE |
| Phone: | 580-242-6040 |
| EMail: | jsober@rfsconsulting.com |
| Owner/Operator address: | P. O. Box 3886 |
| Owner/Operator City/State/Zip: | Enid, OK 73702 |
| 1st Emergency Contact Name: | Mike Hein |
| 1st Emergency Contact Title: | Area Operation Manager |
| 1st Emergency Contact Phone: | 406-480-3954 |
| 1st Emergency 24 Phone: | 406-480-3954 |
| 2nd Emergency Contact Name: | Not reported |
| 2nd Emergency Contact Title: | Not reported |
| 2nd Emergency Contact Phone: | Not reported |
| 2nd Emergency 24 Phone: | Not reported |
| NAICS Code: | 211112 |
| SIC Code: | 1321 |
| CHS Name: | Not reported |
| CAS: | 8002-05-9 |
| Chemical Name: | Crude Oil |
| Chemical Mixture Decription: | Not reported |
| Storage Conditions0: | Not reported |
| Confidential0: | Not reported |
| Storage Conditions1: | Not reported |
| Confidential1: | Not reported |
| Storage Conditions2: | Not reported |
| Confidential2: | Not reported |
| Storage Conditions3: | Not reported |
| Confidential3: | Not reported |
| Trade Secret: | Not reported |
| Pure: | X |
| Mix: | Not reported |
| Solid: | Not reported |
| Liquid: | X |
| Gas: | Not reported |
| EHS: | Not reported |
| Fire: | X |
| Sudden Release Of Pressure: | Not reported |
| Reactivity: | Not reported |
| Immediate (Acute): | X |
| Delayed (Chronic): | Not reported |
| Max Daily Amount Code: | 11 |
| Max Daily Amount Pounds: | 560,448 |
| Average Daily Amount Code: | 11 |
| Average Daily Amount Ounds: | 560,448 |
| Days On Site: | 365 |
| Type Storage: | ABOVE GROUND TANK |
| Type Storage2: | Not reported |
| Type Storage3: | Not reported |
| Type Storage4: | Not reported |
| Pressure-Storage: | Not reported |
| Pressure-Storage2: | Not reported |
| Pressure-Storage3: | Not reported |
| Pressure-Storage4: | Not reported |

**SAVAGE STATION (Continued)** **S113723109**

| | |
|---|---|
| Temp - Storage: | Not reported |
| Temp - Storage2: | Not reported |
| Temp - Storage3: | Not reported |
| Temp - Storage4: | Not reported |
| Location Of Storage: | On Site - Four 400 Bbl Tanks |
| Location Of Storage2: | Not reported |
| Location Of Storage3: | Not reported |
| Location Of Storage4: | Not reported |
| Facility Coordinator Name: | Not reported |
| Facility Coordinator Title: | Not reported |
| Facility Coordinator EMail: | Not reported |
| Facility Coordinator Phone: | Not reported |
| Facility Coor 24 hour phone: | Not reported |
| Tier II Contact Name: | Not reported |
| Tier II Contact title: | Not reported |
| Tier II Contact EMail: | Not reported |
| Tier II Contact phone: | Not reported |
| Tier II Contact 24 hour phone: | Not reported |
| Manned: | Not reported |
| Max occupancy: | Not reported |
| 302: | Not reported |
| 112: | Not reported |
| TRI Facility ID: | Not reported |
| RMP Facility ID: | Not reported |
| Fee Exempt: | Not reported |
| Facility Cost: | Not reported |
| Check Number: | Not reported |
| Payment Month: | Not reported |
| Invoice Number: | Not reported |
| Latitude: | 48.029000 |
| Longitude: | -103.879000 |

Count: 0 records.

ORPHAN SUMMARY

| City | EDR ID | Site Name | Site Address | Zip | Database(s) |
|---|---|---|---|---|---|
| | | NO SITES FOUND | | | |

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

**Number of Days to Update:** Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

**STANDARD ENVIRONMENTAL RECORDS**

***Lists of Federal NPL (Superfund) sites***

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

***Lists of Federal Delisted NPL sites***

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

***Lists of Federal sites subject to CERCLA removals and CERCLA orders***

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

***Lists of Federal CERCLA sites with NFRAP***

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA facilities undergoing Corrective Action***

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA TSD facilities***

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

***Lists of Federal RCRA generators***

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

***Federal institutional controls / engineering controls registries***

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/19/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 71

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/03/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

***Federal ERNS list***

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 06/21/2022
Number of Days to Update: 6

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

***Lists of state- and tribal hazardous waste facilities***

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of Environmental Quality
Telephone: 701-328-5166
Last EDR Contact: 05/16/2022
Next Scheduled EDR Contact: 08/29/2022
Data Release Frequency: N/A

***Lists of state and tribal landfills and solid waste disposal facilities***

SWF/LF: Solid Waste Landfills/Special Use Landfills

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 04/19/2022
Date Data Arrived at EDR: 04/20/2022
Date Made Active in Reports: 07/13/2022
Number of Days to Update: 84

Source: Department of Environmental Quality
Telephone: 701-328-5166
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

***Lists of state and tribal leaking storage tanks***

LUST: Leaking Underground Storage Tank List

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 05/25/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 701-328-5166
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

***Lists of state and tribal registered storage tanks***

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

UST: Underground Storage Tank Data
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 05/24/2022
Date Data Arrived at EDR: 05/25/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 701-328-5166
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Quarterly

AST: Aboveground Storage Tank Listing
Registered Aboveground Storage Tanks.

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 04/20/2022
Date Made Active in Reports: 07/14/2022
Number of Days to Update: 85

Source: Department of Insurance
Telephone: 701-328-3246
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

***State and tribal institutional control / engineering control registries***

AUL: Land Use Controls Listing

Land-Use Controls (LUCs) are defined broadly as legal measures that limit human exposure by restricting activity, use, and access to properties with residual contamination.

Date of Government Version: 06/22/2021
Date Data Arrived at EDR: 07/19/2021
Date Made Active in Reports: 10/07/2021
Number of Days to Update: 80

Source: Department of Environmental Quality
Telephone: 701-328-5158
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Semi-Annually

***Lists of state and tribal voluntary cleanup sites***

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142
Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27
Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

***Lists of state and tribal brownfield sites***

BROWNFIELDS: List of Brownfields Sites
The concept of the Brownfields Program is to take contaminated or potentially contaminated, underdeveloped, unproductive property and convert it into productive real estate. Brownfield sites are defined as abandoned, idled or underused industrial or commercial properties whose redevelopment is complicated by real or perceived environmental contamination.

Date of Government Version: 03/14/2022
Date Data Arrived at EDR: 05/19/2022
Date Made Active in Reports: 08/08/2022
Number of Days to Update: 81
Source: Department of Environmental Quality
Telephone: 701-328-5166
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Semi-Annually

**ADDITIONAL ENVIRONMENTAL RECORDS**

***Local Brownfield lists***

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Semi-Annually

***Local Lists of Landfill / Solid Waste Disposal Sites***

SWRCY: Recycling Centers
A listing of recycling center locations.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 12/04/2020
Date Made Active in Reports: 02/22/2021
Number of Days to Update: 80
Source: Department of Environmental Quality
Telephone: 701-328-5266
Last EDR Contact: 12/04/2020
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52
Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

***Local Lists of Hazardous waste / Contaminated Sites***

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 04/30/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

CDL: Clandestine Drug Lab Location Listing
A listing of clandestine drug lab locations in North Dakota.

Date of Government Version: 07/08/2020
Date Data Arrived at EDR: 08/25/2020
Date Made Active in Reports: 11/16/2020
Number of Days to Update: 83
Source: Bureau of Criminal Investigation
Telephone: 701-328-8171
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 04/30/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Quarterly

PFAS: PFAS Report Listing

A survey was conducted to determine the presence/absence of Per- and Polyfluoroalkyl Substances (PFAS) in North Dakota. Samples were taken from a variety of sites where PFAS would potentially be present such as landfills, drinking water treatment plants, wastewater treatment plants, and fire training areas.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 03/03/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 22

Source: Department of Environmental Quality
Telephone: 701-328-5211
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

***Local Land Records***

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

***Records of Emergency Release Reports***

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

SPILLS: State Spills

A listing of Department of Health spill records.

Date of Government Version: 01/24/2022
Date Data Arrived at EDR: 01/25/2022
Date Made Active in Reports: 04/18/2022
Number of Days to Update: 83

Source: Department of Environmental Quality
Telephone: 701-328-5150
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

***Other Ascertainable Records***

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 303-312-6149
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/11/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 73

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/03/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/04/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 11

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/10/2022
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 69

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/04/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/23/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data
Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 04/14/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 89

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/24/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/22/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 3

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 08/02/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 14

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 68

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 08/30/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 05/13/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 13

Source: EPA
Telephone: (303) 312-6312
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/02/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 73

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Quarterly

AIRS: Permitted Airs Facility Listing

A listing of permitted airs facility locations.

Date of Government Version: 04/19/2022
Date Data Arrived at EDR: 04/20/2022
Date Made Active in Reports: 07/13/2022
Number of Days to Update: 84

Source: Department of Environmental Quality
Telephone: 701-328-5188
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

ASBESTOS: Asbestos Notification Listing

A listing of asbestos notification site locations

Date of Government Version: 05/20/2022
Date Data Arrived at EDR: 05/25/2022
Date Made Active in Reports: 06/08/2022
Number of Days to Update: 14

Source: Department of Environmental Quality
Telephone: 701-328-5188
Last EDR Contact: 07/27/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner facilities

A listing of drycleaner facility locations.

Date of Government Version: 04/19/2022
Date Data Arrived at EDR: 04/20/2022
Date Made Active in Reports: 07/13/2022
Number of Days to Update: 84

Source: Department of Environmental Quality
Telephone: 701-328-5188
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

NPDES: Wastewater Facility Listing

A listing of wastewater facility locations.

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 04/07/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 4

Source: Department of Environmental Quality
Telephone: 701-328-5260
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

TIER 2: Tier 2 Information Listing

Tier 2 information listing.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/27/2017
Date Made Active in Reports: 10/05/2017
Number of Days to Update: 100

Source: Department of Emergency Services
Telephone: 701-328-8263
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Annually

UIC: Underground Injection Wells
A listing of underground injection control wells.

Date of Government Version: 02/15/2021
Date Data Arrived at EDR: 04/27/2021
Date Made Active in Reports: 07/15/2021
Number of Days to Update: 79

Source: Department of Environmental Quality
Telephone: 701-328-5217
Last EDR Contact: 07/25/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

LEAD: Lead Inspection Data
Lead based paint notification site locations.

Date of Government Version: 02/16/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 83

Source: Department of Health
Telephone: 701-328-5210
Last EDR Contact: 07/27/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

**EDR HIGH RISK HISTORICAL RECORDS**

***EDR Exclusive Records***

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

**EDR RECOVERED GOVERNMENT ARCHIVES**

***Exclusive Recovered Govt. Archives***

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Health in North Dakota.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/04/2014
Number of Days to Update: 187

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

# GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

**OTHER DATABASE(S)**

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/08/2022
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 80

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: No Update Planned

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 08/29/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Child Care List
Source: Department of Human Services
Telephone: 701-328-2316

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

**STREET AND ADDRESS INFORMATION**

# GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

**TARGET PROPERTY ADDRESS**

CERILON SITE
4237 147TH AVE. NW
WILLISTON, ND 58801

**TARGET PROPERTY COORDINATES**

| | |
|---|---|
| Latitude (North): | 48.028588 - 48ˆ 1' 42.92'' |
| Longitude (West): | 103.873448 - 103ˆ 52' 24.41'' |
| Universal Tranverse Mercator: | Zone 13 |
| UTM X (Meters): | 583991.4 |
| UTM Y (Meters): | 5319872.5 |
| Elevation: | 1892 ft. above sea level |

**USGS TOPOGRAPHIC MAP**

| | |
|---|---|
| Target Property Map: | 15280950 TRENTON, ND |
| Version Date: | 2020 |
| Northwest Map: | 15280956 TRENTON SW, ND |
| Version Date: | 2020 |

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW DIRECTION INFORMATION**

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

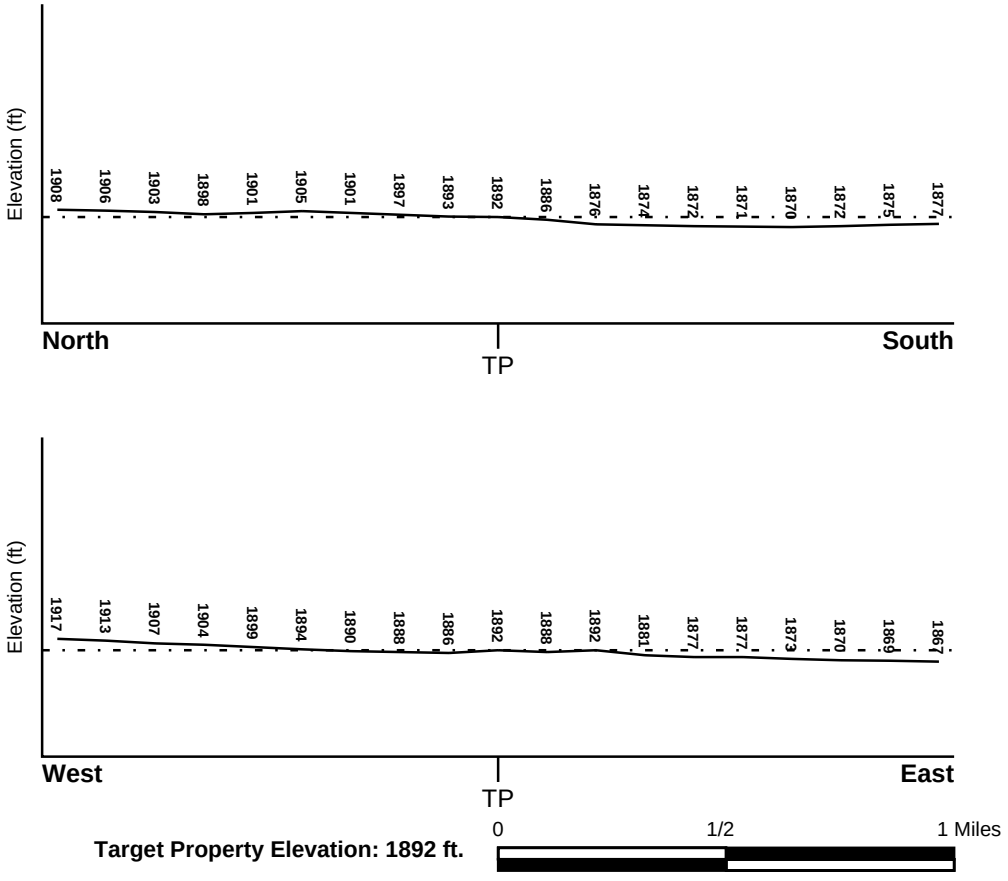
**TOPOGRAPHIC INFORMATION**

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

**TARGET PROPERTY TOPOGRAPHY**

General Topographic Gradient: General South

**SURROUNDING TOPOGRAPHY: ELEVATION PROFILES**




**Target Property Elevation: 1892 ft.**

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**HYDROLOGIC INFORMATION**

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

**FEMA FLOOD ZONE**

| Flood Plain Panel at Target Property | FEMA Source Type |
|---|---|
| 3801460000A | FEMA Q3 Flood data |

| Additional Panels in search area: | FEMA Source Type |
|---|---|
| 3806790025A | FEMA Q3 Flood data |
| 3803120025A | FEMA Q3 Flood data |

**NATIONAL WETLAND INVENTORY**

| NWI Quad at Target Property | NWI Electronic Data Coverage |
|---|---|
| TRENTON | YES - refer to the Overview Map and Detail Map |

**HYDROGEOLOGIC INFORMATION**

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

**AQUIFLOW®**

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

| MAP ID | LOCATION FROM TP | GENERAL DIRECTION GROUNDWATER FLOW |
|---|---|---|
| Not Reported | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**GROUNDWATER FLOW VELOCITY INFORMATION**

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

**GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY**

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

**ROCK STRATIGRAPHIC UNIT**

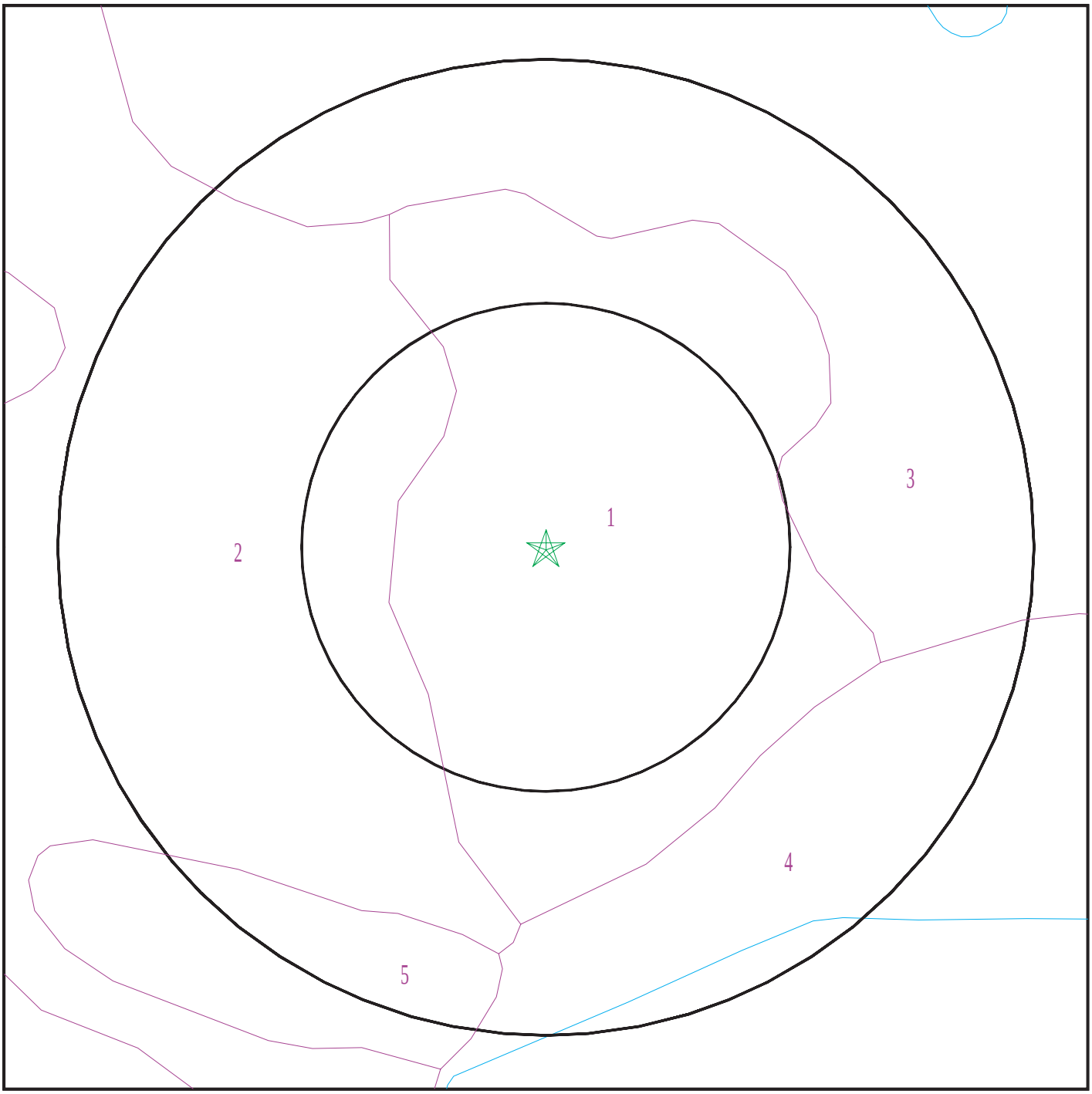
| | |
|---|---|
| Era: | Cenozoic |
| System: | Tertiary |
| Series: | Paleocene |
| Code: | Txc *(decoded above as Era, System & Series)* |

**GEOLOGIC AGE IDENTIFICATION**

Category: Continental Deposits

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

# SSURGO SOIL MAP - 07111665.2r




★ Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

| | | | |
|---|---|---|---|
| SITE NAME: | Cerilon Site | CLIENT: | Barr Engineering |
| ADDRESS: | 4237 147th Ave. NW<br>Williston ND 58801 | CONTACT: | Liz Maher |
| | | INQUIRY #: | 07111665.2r |
| LAT/LONG: | 48.028588 / 103.873448 | DATE: | September 08, 2022 2:07 pm |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY**

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

---

**Soil Map ID: 1**

Soil Component Name: FARLAND

Soil Surface Texture: silt loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

**Soil Layer Information**

| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
|---|---|---|---|---|---|---|---|
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 3 inches | silt loam | Not reported | Not reported | Max: 42<br>Min: 1.4 | Max: 8.4<br>Min: 7.4 |
| 2 | 3 inches | 18 inches | silty clay loam | Not reported | Not reported | Max: 42<br>Min: 1.4 | Max: 8.4<br>Min: 7.4 |
| 3 | 18 inches | 33 inches | silt loam | Not reported | Not reported | Max: 42<br>Min: 1.4 | Max: 8.4<br>Min: 7.4 |
| 4 | 33 inches | 59 inches | stratified very fine sandy loam to silty clay loam | Not reported | Not reported | Max: 42<br>Min: 1.4 | Max: 8.4<br>Min: 7.4 |

---

**Soil Map ID: 2**

Soil Component Name: LAWTHER

Soil Surface Texture: clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

## GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 46 inches | 59 inches | clay loam | Not reported | Not reported | Max: 1.4 Min: 0.42 | Max: 9 Min: 7.9 |
| 2 | 0 inches | 9 inches | silty clay | Not reported | Not reported | Max: 1.4 Min: 0.42 | Max: 9 Min: 7.9 |
| 3 | 9 inches | 33 inches | silty clay | Not reported | Not reported | Max: 1.4 Min: 0.42 | Max: 9 Min: 7.9 |
| 4 | 33 inches | 46 inches | silty clay | Not reported | Not reported | Max: 1.4 Min: 0.42 | Max: 9 Min: 7.9 |

---

**Soil Map ID: 3**

Soil Component Name: KORCHEA

Soil Surface Texture: stratified loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 5 inches | stratified loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay | Max: 14 Min: 1.4 | Max: 8.4 Min: 7.4 |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 2 | 5 inches | 59 inches | stratified fine sandy loam to silty clay loam | Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils. | FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay | Max: 14<br>Min: 1.4 | Max: 8.4<br>Min: 7.4 |

---

**Soil Map ID: 4**

Soil Component Name: HAVRELON

Soil Surface Texture: loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 12 inches | loam | Not reported | Not reported | Max: 14<br>Min: 4 | Max: 7.8<br>Min: 7.4 |
| 2 | 12 inches | 59 inches | stratified very fine sandy loam to silty clay loam | Not reported | Not reported | Max: 14<br>Min: 4 | Max: 7.8<br>Min: 7.4 |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**Soil Map ID: 5**

Soil Component Name: SAVAGE

Soil Surface Texture: silty clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

| Soil Layer Information | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Boundary | | | Classification | | Saturated hydraulic conductivity micro m/sec | Soil Reaction (pH) |
| Layer | Upper | Lower | Soil Texture Class | AASHTO Group | Unified Soil | | |
| 1 | 0 inches | 7 inches | silty clay loam | Not reported | Not reported | Max: 4.23<br>Min: 0.42 | Max: 8.4<br>Min: 7.4 |
| 2 | 7 inches | 25 inches | silty clay | Not reported | Not reported | Max: 4.23<br>Min: 0.42 | Max: 8.4<br>Min: 7.4 |
| 3 | 25 inches | 51 inches | silty clay | Not reported | Not reported | Max: 4.23<br>Min: 0.42 | Max: 8.4<br>Min: 7.4 |
| 4 | 51 inches | 59 inches | silty clay loam | Not reported | Not reported | Max: 4.23<br>Min: 0.42 | Max: 8.4<br>Min: 7.4 |

**LOCAL / REGIONAL WATER AGENCY RECORDS**

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

**WELL SEARCH DISTANCE INFORMATION**

| DATABASE | SEARCH DISTANCE (miles) |
|---|---|
| Federal USGS | 1.000 |
| Federal FRDS PWS | Nearest PWS within 1 mile |
| State Database | 1.000 |

# GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

**FEDERAL USGS WELL INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 2 | USGS40000937896 | 1/4 - 1/2 Mile WSW |
| 4 | USGS40000938043 | 1/2 - 1 Mile NNE |
| 9 | USGS40000937892 | 1/2 - 1 Mile ESE |

**FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| No PWS System Found | | |

Note: PWS System location is not always the same as well location.

**STATE DATABASE WELL INFORMATION**

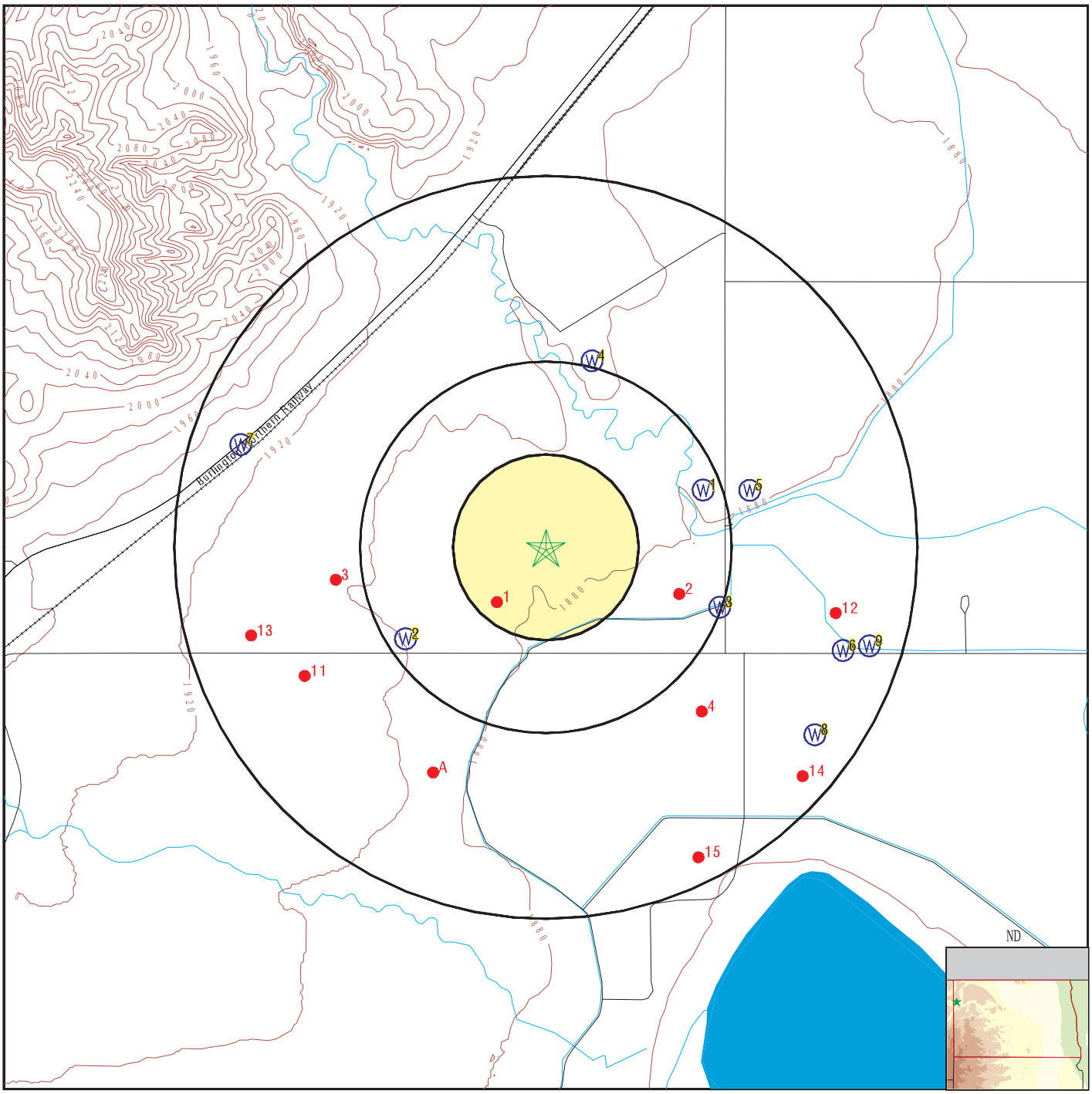
| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 1 | ND8000000028808 | 1/4 - 1/2 Mile ENE |
| 3 | ND8000000028809 | 1/4 - 1/2 Mile ESE |
| 5 | ND8000000028790 | 1/2 - 1 Mile ENE |
| 6 | ND8000000028791 | 1/2 - 1 Mile ESE |
| 7 | ND8000000028806 | 1/2 - 1 Mile WNW |
| 8 | ND8000000027559 | 1/2 - 1 Mile SE |

**OTHER STATE DATABASE INFORMATION**

**STATE OIL/GAS WELL INFORMATION**

| MAP ID | WELL ID | LOCATION FROM TP |
|---|---|---|
| 1 | NDOG80000003989 | 1/8 - 1/4 Mile SW |
| 2 | NDOG80000005998 | 1/4 - 1/2 Mile ESE |
| 3 | NDOG80000038088 | 1/2 - 1 Mile West |
| 4 | NDOG80000006268 | 1/2 - 1 Mile SE |
| A5 | NDOG80000036898 | 1/2 - 1 Mile SSW |
| A6 | NDOG80000036899 | 1/2 - 1 Mile SSW |
| A7 | NDOG80000036900 | 1/2 - 1 Mile SSW |
| A8 | NDOG80000036901 | 1/2 - 1 Mile SSW |
| A9 | NDOG80000036902 | 1/2 - 1 Mile SSW |
| A10 | NDOG80000036903 | 1/2 - 1 Mile SSW |
| 11 | NDOG80000023155 | 1/2 - 1 Mile WSW |
| 12 | NDOG80000005564 | 1/2 - 1 Mile ESE |
| 13 | NDOG80000020075 | 1/2 - 1 Mile WSW |
| 14 | NDOG80000006953 | 1/2 - 1 Mile SE |
| 15 | NDOG80000004176 | 1/2 - 1 Mile SSE |

# PHYSICAL SETTING SOURCE MAP - 07111665.2r




- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- Indeterminate Groundwater Flow at Location
- Groundwater Flow Varies at Location
- Oil, gas or related wells

| | | | |
|---|---|---|---|
| SITE NAME: | Cerilon Site | CLIENT: | Barr Engineering |
| ADDRESS: | 4237 147th Ave. NW<br>Williston ND 58801 | CONTACT: | Liz Maher |
| | | INQUIRY #: | 07111665.2r |
| LAT/LONG: | 48.028588 / 103.873448 | DATE: | September 08, 2022 2:07 pm |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| Map ID<br>Direction<br>Distance<br>Elevation | | Database | EDR ID Number |
|---|---|---|---|
| **1**<br>**ENE**<br>**1/4 - 1/2 Mile**<br>**Higher** | | **ND WELLS** | **ND8000000028808** |

| | | | |
|---|---|---|---|
| Well Index: | 28096 | Basin: | Lake Sakakawea |
| Aquifer: | Trenton | Purpose: | Domestic Well |
| Casing Type: | PVC | Diameter (in): | 5 |
| Surface Elevation (ft): | 0 | Drilled Date: | 15-APR-82 |
| Total Depth (ft): | 55 | Bedrock Depth (ft): | 0 |
| Top of Screen (ft): | 45 | Bottom of Screen (ft): | 55 |
| | | | |
| Unit: | CLAY | Begin Interval: | 0 |
| End Interval: | 15 | Description: | sandy, lignite mixed |
| | | | |
| Unit: | CLAY | Begin Interval: | 15 |
| End Interval: | 30 | Description: | sandy |
| | | | |
| Unit: | GRAVEL | Begin Interval: | 30 |
| End Interval: | 37 | Description: | Not Reported |
| | | | |
| Unit: | CLAY | Begin Interval: | 37 |
| End Interval: | 41 | Description: | sandy |
| | | | |
| Unit: | SAND & GRAVEL | Begin Interval: | 41 |
| End Interval: | 45 | Description: | Not Reported |
| | | | |
| Unit: | GRAVEL | Begin Interval: | 45 |
| End Interval: | 53 | Description: | Not Reported |
| | | | |
| Unit: | CLAY | Begin Interval: | 53 |
| End Interval: | 55 | Description: | Not Reported |
| | | | |
| Date Sampled: | 18-JUL-01 | Time Sampled: | 17:30:00 |
| Source: | ND State Water Commission | Lab ID: | NDSWC Lab |
| Pumping Time: | 2 | Yield: | 10 |
| Water Level: | Not Reported | Field Conductivity: | 692 |
| Lab Conductivity: | 872 | Field PH: | Not Reported |
| Lab PH: | 7.52 | Field Temp: | Not Reported |
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 67 |
| Magnesium (mg/l): | 25 | Potassium (mg/l): | 3.9 |
| Sodium (mg/l): | 82 | Fluoride (mg/l): | 0.6 |
| Bicarbonate (mg/l): | 309 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 180 | Chloride (mg/l): | 14 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | A | Nitrate (mg/l): | 8.2 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.03 |
| Manganese (mg/l): | 0.01 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |

| | | | |
|---|---|---|---|
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 574 |
| TDS Calculated (mg/l): | 533 | Hardness: | 270 |
| Non-Carbonate Hardness: | 17 | Alk .as CaCO3: | Not Reported |
| SAR: | 2.2 | RSC: | 0 |
| Percent Sodium: | 39 | Date Started: | 2001-07-25 |
| Date Ended: | 2001-08-03 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | Not Reported | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | NDHD Lab |
| NO3 Sample Method: | Cadmium Reduction | Remarks: | Not Reported |

---

**2**
**WSW** **FED USGS** **USGS40000937896**
**1/4 - 1/2 Mile**
**Higher**

| | | | |
|---|---|---|---|
| Organization ID: | USGS-ND | | |
| Organization Name: | USGS North Dakota Water Science Center | | |
| Monitor Location: | 153-103-36CCD | Type: | Well |
| Description: | Not Reported | HUC: | 10110101 |
| Drainage Area: | Not Reported | Drainage Area Units: | Not Reported |
| Contrib Drainage Area: | Not Reported | Contrib Drainage Area Unts: | Not Reported |
| Aquifer: | Not Reported | Formation Type: | Not Reported |
| Aquifer Type: | Not Reported | Construction Date: | 19510101 |
| Well Depth: | 65 | Well Depth Units: | ft |
| Well Hole Depth: | Not Reported | Well Hole Depth Units: | Not Reported |

| | | | |
|---|---|---|---|
| Ground water levels,Number of Measurements: | 1 | Level reading date: | 1964-01-01 |
| Feet below surface: | 45.00 | Feet to sea level: | Not Reported |
| Note: | Not Reported | | |

---

**3**
**ESE** **ND WELLS** **ND8000000028809**
**1/4 - 1/2 Mile**
**Lower**

| | | | |
|---|---|---|---|
| Well Index: | 11807 | Basin: | Lake Sakakawea |
| Aquifer: | Trenton | Purpose: | Observation Well |
| Casing Type: | ABS | Diameter (in): | 0 |
| Surface Elevation (ft): | 0 | Drilled Date: | 30-JUN-71 |
| Total Depth (ft): | 105 | Bedrock Depth (ft): | 0 |
| Top of Screen (ft): | 87 | Bottom of Screen (ft): | 93 |

| | | | |
|---|---|---|---|
| Unit: | TOPSOIL | Begin Interval: | 0 |
| End Interval: | 1 | Description: | Sandy, silty, clayey, brown |

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 1 |
| End Interval: | 16 | | |
| Description: | Very silty, sandy, dark yellowish brown, slightly cohesive, plastic, oxidized (alluvium) | | |

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 16 |
| End Interval: | 21 | | |
| Description: | Same as above, only olive-gray, occasional thin sand lenses (alluvium) | | |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 21 |
| End Interval: | 48 | | |
| Description: | Very silty, olive-gray to medium gray with dark greenish gray mottling, moderately cohesive, highly | | |

| | | | |
|---|---|---|---|
| Unit: | SAND | Begin Interval: | 48 |
| End Interval: | 69 | | |
| Description: | Fine- to coarse-grained (mostly fine- to medium-grained), subrounded, moderately well-sorted, mostly | | |

| | | | |
|---|---|---|---|
| Unit: | GRAVEL | Begin Interval: | 69 |
| End Interval: | 75 | | |
| Description: | Moderately sandy, fine to coarse (mostly medium to coarse), subangular to rounded, fair sorting, mos | | |

| | | | |
|---|---|---|---|
| Unit: | SAND | Begin Interval: | 75 |
| End Interval: | 92 | | |
| Description: | Occasional thin clay lenses, very fine- to coarse-grained (mostly fine- to medium-grained), subangul | | |

| | | | |
|---|---|---|---|
| Unit: | GRAVEL | Begin Interval: | 92 |
| End Interval: | 105 | | |
| Description: | Moderately sandy, fine to coarse (mostly fine to medium), angular to rounded, fair sorting, mostly b | | |

| | | | |
|---|---|---|---|
| Date Sampled: | 01-JUL-71 | Time Sampled: | 00:00:00 |
| Source: | ND State Water Commission | Lab ID: | Not Reported |
| Pumping Time: | 360 | Yield: | 7.5 |
| Water Level: | Not Reported | Field Conductivity: | 1510 |
| Lab Conductivity: | 1440 | Field PH: | Not Reported |
| Lab PH: | 7.9 | Field Temp: | 8.5 |
| Silica (mg/l): | 26 | Calcium (mg/l): | 46 |
| Magnesium (mg/l): | 15 | Potassium (mg/l): | 7.4 |
| Sodium (mg/l): | 296 | Fluoride (mg/l): | 0.8 |
| Bicarbonate (mg/l): | 724 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 190 | Chloride (mg/l): | 6.9 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | M | Nitrate (mg/l): | 0.4 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | 0.24 | Iron (mg/l): | 1.3 |
| Manganese (mg/l): | 0.18 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 1020 |
| TDS Calculated (mg/l): | 947 | Hardness: | 176 |
| Non-Carbonate Hardness: | 0 | Alk .as CaCO3: | Not Reported |
| SAR: | 9.7 | RSC: | Not Reported |
| Percent Sodium: | 78 | Date Started: | 1971-08-09 |
| Date Ended: | 1971-08-19 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | Not Reported | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Unknown |
| NO3 Sample Method: | Unknown | Remarks: | W |

| | | | |
|---|---|---|---|
| Date Sampled: | 18-JUL-01 | Time Sampled: | 10:10:00 |
| Source: | ND State Water Commission | Lab ID: | NDSWC Lab |
| Pumping Time: | 95 | Yield: | 5 |
| Water Level: | 21.39 | Field Conductivity: | 1500 |
| Lab Conductivity: | 1820 | Field PH: | Not Reported |
| Lab PH: | 7.91 | Field Temp: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 65 |
| Magnesium (mg/l): | 23 | Potassium (mg/l): | 11 |
| Sodium (mg/l): | 340 | Fluoride (mg/l): | 0.8 |
| Bicarbonate (mg/l): | 740 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 410 | Chloride (mg/l): | 5.6 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | I | Nitrate (mg/l): | 0.1 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 1.3 |
| Manganese (mg/l): | 0.4 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 1240 |
| TDS Calculated (mg/l): | 1220 | Hardness: | 260 |
| Non-Carbonate Hardness: | 0 | Alk .as CaCO3: | Not Reported |
| SAR: | 9.2 | RSC: | 7 |
| Percent Sodium: | 73 | Date Started: | 2001-07-24 |
| Date Ended: | 2001-08-03 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | NDHD Lab |
| NO3 Sample Method: | Cadmium Reduction | Remarks: | Not Reported |

| | | | |
|---|---|---|---|
| Date Sampled: | 27-JUN-06 | Time Sampled: | 13:31:00 |
| Source: | HD | Lab ID: | 06-G700 |
| Pumping Time: | 20 | Yield: | 4 |
| Water Level: | 20.90 | Field Conductivity: | 1704 |
| Lab Conductivity: | 1810 | Field PH: | Not Reported |
| Lab PH: | 8.03 | Field Temp: | Not Reported |
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 62.2 |
| Magnesium (mg/l): | 23.0 | Potassium (mg/l): | 9.16 |
| Sodium (mg/l): | 301. | Fluoride (mg/l): | 0.686 |
| Bicarbonate (mg/l): | 686. | Carbonate (mg/l): | <1 |
| Sulfate (mg/l): | 411. | Chloride (mg/l): | 8.17 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | <1 |
| Color: | Not Reported | Nitrate (mg/l): | <0.09 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.968 |
| Manganese (mg/l): | 0.367 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | Not Reported |
| TDS Calculated (mg/l): | 1120 | Hardness: | 250. |
| Non-Carbonate Hardness: | 0. | Alk .as CaCO3: | 562. |
| SAR: | 8.27 | RSC: | 6. |
| Percent Sodium: | 72.3 | Date Started: | 2006-06-29 |
| Date Ended: | Not Reported | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Not Reported |
| NO3 Sample Method: | Not Reported | Remarks: | Not Reported |

| | | | |
|---|---|---|---|
| Date Sampled: | 31-AUG-11 | Time Sampled: | 10:03:00 |
| Source: | HD | Lab ID: | 11-G1409 |
| Pumping Time: | 20 | Yield: | 5 |
| Water Level: | 17.45 | Field Conductivity: | 1747 |
| Lab Conductivity: | 1760 | Field PH: | Not Reported |
| Lab PH: | 8.06 | Field Temp: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Silica (mg/l): | 25.9 | Calcium (mg/l): | 82.2 |
| Magnesium (mg/l): | 31.1 | Potassium (mg/l): | 9.34 |
| Sodium (mg/l): | 288. | Fluoride (mg/l): | 0.45 |
| Bicarbonate (mg/l): | 662. | Carbonate (mg/l): | <1 |
| Sulfate (mg/l): | 452. | Chloride (mg/l): | <15 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | <1 |
| Color: | Not Reported | Nitrate (mg/l): | 0.18 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 2.49 |
| Manganese (mg/l): | 0.483 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | Not Reported |
| TDS Calculated (mg/l): | 1090 | Hardness: | 333. |
| Non-Carbonate Hardness: | 0. | Alk .as CaCO3: | 543. |
| SAR: | 6.86 | RSC: | 4. |
| Percent Sodium: | 65.1 | Date Started: | 2011-09-02 |
| Date Ended: | Not Reported | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Not Reported |
| NO3 Sample Method: | Not Reported | Remarks: | Not Reported |

| | | | |
|---|---|---|---|
| Date Sampled: | 12-JUL-17 | Time Sampled: | 07:00:00 |
| Source: | HD | Lab ID: | 17-G812 |
| Pumping Time: | 20 | Yield: | .1GPM |
| Water Level: | 18.60 | Field Conductivity: | 1833 |
| Lab Conductivity: | 1880 | Field PH: | Not Reported |
| Lab PH: | 8.01 | Field Temp: | 9.8 |
| Silica (mg/l): | 25.7 | Calcium (mg/l): | 88.9 |
| Magnesium (mg/l): | 33.8 | Potassium (mg/l): | 10.1 |
| Sodium (mg/l): | 290. | Fluoride (mg/l): | 0.535 |
| Bicarbonate (mg/l): | 627. | Carbonate (mg/l): | <1 |
| Sulfate (mg/l): | 547. | Chloride (mg/l): | 10.8 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | <1 |
| Color: | Not Reported | Nitrate (mg/l): | <0.09 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | 0.193 | Iron (mg/l): | 1.58 |
| Manganese (mg/l): | 0.527 | Selenium (ug/l): | <5 |
| Lead (ug/l): | <5 | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | 6.16 | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | 5.21 | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | <5 | TDS Determined (mg/l): | Not Reported |
| TDS Calculated (mg/l): | 1170 | Hardness: | 361. |
| Non-Carbonate Hardness: | 0. | Alk .as CaCO3: | 514. |
| SAR: | 6.63 | RSC: | 3. |
| Percent Sodium: | 63.5 | Date Started: | 2017-07-14 |
| Date Ended: | Not Reported | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Not Reported |
| NO3 Sample Method: | Not Reported | Remarks: | Not Reported |

Water Level URL: https://www.swc.nd.gov/info_edu/map_data_resources/groundsurfacewater/waterlevels.php?id=11807

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

**4**
**NNE**
**1/2 - 1 Mile**
**Higher** | **FED USGS** | **USGS40000938043**

| | | | |
|---|---|---|---|
| Organization ID: | USGS-ND | | |
| Organization Name: | USGS North Dakota Water Science Center | | |
| Monitor Location: | 153-103-36ABD | Type: | Well |
| Description: | Not Reported | HUC: | 10110101 |
| Drainage Area: | Not Reported | Drainage Area Units: | Not Reported |
| Contrib Drainage Area: | Not Reported | Contrib Drainage Area Unts: | Not Reported |
| Aquifer: | Not Reported | Formation Type: | Not Reported |
| Aquifer Type: | Not Reported | Construction Date: | 19100101 |
| Well Depth: | 90 | Well Depth Units: | ft |
| Well Hole Depth: | Not Reported | Well Hole Depth Units: | Not Reported |

| | | | |
|---|---|---|---|
| Ground water levels,Number of Measurements: | 1 | Level reading date: | 1964-01-01 |
| Feet below surface: | 60.00 | Feet to sea level: | Not Reported |
| Note: | Not Reported | | |

---

**5**
**ENE**
**1/2 - 1 Mile**
**Lower** | **ND WELLS** | **ND8000000028790**

| | | | |
|---|---|---|---|
| Well Index: | 28078 | Basin: | Lake Sakakawea |
| Aquifer: | Trenton | Purpose: | Domestic Well |
| Casing Type: | PVC | Diameter (in): | 5 |
| Surface Elevation (ft): | 0 | Drilled Date: | 15-APR-88 |
| Total Depth (ft): | 52 | Bedrock Depth (ft): | 0 |
| Top of Screen (ft): | 40 | Bottom of Screen (ft): | 50 |

| | | | |
|---|---|---|---|
| Unit: | Not Reported | Begin Interval: | 0 |
| End Interval: | 0 | Description: | Not Reported |
| Unit: | CLAY | Begin Interval: | 0 |
| End Interval: | 21 | Description: | sandy, brown |
| Unit: | CLAY | Begin Interval: | 21 |
| End Interval: | 26 | Description: | brown |
| Unit: | SAND | Begin Interval: | 26 |
| End Interval: | 30 | Description: | lt. brown |
| Unit: | CLAY | Begin Interval: | 30 |
| End Interval: | 40 | Description: | blue |
| Unit: | GRAVEL | Begin Interval: | 40 |
| End Interval: | 50 | Description: | Not Reported |
| Unit: | CLAY | Begin Interval: | 50 |

| | | | |
|---|---|---|---|
| End Interval: | 52 | Description: | blue |

| | | | |
|---|---|---|---|
| Date Sampled: | 18-JUL-01 | Time Sampled: | 08:50:00 |
| Source: | ND State Water Commission | Lab ID: | NDSWC Lab |
| Pumping Time: | 4 | Yield: | 10 |
| Water Level: | Not Reported | Field Conductivity: | 673 |
| Lab Conductivity: | 793 | Field PH: | Not Reported |
| Lab PH: | 7.79 | Field Temp: | Not Reported |
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 62 |
| Magnesium (mg/l): | 24 | Potassium (mg/l): | 3.7 |
| Sodium (mg/l): | 69 | Fluoride (mg/l): | 0.7 |
| Bicarbonate (mg/l): | 275 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 170 | Chloride (mg/l): | 14 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | A | Nitrate (mg/l): | 2.7 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.05 |
| Manganese (mg/l): | 0.02 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 510 |
| TDS Calculated (mg/l): | 481 | Hardness: | 250 |
| Non-Carbonate Hardness: | 28 | Alk .as CaCO3: | Not Reported |
| SAR: | 1.9 | RSC: | 0 |
| Percent Sodium: | 37 | Date Started: | 2001-07-24 |
| Date Ended: | 2001-08-03 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | Not Reported | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | NDHD Lab |
| NO3 Sample Method: | Cadmium Reduction | Remarks: | Not Reported |

---

**6**
**ESE**
**1/2 - 1 Mile**
**Lower**

**ND WELLS** **ND8000000028791**

| | | | |
|---|---|---|---|
| Well Index: | 11801 | Basin: | Lake Sakakawea |
| Aquifer: | Trenton | Purpose: | Observation Well |
| Casing Type: | ABS | Diameter (in): | 0 |
| Surface Elevation (ft): | 0 | Drilled Date: | 19-JUN-68 |
| Total Depth (ft): | 94 | Bedrock Depth (ft): | 0 |
| Top of Screen (ft): | 83 | Bottom of Screen (ft): | 86 |

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 0 |
| End Interval: | 15 | | |
| Description: | Slightly silty, soft, yellowish brown, becomes olive-gray after about 8 ft. | | |

| | | | |
|---|---|---|---|
| Unit: | SAND | Begin Interval: | 15 |
| End Interval: | 40 | | |
| Description: | Fine to medium, moderately well-sorted, angular, primarily quartz with some black igneous rocks, som | | |

| | | | |
|---|---|---|---|
| Unit: | GRAVEL | Begin Interval: | 40 |
| End Interval: | 94 | | |
| Description: | Fine to coarse with pebbles, sandy, subangular, quite an amount of lignite, poorly sorted, layer of | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Date Sampled: | 20-JUN-68 | Time Sampled: | 00:00:00 |
| Source: | ND State Water Commission | Lab ID: | Not Reported |
| Pumping Time: | 540 | Yield: | 4 |
| Water Level: | 14.5 | Field Conductivity: | Not Reported |
| Lab Conductivity: | 2220 | Field PH: | Not Reported |
| Lab PH: | 7.9 | Field Temp: | 11.1 |
| Silica (mg/l): | 25 | Calcium (mg/l): | 170 |
| Magnesium (mg/l): | 48 | Potassium (mg/l): | 11 |
| Sodium (mg/l): | 300 | Fluoride (mg/l): | 0.3 |
| Bicarbonate (mg/l): | 720 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 685 | Chloride (mg/l): | 13 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | M | Nitrate (mg/l): | 0 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | 0.2 | Iron (mg/l): | 6.6 |
| Manganese (mg/l): | 0.36 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 1610 |
| TDS Calculated (mg/l): | 1610 | Hardness: | 620 |
| Non-Carbonate Hardness: | 30 | Alk .as CaCO3: | Not Reported |
| SAR: | 5.3 | RSC: | Not Reported |
| Percent Sodium: | 51 | Date Started: | 1968-07-08 |
| Date Ended: | 1968-07-15 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | Not Reported | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Unknown |
| NO3 Sample Method: | Unknown | Remarks: | W |

| | | | |
|---|---|---|---|
| Date Sampled: | 02-JUL-71 | Time Sampled: | 00:00:00 |
| Source: | Not Reported | Lab ID: | Not Reported |
| Pumping Time: | 45 | Yield: | 1 |
| Water Level: | Not Reported | Field Conductivity: | 2550 |
| Lab Conductivity: | 2280 | Field PH: | Not Reported |
| Lab PH: | 7.6 | Field Temp: | 8 |
| Silica (mg/l): | 24 | Calcium (mg/l): | 176 |
| Magnesium (mg/l): | 64 | Potassium (mg/l): | 11 |
| Sodium (mg/l): | 321 | Fluoride (mg/l): | 0.3 |
| Bicarbonate (mg/l): | 712 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 773 | Chloride (mg/l): | 12 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | M | Nitrate (mg/l): | 1 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | 0.14 | Iron (mg/l): | 7.3 |
| Manganese (mg/l): | 0.34 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 1770 |
| TDS Calculated (mg/l): | 1740 | Hardness: | 704 |
| Non-Carbonate Hardness: | 120 | Alk .as CaCO3: | Not Reported |
| SAR: | 5.3 | RSC: | Not Reported |
| Percent Sodium: | 49 | Date Started: | 1971-08-09 |
| Date Ended: | 1971-08-19 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | Not Reported | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Unknown |
| NO3 Sample Method: | Unknown | Remarks: | Not Reported |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Date Sampled: | 18-JUL-01 | Time Sampled: | 12:30:00 |
| Source: | ND State Water Commission | Lab ID: | NDSWC Lab |
| Pumping Time: | 120 | Yield: | Not Reported |
| Water Level: | 15.7 | Field Conductivity: | 1940 |
| Lab Conductivity: | 2370 | Field PH: | Not Reported |
| Lab PH: | 7.77 | Field Temp: | Not Reported |
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 170 |
| Magnesium (mg/l): | 59 | Potassium (mg/l): | 15 |
| Sodium (mg/l): | 360 | Fluoride (mg/l): | 0.3 |
| Bicarbonate (mg/l): | 786 | Carbonate (mg/l): | 0 |
| Sulfate (mg/l): | 710 | Chloride (mg/l): | 16 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | Not Reported |
| Color: | M | Nitrate (mg/l): | 0.2 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.09 |
| Manganese (mg/l): | 0.81 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | 1670 |
| TDS Calculated (mg/l): | 1720 | Hardness: | 670 |
| Non-Carbonate Hardness: | 23 | Alk .as CaCO3: | Not Reported |
| SAR: | 6 | RSC: | 0 |
| Percent Sodium: | 53 | Date Started: | 2001-07-24 |
| Date Ended: | 2001-08-03 | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | NDHD Lab |
| NO3 Sample Method: | Cadmium Reduction | Remarks: | Not Reported |

| | | | |
|---|---|---|---|
| Date Sampled: | 27-JUN-06 | Time Sampled: | 12:53:00 |
| Source: | HD | Lab ID: | 06-G699 |
| Pumping Time: | 50 | Yield: | SLOW |
| Water Level: | 15.36 | Field Conductivity: | 2270 |
| Lab Conductivity: | 2350 | Field PH: | Not Reported |
| Lab PH: | 7.83 | Field Temp: | Not Reported |
| Silica (mg/l): | Not Reported | Calcium (mg/l): | 134. |
| Magnesium (mg/l): | 51.4 | Potassium (mg/l): | 11.5 |
| Sodium (mg/l): | 338. | Fluoride (mg/l): | 0.190 |
| Bicarbonate (mg/l): | 745. | Carbonate (mg/l): | <1 |
| Sulfate (mg/l): | 735. | Chloride (mg/l): | 12.9 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | <1 |
| Color: | Not Reported | Nitrate (mg/l): | 0.13 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.079 |
| Manganese (mg/l): | 0.455 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | Not Reported |
| TDS Calculated (mg/l): | 1460 | Hardness: | 547. |
| Non-Carbonate Hardness: | 0. | Alk .as CaCO3: | 611. |
| SAR: | 6.29 | RSC: | 1. |
| Percent Sodium: | 57.2 | Date Started: | 2006-06-29 |
| Date Ended: | Not Reported | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Not Reported |
| NO3 Sample Method: | Not Reported | Remarks: | slow pumper, well sh |

| | | | |
|---|---|---|---|
| Date Sampled: | 31-AUG-11 | Time Sampled: | 09:35:00 |
| Source: | HD | Lab ID: | 11-G1408 |
| Pumping Time: | 40 | Yield: | slow |
| Water Level: | 11.10 | Field Conductivity: | 1960 |
| Lab Conductivity: | 1960 | Field PH: | Not Reported |
| Lab PH: | 8.30 | Field Temp: | Not Reported |
| Silica (mg/l): | 15.9 | Calcium (mg/l): | 88.7 |
| Magnesium (mg/l): | 50.8 | Potassium (mg/l): | 9.13 |
| Sodium (mg/l): | 314. | Fluoride (mg/l): | 0.34 |
| Bicarbonate (mg/l): | 536. | Carbonate (mg/l): | <1 |
| Sulfate (mg/l): | 638. | Chloride (mg/l): | 20.2 |
| Bromide (mg/l): | Not Reported | Hydroxide (mg/l): | <1 |
| Color: | Not Reported | Nitrate (mg/l): | 1.59 |
| Nitrate Remarks: | Not Reported | Phosphate (mg/l): | Not Reported |
| Boron (mg/l): | Not Reported | Iron (mg/l): | 0.073 |
| Manganese (mg/l): | 0.408 | Selenium (ug/l): | Not Reported |
| Lead (ug/l): | Not Reported | Mercury (ug/l): | Not Reported |
| Arsenic (ug/l): | Not Reported | Lithium (ug/l): | Not Reported |
| Molybdenum (ug/l): | Not Reported | Strontium (ug/l): | Not Reported |
| Cadmium (ug/l): | Not Reported | TDS Determined (mg/l): | Not Reported |
| TDS Calculated (mg/l): | 1220 | Hardness: | 431. |
| Non-Carbonate Hardness: | 0. | Alk .as CaCO3: | 439. |
| SAR: | 6.58 | RSC: | 0. |
| Percent Sodium: | 61.2 | Date Started: | 2011-09-02 |
| Date Ended: | Not Reported | Dissolved O2: | Not Reported |
| Down Hole Temp: | Not Reported | Suspended Solids (mg/l): | Not Reported |
| Sampling Method: | A | Stage: | Not Reported |
| Surface Depth: | 0 | NO3 Sample Source: | Not Reported |
| NO3 Sample Method: | Not Reported | Remarks: | Replace or put on do |

Water Level URL: https://www.swc.nd.gov/info_edu/map_data_resources/groundsurfacewater/waterlevels.php?id=11801

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**7**
**WNW**
**1/2 - 1 Mile**
**Higher**

**ND WELLS** **ND8000000028806**

| | | | |
|---|---|---|---|
| Well Index: | 32484 | Basin: | Missouri River |
| Aquifer: | Fort Union | Purpose: | Stock Well |
| Casing Type: | PVC | Diameter (in): | 5 |
| Surface Elevation (ft): | 1920 | Drilled Date: | 29-SEP-96 |
| Total Depth (ft): | 119 | Bedrock Depth (ft): | 107 |
| Top of Screen (ft): | 107 | Bottom of Screen (ft): | 117 |

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 0 |
| End Interval: | 33 | Description: | brown, sandy |
| Unit: | GRAVEL | Begin Interval: | 33 |
| End Interval: | 35 | Description: | Not Reported |
| Unit: | CLAY | Begin Interval: | 35 |
| End Interval: | 48 | Description: | brown, sandy |
| Unit: | GRAVEL | Begin Interval: | 48 |
| End Interval: | 50 | Description: | Not Reported |

| | | | |
|---|---|---|---|
| Unit: | CLAY | Begin Interval: | 50 |
| End Interval: | 52 | Description: | brown |
| Unit: | GRAVEL | Begin Interval: | 52 |
| End Interval: | 53 | Description: | Not Reported |
| Unit: | CLAY | Begin Interval: | 53 |
| End Interval: | 60 | Description: | sandy, brown |
| Unit: | SAND & GRAVEL | Begin Interval: | 60 |
| End Interval: | 70 | Description: | Not Reported |
| Unit: | CLAY | Begin Interval: | 70 |
| End Interval: | 95 | Description: | brown, sandy |
| Unit: | LIGNITE | Begin Interval: | 95 |
| End Interval: | 97 | Description: | Not Reported |
| Unit: | SAND | Begin Interval: | 97 |
| End Interval: | 98 | Description: | Not Reported |
| Unit: | GRAVEL | Begin Interval: | 98 |
| End Interval: | 107 | Description: | fine and sand |
| Unit: | LIGNITE | Begin Interval: | 107 |
| End Interval: | 113 | Description: | bedrock? |
| Unit: | SAND | Begin Interval: | 113 |
| End Interval: | 114 | Description: | Not Reported |
| Unit: | LIGNITE | Begin Interval: | 114 |
| End Interval: | 119 | Description: | hard |

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**8**
**SE**
**1/2 - 1 Mile**
**Lower**

**ND WELLS** **ND8000000027559**

| | | | |
|---|---|---|---|
| Well Index: | 32351 | Basin: | Lake Sakakawea |
| Aquifer: | Trenton | Purpose: | Industrial Well |
| Casing Type: | Steel | Diameter (in): | 458 |
| Surface Elevation (ft): | 1865 | Drilled Date: | 08-SEP-82 |
| Total Depth (ft): | 60 | Bedrock Depth (ft): | 0 |
| Top of Screen (ft): | 44 | Bottom of Screen (ft): | 48 |
| Unit: | CLAY | Begin Interval: | 0 |
| End Interval: | 10 | Description: | sticky, yellow |

| | | | |
|---|---|---|---|
| Unit: | SAND | Begin Interval: | 10 |
| End Interval: | 23 | Description: | fine |
| Unit: | SAND | Begin Interval: | 23 |
| End Interval: | 44 | Description: | medium |
| Unit: | GRAVEL | Begin Interval: | 44 |
| End Interval: | 48 | Description: | Not Reported |
| Unit: | SAND | Begin Interval: | 48 |
| End Interval: | 60 | Description: | Not Reported |

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**9**
**ESE**
**1/2 - 1 Mile**
**Lower**

**FED USGS** **USGS40000937892**

| | | | |
|---|---|---|---|
| Organization ID: | USGS-ND | | |
| Organization Name: | USGS North Dakota Water Science Center | | |
| Monitor Location: | 153-102-31CDC | Type: | Well |
| Description: | Not Reported | HUC: | 10110101 |
| Drainage Area: | Not Reported | Drainage Area Units: | Not Reported |
| Contrib Drainage Area: | Not Reported | Contrib Drainage Area Unts: | Not Reported |
| Aquifer: | Sand and gravel aquifers (glaciated regions) | | |
| Formation Type: | Trenton Aquifer | Aquifer Type: | Not Reported |
| Construction Date: | 19680619 | Well Depth: | 86 |
| Well Depth Units: | ft | Well Hole Depth: | 94 |
| Well Hole Depth Units: | ft | | |

| | | | |
|---|---|---|---|
| Ground water levels,Number of Measurements: | 395 | Level reading date: | 1997-09-15 |
| Feet below surface: | 12.39 | Feet to sea level: | Not Reported |
| Note: | Not Reported | | |
| Level reading date: | 1997-08-14 | Feet below surface: | 10.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-07-15 | Feet below surface: | 10.69 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-06-14 | Feet below surface: | 10.38 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-05-15 | Feet below surface: | 11.58 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-04-16 | Feet below surface: | 13.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-03-19 | Feet below surface: | 13.71 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1997-02-21 | Feet below surface: | 13.81 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-11-15 | Feet below surface: | 14.44 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1996-10-15 | Feet below surface: | 13.99 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-09-14 | Feet below surface: | 12.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-08-14 | Feet below surface: | 11.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-07-15 | Feet below surface: | 11.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-06-16 | Feet below surface: | 10.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-05-15 | Feet below surface: | 13.84 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-04-17 | Feet below surface: | 13.48 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-03-14 | Feet below surface: | 14.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1996-02-17 | Feet below surface: | 14.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-11-18 | Feet below surface: | 14.65 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-10-16 | Feet below surface: | 14.40 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-09-15 | Feet below surface: | 13.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-08-14 | Feet below surface: | 9.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-07-17 | Feet below surface: | 11.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-06-14 | Feet below surface: | 14.11 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-05-15 | Feet below surface: | 15.25 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-04-14 | Feet below surface: | 15.24 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-03-18 | Feet below surface: | 14.90 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1995-02-18 | Feet below surface: | 15.55 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-11-29 | Feet below surface: | 15.61 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-11-04 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1994-09-29 | Feet below surface: | 14.44 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-08-31 | Feet below surface: | 13.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-07-31 | Feet below surface: | 12.34 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-06-24 | Feet below surface: | 13.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-05-28 | Feet below surface: | 13.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-05-01 | Feet below surface: | 14.55 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1994-03-26 | Feet below surface: | 12.96 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-11-13 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-10-17 | Feet below surface: | 14.68 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-09-13 | Feet below surface: | 12.52 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-08-13 | Feet below surface: | 10.90 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-07-14 | Feet below surface: | 10.75 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-06-17 | Feet below surface: | 12.64 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-05-16 | Feet below surface: | 15.62 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-04-18 | Feet below surface: | 15.63 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-03-15 | Feet below surface: | 14.24 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1993-02-14 | Feet below surface: | 16.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-11-24 | Feet below surface: | 15.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-11-15 | Feet below surface: | 15.25 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-10-11 | Feet below surface: | 14.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-09-14 | Feet below surface: | 13.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1992-08-15 | Feet below surface: | 11.47 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-07-19 | Feet below surface: | 10.96 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-06-13 | Feet below surface: | 11.44 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-05-12 | Feet below surface: | 14.02 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-04-13 | Feet below surface: | 15.30 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-03-14 | Feet below surface: | 15.27 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1992-02-23 | Feet below surface: | 15.99 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-11-13 | Feet below surface: | 14.23 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-10-12 | Feet below surface: | 13.67 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-09-22 | Feet below surface: | 13.13 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-09-01 | Feet below surface: | 12.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-08-16 | Feet below surface: | 9.54 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-08-02 | Feet below surface: | 11.04 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-07-18 | Feet below surface: | 12.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-07-04 | Feet below surface: | 10.22 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-06-13 | Feet below surface: | 11.86 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-05-28 | Feet below surface: | 13.63 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-05-14 | Feet below surface: | 13.56 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-04-24 | Feet below surface: | 15.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-03-24 | Feet below surface: | 15.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1991-03-03 | Feet below surface: | 15.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1990-11-08 | Feet below surface: | 14.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-09-30 | Feet below surface: | 13.93 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-09-15 | Feet below surface: | 13.53 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-09-04 | Feet below surface: | 12.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-08-19 | Feet below surface: | 12.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-07-29 | Feet below surface: | 12.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-07-15 | Feet below surface: | 13.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-07-02 | Feet below surface: | 12.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-06-17 | Feet below surface: | 12.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-06-03 | Feet below surface: | 13.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-05-16 | Feet below surface: | 11.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-05-03 | Feet below surface: | 14.72 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-04-19 | Feet below surface: | 15.32 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-03-18 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1990-02-21 | Feet below surface: | 14.99 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-11-21 | Feet below surface: | 14.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-10-18 | Feet below surface: | 14.64 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-09-14 | Feet below surface: | 13.21 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-09-01 | Feet below surface: | 12.25 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-08-16 | Feet below surface: | 11.24 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-07-30 | Feet below surface: | 12.33 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1989-07-15 | Feet below surface: | 11.91 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-07-01 | Feet below surface: | 11.86 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-06-17 | Feet below surface: | 14.75 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-04-26 | Feet below surface: | 14.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1989-03-11 | Feet below surface: | 14.50 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-11-17 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-10-12 | Feet below surface: | 14.05 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-09-15 | Feet below surface: | 12.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-09-02 | Feet below surface: | 12.20 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-08-15 | Feet below surface: | 12.43 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-08-01 | Feet below surface: | 12.73 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-07-14 | Feet below surface: | 12.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-07-01 | Feet below surface: | 12.58 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-06-16 | Feet below surface: | 11.93 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-06-01 | Feet below surface: | 12.93 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-05-17 | Feet below surface: | 12.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-05-03 | Feet below surface: | 14.10 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-04-17 | Feet below surface: | 15.34 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-03-16 | Feet below surface: | 15.17 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1988-02-18 | Feet below surface: | 15.62 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-11-19 | Feet below surface: | 15.50 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1987-10-21 | Feet below surface: | 14.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-09-16 | Feet below surface: | 14.24 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-08-30 | Feet below surface: | 13.16 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-08-15 | Feet below surface: | 12.17 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-08-06 | Feet below surface: | 10.65 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-07-31 | Feet below surface: | 12.99 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-07-16 | Feet below surface: | 11.77 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-06-29 | Feet below surface: | 12.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-06-15 | Feet below surface: | 13.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-05-29 | Feet below surface: | 14.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-04-22 | Feet below surface: | 14.86 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-03-25 | Feet below surface: | 14.52 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1987-02-12 | Feet below surface: | 14.80 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-11-13 | Feet below surface: | 14.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-10-19 | Feet below surface: | 14.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-09-16 | Feet below surface: | 13.82 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-08-30 | Feet below surface: | 12.51 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-08-10 | Feet below surface: | 12.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-07-27 | Feet below surface: | 13.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-07-12 | Feet below surface: | 12.91 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-06-29 | Feet below surface: | 11.47 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1986-06-13 | Feet below surface: | 12.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-05-26 | Feet below surface: | 13.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1986-04-22 | Feet below surface: | 13.61 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-12-05 | Feet below surface: | 14.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-10-02 | Feet below surface: | 13.65 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-09-04 | Feet below surface: | 12.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-08-17 | Feet below surface: | 12.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-07-31 | Feet below surface: | 11.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-07-15 | Feet below surface: | 11.02 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-06-29 | Feet below surface: | 12.23 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-06-13 | Feet below surface: | 12.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-05-31 | Feet below surface: | 11.81 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-05-15 | Feet below surface: | 13.50 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-05-01 | Feet below surface: | 14.67 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-03-31 | Feet below surface: | 14.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1985-02-28 | Feet below surface: | 14.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-11-29 | Feet below surface: | 14.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-10-16 | Feet below surface: | 15.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-09-17 | Feet below surface: | 13.20 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-08-30 | Feet below surface: | 12.33 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-08-15 | Feet below surface: | 12.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1984-07-30 | Feet below surface: | 11.83 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-07-14 | Feet below surface: | 11.27 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-06-28 | Feet below surface: | 12.16 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-06-14 | Feet below surface: | 11.99 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-05-27 | Feet below surface: | 13.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-05-11 | Feet below surface: | 14.78 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-04-18 | Feet below surface: | 14.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-03-15 | Feet below surface: | 14.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1984-02-16 | Feet below surface: | 14.62 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-12-02 | Feet below surface: | 15.01 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-11-02 | Feet below surface: | 14.95 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-10-04 | Feet below surface: | 13.92 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-09-14 | Feet below surface: | 13.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-09-01 | Feet below surface: | 12.56 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-08-11 | Feet below surface: | 12.11 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-07-27 | Feet below surface: | 11.60 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-07-13 | Feet below surface: | 12.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-06-24 | Feet below surface: | 12.69 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-06-08 | Feet below surface: | 13.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-05-20 | Feet below surface: | 13.10 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-05-05 | Feet below surface: | 14.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1983-04-13 | Feet below surface: | 14.46 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1983-02-16 | Feet below surface: | 14.27 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-12-02 | Feet below surface: | 13.44 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-11-02 | Feet below surface: | 14.24 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-10-07 | Feet below surface: | 13.83 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-09-15 | Feet below surface: | 13.78 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-08-27 | Feet below surface: | 12.76 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-07-30 | Feet below surface: | 12.53 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-07-16 | Feet below surface: | 12.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-07-02 | Feet below surface: | 12.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-06-18 | Feet below surface: | 13.38 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-05-29 | Feet below surface: | 13.70 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-04-30 | Feet below surface: | 13.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1982-03-26 | Feet below surface: | 13.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-12-04 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-11-16 | Feet below surface: | 14.60 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-10-14 | Feet below surface: | 14.56 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-09-22 | Feet below surface: | 13.31 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-09-07 | Feet below surface: | 13.01 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-08-23 | Feet below surface: | 12.43 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-08-06 | Feet below surface: | 12.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1981-07-24 | Feet below surface: | 12.23 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-07-09 | Feet below surface: | 13.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-06-18 | Feet below surface: | 12.16 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-06-04 | Feet below surface: | 10.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-05-14 | Feet below surface: | 11.81 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-04-10 | Feet below surface: | 16.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-03-19 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1981-01-15 | Feet below surface: | 16.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-12-05 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-11-06 | Feet below surface: | 14.31 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-10-20 | Feet below surface: | 12.21 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-09-15 | Feet below surface: | 12.23 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-08-31 | Feet below surface: | 12.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-08-13 | Feet below surface: | 8.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-07-24 | Feet below surface: | 8.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-07-08 | Feet below surface: | 11.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-06-19 | Feet below surface: | 12.32 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-06-04 | Feet below surface: | 11.82 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-05-16 | Feet below surface: | 12.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-04-30 | Feet below surface: | 12.34 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-04-08 | Feet below surface: | 15.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1980-03-20 | Feet below surface: | 15.50 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-02-14 | Feet below surface: | 15.51 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1980-01-15 | Feet below surface: | 15.45 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-11-30 | Feet below surface: | 15.03 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-10-03 | Feet below surface: | 13.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-09-19 | Feet below surface: | 13.08 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-09-06 | Feet below surface: | 12.69 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-08-14 | Feet below surface: | 12.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-08-01 | Feet below surface: | 11.75 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-07-18 | Feet below surface: | 11.31 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-07-06 | Feet below surface: | 11.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-06-15 | Feet below surface: | 13.16 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-06-06 | Feet below surface: | 12.58 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-05-01 | Feet below surface: | 12.13 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-04-03 | Feet below surface: | 12.60 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-03-06 | Feet below surface: | 14.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-02-06 | Feet below surface: | 14.39 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1979-01-04 | Feet below surface: | 14.71 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-11-28 | Feet below surface: | 14.04 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-11-02 | Feet below surface: | 14.34 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-10-06 | Feet below surface: | 13.88 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1978-09-18 | Feet below surface: | 13.02 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-09-07 | Feet below surface: | 12.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-08-15 | Feet below surface: | 12.05 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-08-01 | Feet below surface: | 11.94 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-07-18 | Feet below surface: | 12.06 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-07-04 | Feet below surface: | 12.65 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-06-16 | Feet below surface: | 12.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-06-08 | Feet below surface: | 12.96 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-05-18 | Feet below surface: | 14.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-05-04 | Feet below surface: | 13.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-04-06 | Feet below surface: | 13.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-03-01 | Feet below surface: | 15.61 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-02-01 | Feet below surface: | 15.77 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1978-01-05 | Feet below surface: | 16.42 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-11-29 | Feet below surface: | 15.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-11-02 | Feet below surface: | 14.81 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-10-05 | Feet below surface: | 14.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-09-15 | Feet below surface: | 13.42 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-08-31 | Feet below surface: | 12.55 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-08-16 | Feet below surface: | 12.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-08-03 | Feet below surface: | 12.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1977-07-14 | Feet below surface: | 12.92 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-07-07 | Feet below surface: | 12.34 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-06-15 | Feet below surface: | 12.44 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-06-02 | Feet below surface: | 13.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-05-17 | Feet below surface: | 12.96 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-05-04 | Feet below surface: | 12.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-04-05 | Feet below surface: | 15.10 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-03-02 | Feet below surface: | 14.64 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-02-03 | Feet below surface: | 14.82 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1977-01-05 | Feet below surface: | 15.00 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-11-30 | Feet below surface: | 15.03 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-11-05 | Feet below surface: | 14.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-10-05 | Feet below surface: | 14.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-09-15 | Feet below surface: | 12.73 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-08-31 | Feet below surface: | 12.68 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-08-17 | Feet below surface: | 11.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-08-06 | Feet below surface: | 12.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-06-02 | Feet below surface: | 12.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1976-03-02 | Feet below surface: | 14.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1975-12-04 | Feet below surface: | 15.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1975-09-05 | Feet below surface: | 12.61 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1975-06-04 | Feet below surface: | 13.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1975-03-13 | Feet below surface: | 14.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-12-03 | Feet below surface: | 15.67 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-09-06 | Feet below surface: | 13.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-06-05 | Feet below surface: | 14.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-05-01 | Feet below surface: | 15.39 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-04-03 | Feet below surface: | 15.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-03-06 | Feet below surface: | 15.67 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-02-01 | Feet below surface: | 15.78 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1974-01-10 | Feet below surface: | 16.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-12-05 | Feet below surface: | 15.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-11-07 | Feet below surface: | 15.79 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-10-16 | Feet below surface: | 15.37 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-10-04 | Feet below surface: | 14.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-09-13 | Feet below surface: | 13.83 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-09-06 | Feet below surface: | 12.12 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-08-14 | Feet below surface: | 12.88 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-08-02 | Feet below surface: | 13.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-07-19 | Feet below surface: | 12.81 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-07-04 | Feet below surface: | 14.18 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-06-20 | Feet below surface: | 13.26 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1973-06-07 | Feet below surface: | 14.02 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-05-03 | Feet below surface: | 15.82 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-04-04 | Feet below surface: | 15.80 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-03-23 | Feet below surface: | 15.73 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-02-07 | Feet below surface: | 16.08 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1973-01-12 | Feet below surface: | 15.68 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-12-07 | Feet below surface: | 15.98 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-11-09 | Feet below surface: | 15.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-10-11 | Feet below surface: | 15.46 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-10-04 | Feet below surface: | 15.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-09-12 | Feet below surface: | 14.40 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-09-08 | Feet below surface: | 14.51 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-08-11 | Feet below surface: | 13.27 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-08-04 | Feet below surface: | 13.75 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-07-11 | Feet below surface: | 13.20 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-06-27 | Feet below surface: | 13.67 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-06-15 | Feet below surface: | 13.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-06-08 | Feet below surface: | 13.17 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-05-09 | Feet below surface: | 14.36 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-05-04 | Feet below surface: | 14.32 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-04-19 | Feet below surface: | 14.22 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

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|---|---|---|---|
| Level reading date: | 1972-04-05 | Feet below surface: | 13.77 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-03-07 | Feet below surface: | 15.75 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-02-02 | Feet below surface: | 15.96 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1972-01-05 | Feet below surface: | 15.74 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-11-29 | Feet below surface: | 15.61 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-11-03 | Feet below surface: | 15.50 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-10-07 | Feet below surface: | 14.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-09-09 | Feet below surface: | 13.68 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-08-26 | Feet below surface: | 13.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-08-17 | Feet below surface: | 13.09 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-08-04 | Feet below surface: | 13.12 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-07-15 | Feet below surface: | 13.97 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-07-08 | Feet below surface: | 13.93 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-06-17 | Feet below surface: | 13.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-06-03 | Feet below surface: | 14.13 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-05-12 | Feet below surface: | 14.39 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-05-05 | Feet below surface: | 15.40 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-04-06 | Feet below surface: | 14.49 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-03-03 | Feet below surface: | 15.05 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-02-03 | Feet below surface: | 16.08 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1971-01-07 | Feet below surface: | 16.03 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1970-12-01 | Feet below surface: | 16.11 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-11-04 | Feet below surface: | 16.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-10-07 | Feet below surface: | 15.62 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-09-10 | Feet below surface: | 13.66 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-08-27 | Feet below surface: | 14.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-08-14 | Feet below surface: | 12.89 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-07-30 | Feet below surface: | 14.11 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-07-15 | Feet below surface: | 13.55 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-06-30 | Feet below surface: | 14.05 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-06-18 | Feet below surface: | 14.19 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-06-03 | Feet below surface: | 14.41 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-05-20 | Feet below surface: | 15.15 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-05-05 | Feet below surface: | 15.80 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-04-23 | Feet below surface: | 16.35 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-03-25 | Feet below surface: | 16.32 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-02-26 | Feet below surface: | 15.55 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1970-01-27 | Feet below surface: | 15.87 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-12-29 | Feet below surface: | 16.08 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-12-02 | Feet below surface: | 16.46 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-11-05 | Feet below surface: | 15.71 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-10-22 | Feet below surface: | 15.65 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

| | | | |
|---|---|---|---|
| Level reading date: | 1969-10-07 | Feet below surface: | 15.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-09-24 | Feet below surface: | 14.42 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-09-11 | Feet below surface: | 13.42 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-08-21 | Feet below surface: | 12.80 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-07-30 | Feet below surface: | 14.17 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-07-15 | Feet below surface: | 13.54 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-07-02 | Feet below surface: | 13.38 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-06-19 | Feet below surface: | 14.07 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-06-05 | Feet below surface: | 13.77 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-05-20 | Feet below surface: | 14.92 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-05-09 | Feet below surface: | 15.46 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-04-24 | Feet below surface: | 15.22 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-04-11 | Feet below surface: | 15.14 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-03-26 | Feet below surface: | 15.51 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-03-12 | Feet below surface: | 16.53 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-02-13 | Feet below surface: | 16.47 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1969-01-04 | Feet below surface: | 16.52 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-12-17 | Feet below surface: | 16.59 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-11-20 | Feet below surface: | 16.52 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-11-05 | Feet below surface: | 16.54 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-10-22 | Feet below surface: | 16.18 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

## GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

| | | | |
|---|---|---|---|
| Level reading date: | 1968-10-09 | Feet below surface: | 16.04 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-09-24 | Feet below surface: | 15.69 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-09-12 | Feet below surface: | 14.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-08-28 | Feet below surface: | 13.85 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-08-15 | Feet below surface: | 13.28 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-07-30 | Feet below surface: | 12.66 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-07-19 | Feet below surface: | 14.29 |
| Feet to sea level: | Not Reported | Note: | Not Reported |
| Level reading date: | 1968-07-02 | Feet below surface: | 15.13 |
| Feet to sea level: | Not Reported | Note: | Not Reported |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

**1**
**SW**
**1/8 - 1/4 Mile**

**OIL_GAS** **NDOG80000003989**

| | | | |
|---|---|---|---|
| API #: | 33-105-01338-00-00 | Well Name: | TRENTON STATE 1 |
| Operator: | MARSHALL & WINSTON, INC. | Spud Date: | 19-FEB-88 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Plugged and Abandoned | | |

---

**2**
**ESE**
**1/4 - 1/2 Mile**

**OIL_GAS** **NDOG80000005998**

| | | | |
|---|---|---|---|
| API #: | 33-105-01034-00-00 | Well Name: | AUNE 1-36 |
| Operator: | RIM OPERATING, INC. | Spud Date: | 12-AUG-82 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**3**
**West**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000038088**

| | | | |
|---|---|---|---|
| API #: | 33-105-90474-00-00 | Well Name: | BEARCE 1 SWD |
| Operator: | HENRY HILL OIL SERVICES, LLC | Spud Date: | 29-JAN-20 |
| Field: | SIXMILE | Well Type: | Salt Water Disposal |
| Well Status: | Active | | |

---

**4**
**SE**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000006268**

| | | | |
|---|---|---|---|
| API #: | 33-105-01040-00-00 | Well Name: | HOUSTON 41-4 |
| Operator: | RITTER, LABER & ASSOCIATES, INC. | Spud Date: | 26-SEP-82 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**A5**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036898**

| | | | |
|---|---|---|---|
| API #: | 33-105-04755-00-00 | Well Name: | MISSOURI 152-103-4-2-1H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 14-JUN-18 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Inactive (Shut-in >= 3 and <= 12 months) | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

**A6**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036899**

| | | | |
|---|---|---|---|
| API #: | 33-105-04756-00-00 | Well Name: | MISSOURI 152-103-4-2-2H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 18-JUN-18 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**A7**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036900**

| | | | |
|---|---|---|---|
| API #: | 33-105-04757-00-00 | Well Name: | MISSOURI 152-103-4-2-3H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 23-JUN-18 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**A8**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036901**

| | | | |
|---|---|---|---|
| API #: | 33-105-04758-00-00 | Well Name: | MISSOURI 152-103-4-2-4H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 15-OCT-19 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**A9**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036902**

| | | | |
|---|---|---|---|
| API #: | 33-105-04759-00-00 | Well Name: | MISSOURI 152-103-4-2-5H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 16-OCT-19 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**A10**
**SSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000036903**

| | | | |
|---|---|---|---|
| API #: | 33-105-04760-00-00 | Well Name: | MISSOURI 152-103-4-2-6H |
| Operator: | NINE POINT ENERGY, LLC | Spud Date: | 20-OCT-19 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance

Database EDR ID Number

**11**
**WSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000023155**

| | | | |
|---|---|---|---|
| API #: | 33-105-02449-00-00 | Well Name: | EVERETT 5-8 #1H |
| Operator: | EQUINOR ENERGY LP | Spud Date: | 13-DEC-11 |
| Field: | SUGAR BEET | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**12**
**ESE**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000005564**

| | | | |
|---|---|---|---|
| API #: | 33-105-01111-00-00 | Well Name: | EIGHTMILE SWD 1 |
| Operator: | PAUL RANKIN INC. | Spud Date: | 26-MAR-84 |
| Field: | EIGHTMILE | Well Type: | Salt Water Disposal |
| Well Status: | Inactive (Shut-in >= 3 and <= 12 months) | | |

---

**13**
**WSW**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000020075**

| | | | |
|---|---|---|---|
| API #: | 33-105-01900-00-00 | Well Name: | HARDSCRABBLE 13-3526H |
| Operator: | EOG RESOURCES, INC. | Spud Date: | 09-DEC-10 |
| Field: | SIXMILE | Well Type: | Oil and Gas |
| Well Status: | Active | | |

---

**14**
**SE**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000006953**

| | | | |
|---|---|---|---|
| API #: | 33-105-01022-00-00 | Well Name: | CLARENCE JOHNSRUD 1-3 |
| Operator: | PAUL RANKIN INC. | Spud Date: | 30-MAR-82 |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Inactive (Shut-in >= 3 and <= 12 months) | | |

---

**15**
**SSE**
**1/2 - 1 Mile**

**OIL_GAS** **NDOG80000004176**

| | | | |
|---|---|---|---|
| API #: | 33-105-01225-00-00 | Well Name: | OYLOE HOUSTON 1 |
| Operator: | SUN EXPLORATION & PRODUCTION CO. | Spud Date: | Not Reported |
| Field: | EIGHTMILE | Well Type: | Oil and Gas |
| Well Status: | Permit Now Cancelled | | |

# GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
# RADON

**AREA RADON INFORMATION**

State Database: ND Radon

Radon Test Results

| Source | Total Sites | Average | Std. Dev. | Pct > 4 Pci/L | Pct > 20 Pci/L |
|---|---|---|---|---|---|
| wic | 32 | 3.08 | 2.01 | 21.9 | 0.0 |
| school | 175 | 1.84 | 1.89 | 5.7 | 0.0 |
| home | 19 | 3.8 | 2.1 | 36.8 | 0.0 |
| daycare | 34 | 1.86 | 0.97 | 2.9 | 0.0 |

Federal EPA Radon Zone for WILLIAMS County: 1

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

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Federal Area Radon Information for Zip Code: 58801

Number of sites tested: 18

| Area | Average Activity | % <4 pCi/L | % 4-20 pCi/L | % >20 pCi/L |
|---|---|---|---|---|
| Living Area - 1st Floor | 2.450 pCi/L | 100% | 0% | 0% |
| Living Area - 2nd Floor | Not Reported | Not Reported | Not Reported | Not Reported |
| Basement | 4.067 pCi/L | 56% | 44% | 0% |

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

## HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

## HYDROGEOLOGIC INFORMATION

AQUIFLOW$^{R}$ Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

## GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

## LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Locations
Source: State Water Commission
Telephone: 701-328-2754

## OTHER STATE DATABASE INFORMATION

Oil and Gas Well Locations Listing
Source: North Dakota Industrial Commission
Telephone: 701-328-8020
A listing of oil and gas well locations in the state.

RADON

State Database: ND Radon
Source: Dept of Health
Telephone: 701-328-5188
Radon Surveys in North Dakota. Includes cluster, day care, school, home, and women with infant children

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

# PHYSICAL SETTING SOURCE RECORDS SEARCHED

**STREET AND ADDRESS INFORMATION**

# Appendix D

## Historical Documentation

# Aerial Photographs

**Cerilon Site**

4237 147th Ave. NW

Williston, ND 58801

Inquiry Number: 7111665.8

September 08, 2022

# The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Aerial Photo Decade Package

09/08/22

**Site Name:**

Cerilon Site
4237 147th Ave. NW
Williston, ND 58801
EDR Inquiry # 7111665.8

**Client Name:**

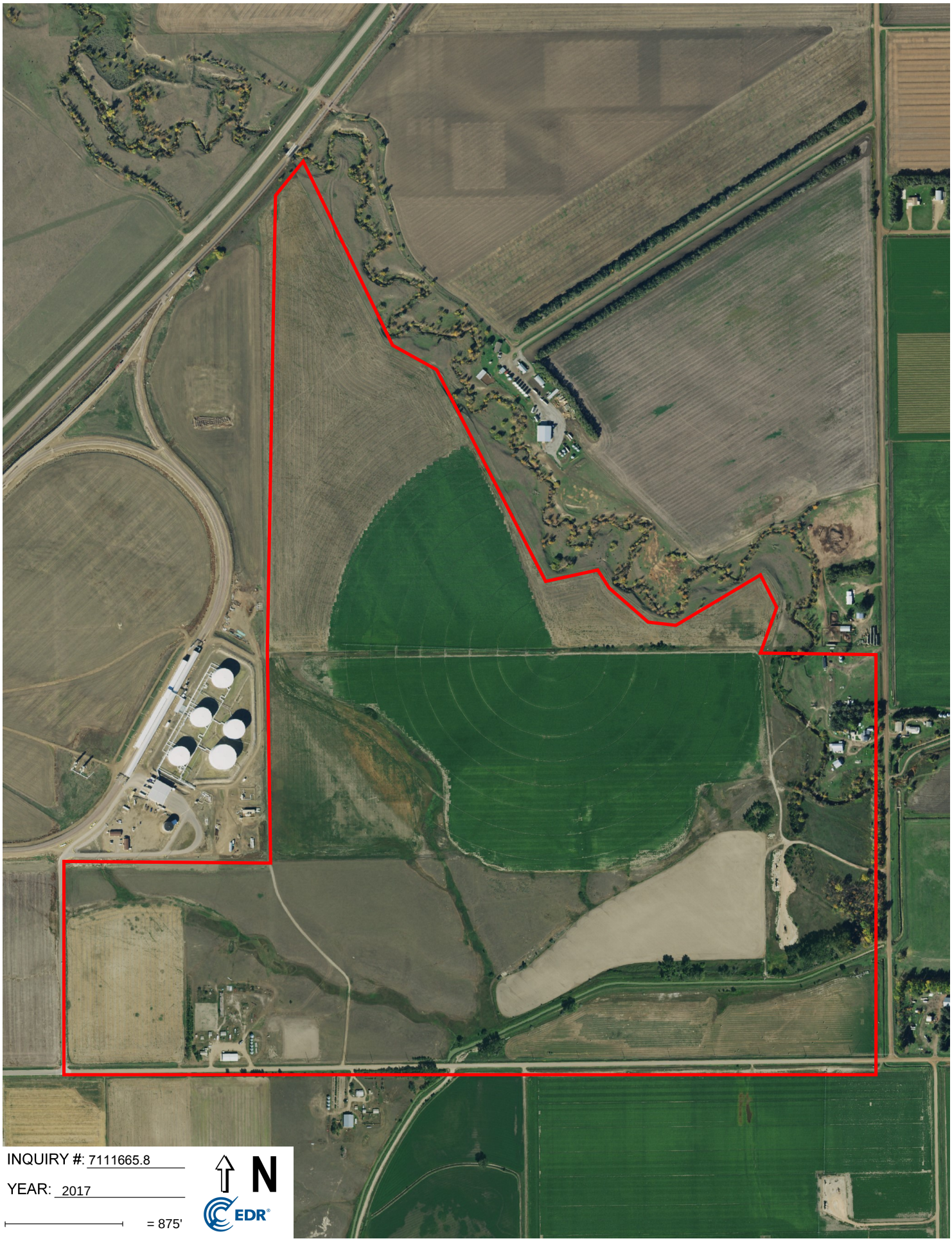
Barr Engineering
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Contact: Liz Maher

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

***Search Results:***

| Year | Scale | Details | Source |
|---|---|---|---|
| 2017 | 1"=875' | Flight Year: 2017 | USDA/NAIP |
| 2014 | 1"=875' | Flight Year: 2014 | USDA/NAIP |
| 2010 | 1"=875' | Flight Year: 2010 | USDA/NAIP |
| 2006 | 1"=875' | Flight Year: 2006 | USDA/NAIP |
| 1995 | 1"=875' | Acquisition Date: August 01, 1995 | USGS/DOQQ |
| 1983 | 1"=875' | Flight Date: September 22, 1983 | USDA |
| 1976 | 1"=875' | Flight Date: May 10, 1976 | USGS |
| 1967 | 1"=875' | Flight Date: May 27, 1967 | USGS |
| 1958 | 1"=875' | Flight Date: August 02, 1958 | USDA |
| 1949 | 1"=875' | Flight Date: August 21, 1949 | USGS |

**When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.**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YEAR: 2017
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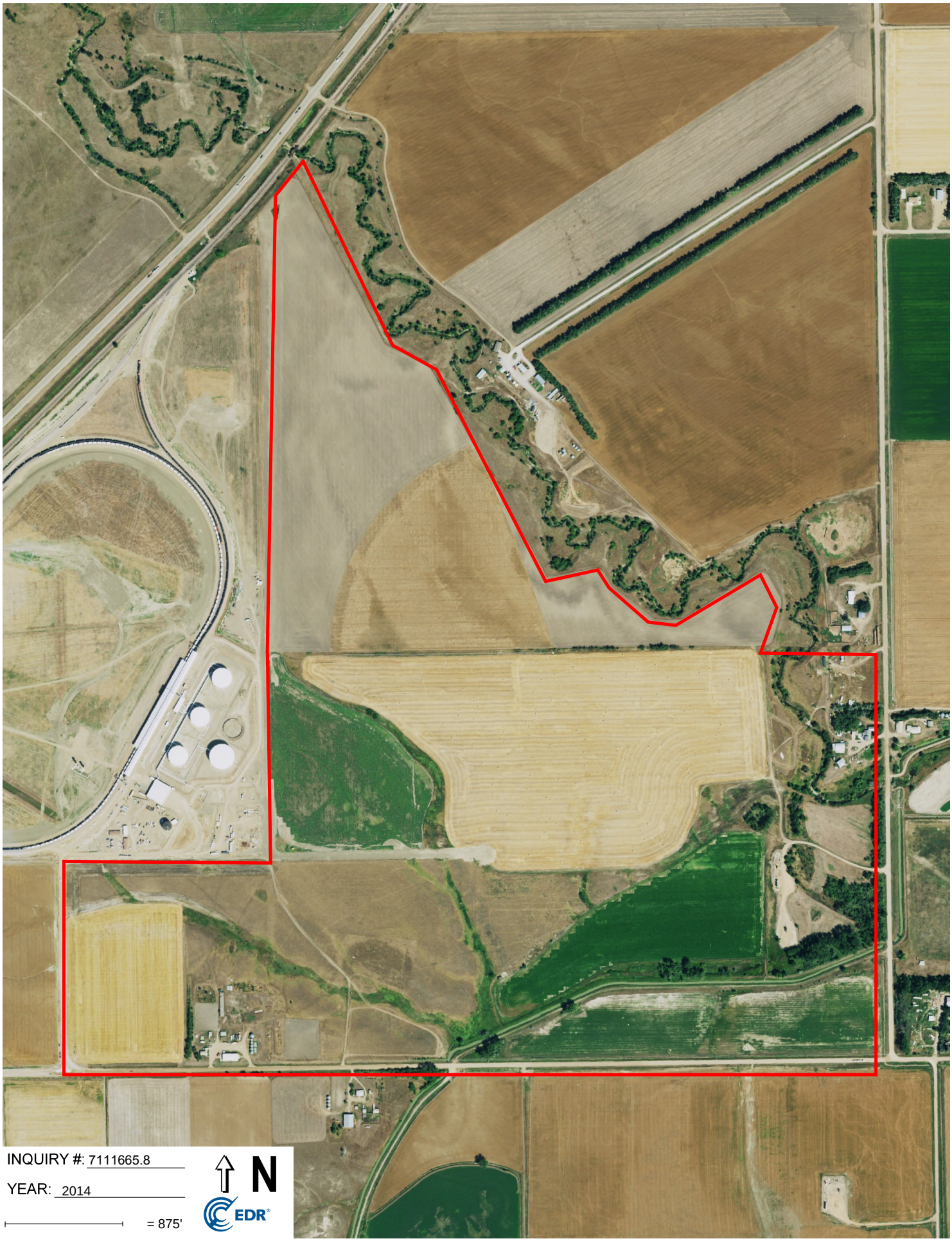
EDR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= 875'
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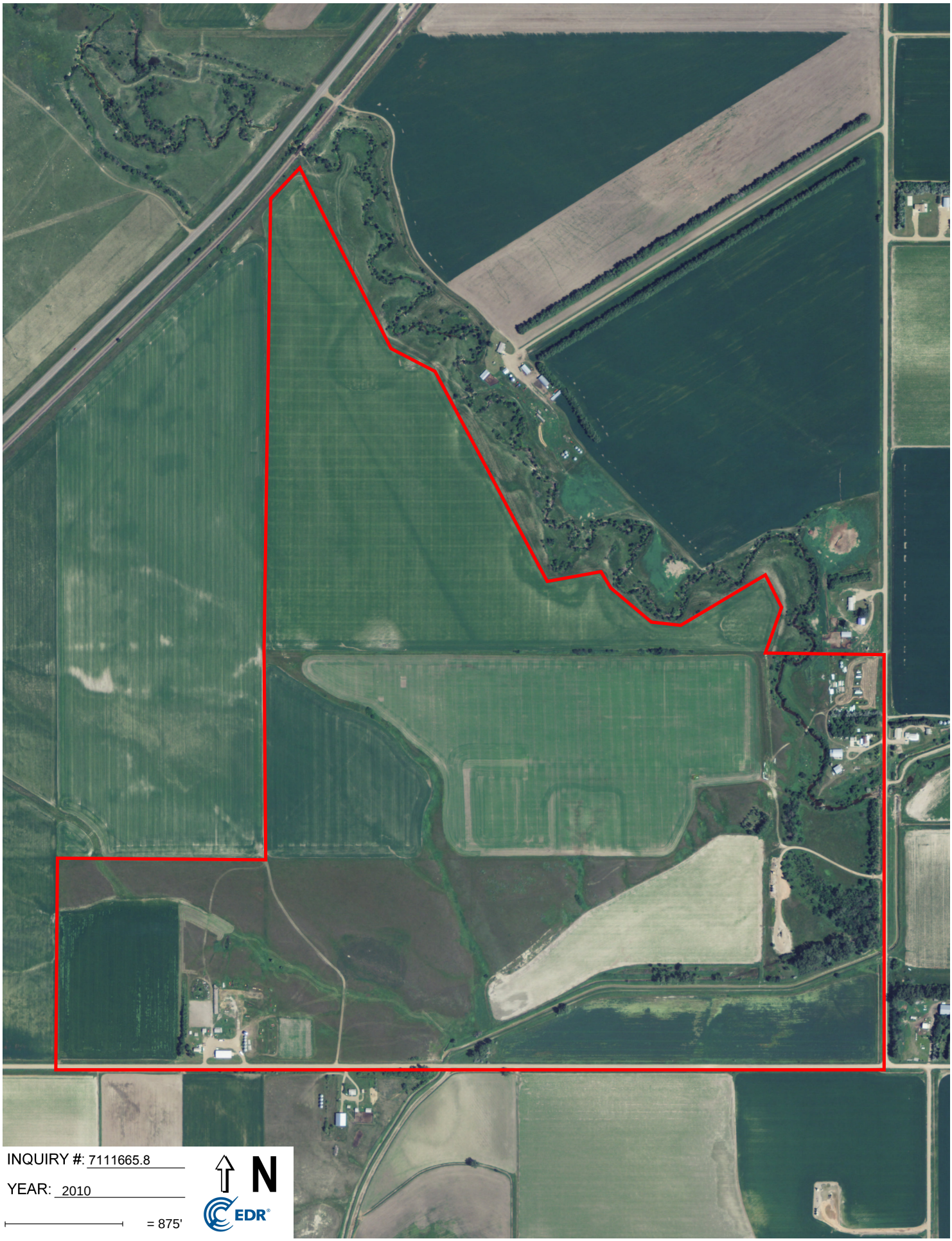
EDR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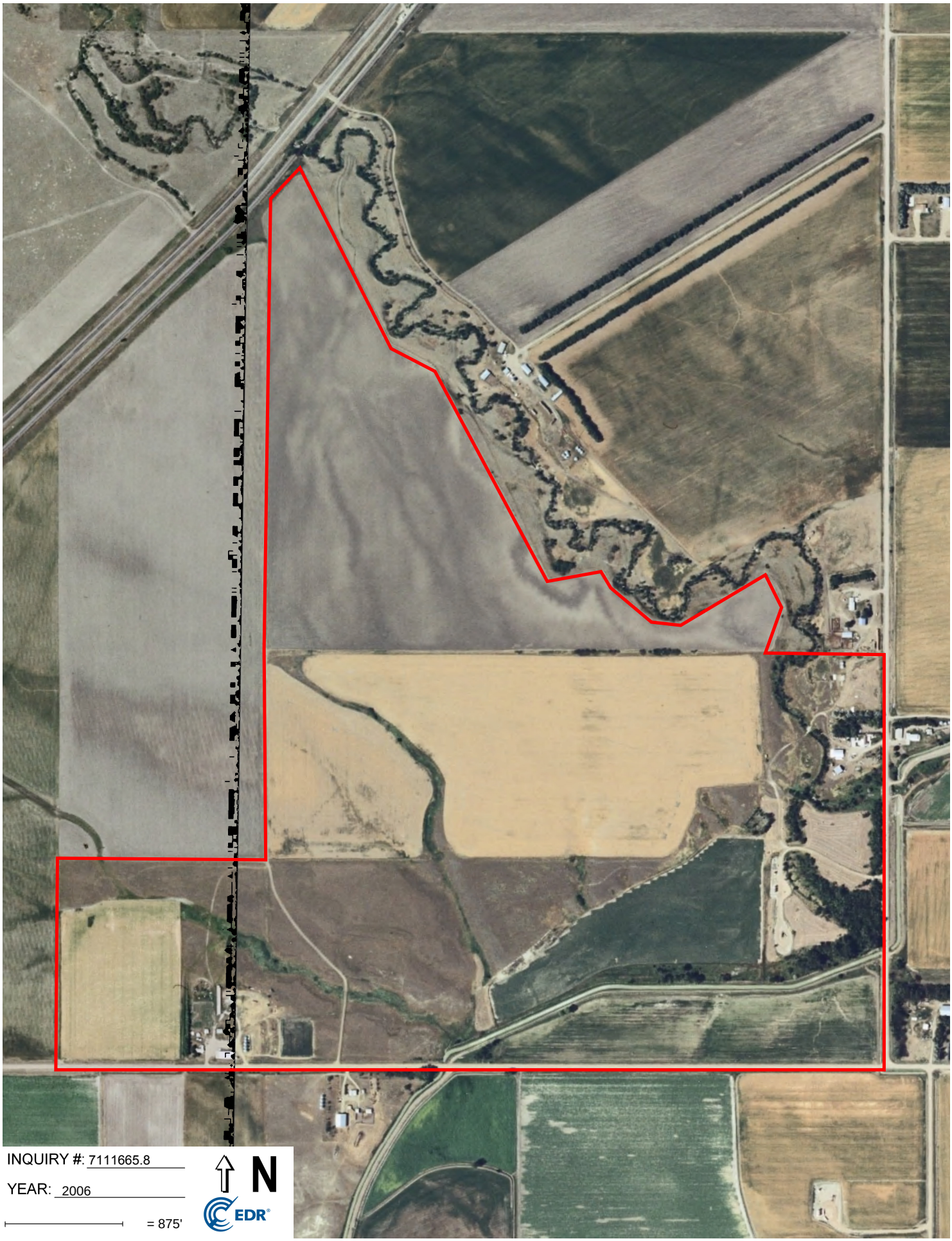
N
EDR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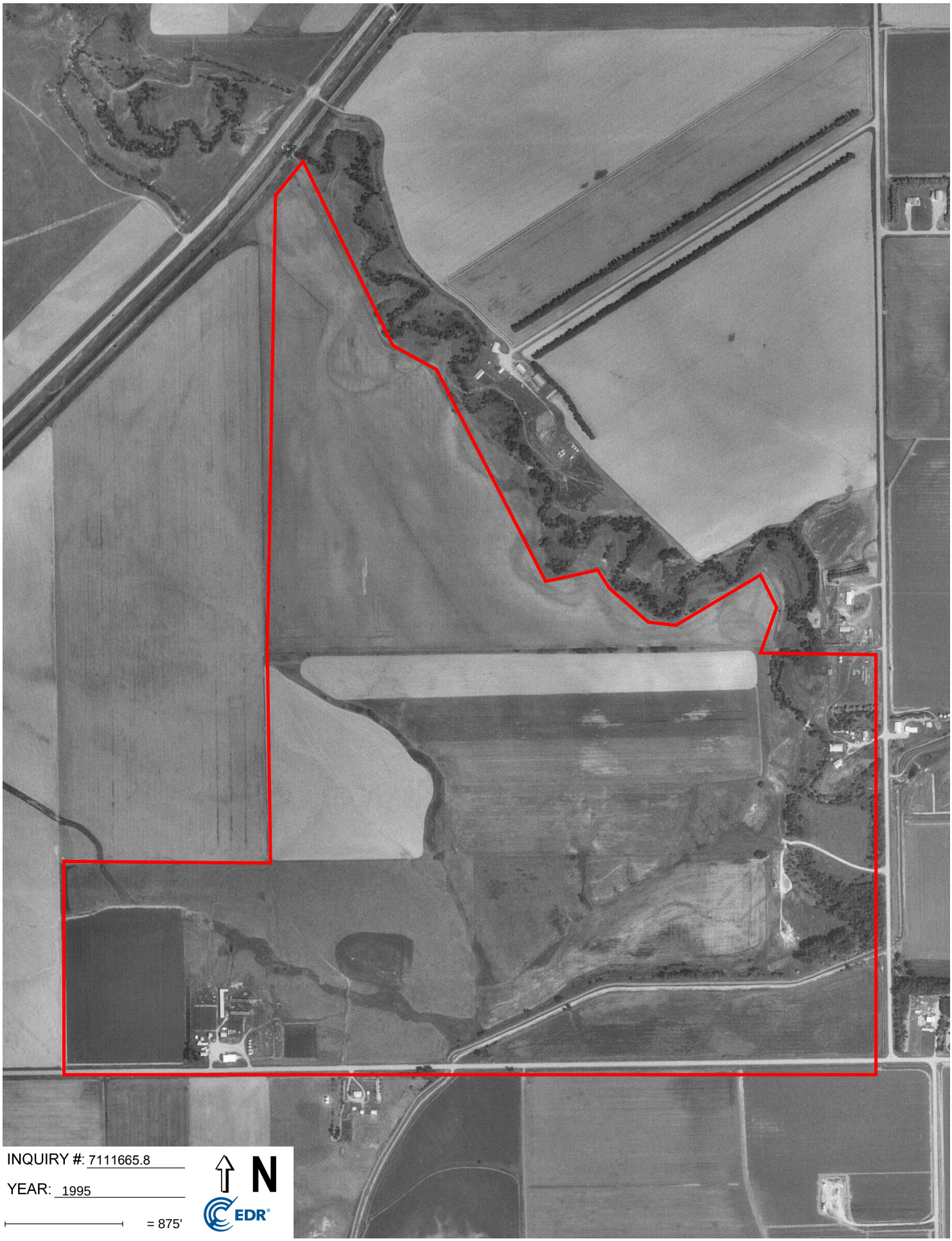
N
EDR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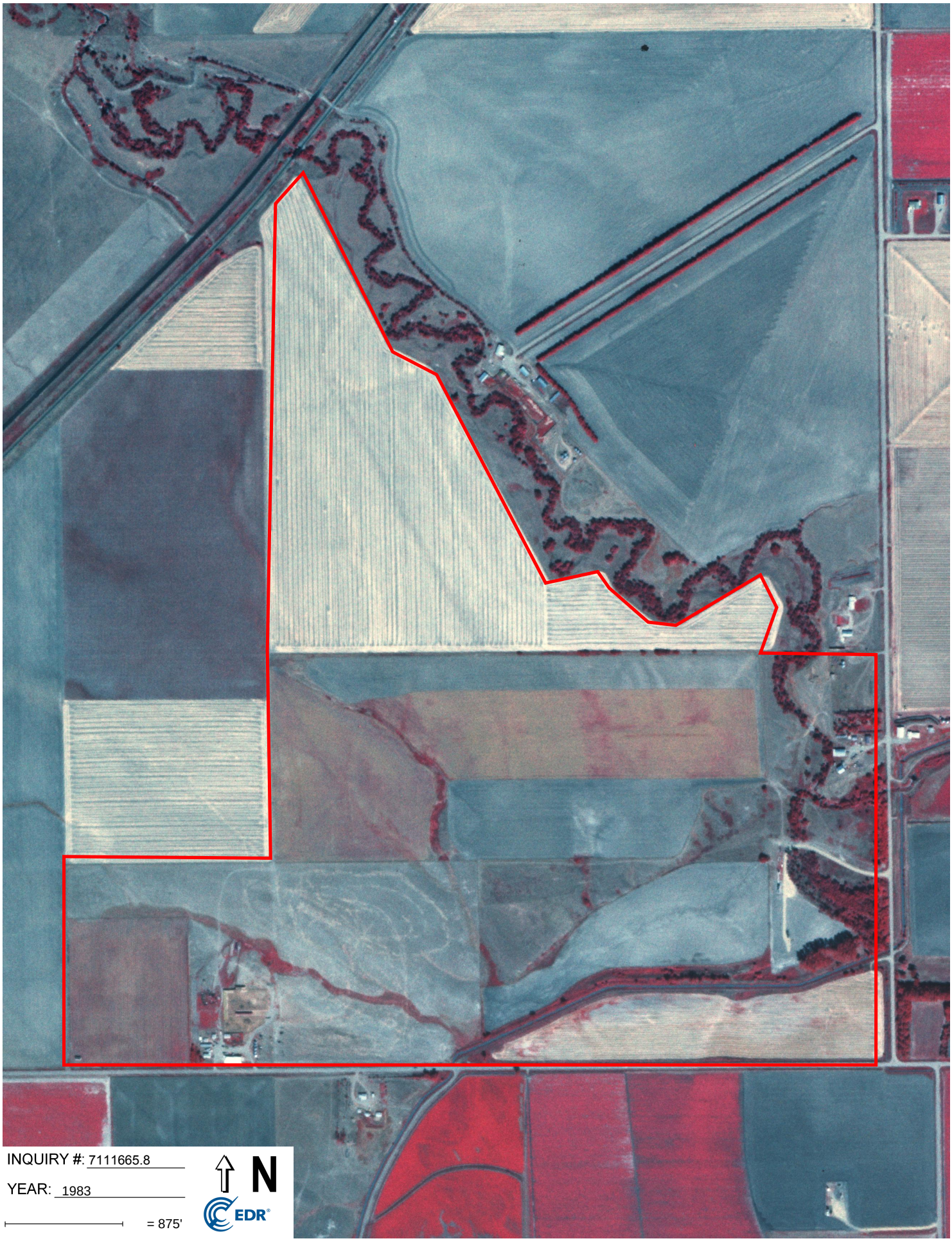
EDR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N
EDR


INQUIRY #: 7111665.8
YEAR: 1976
= 875'
N
EDR

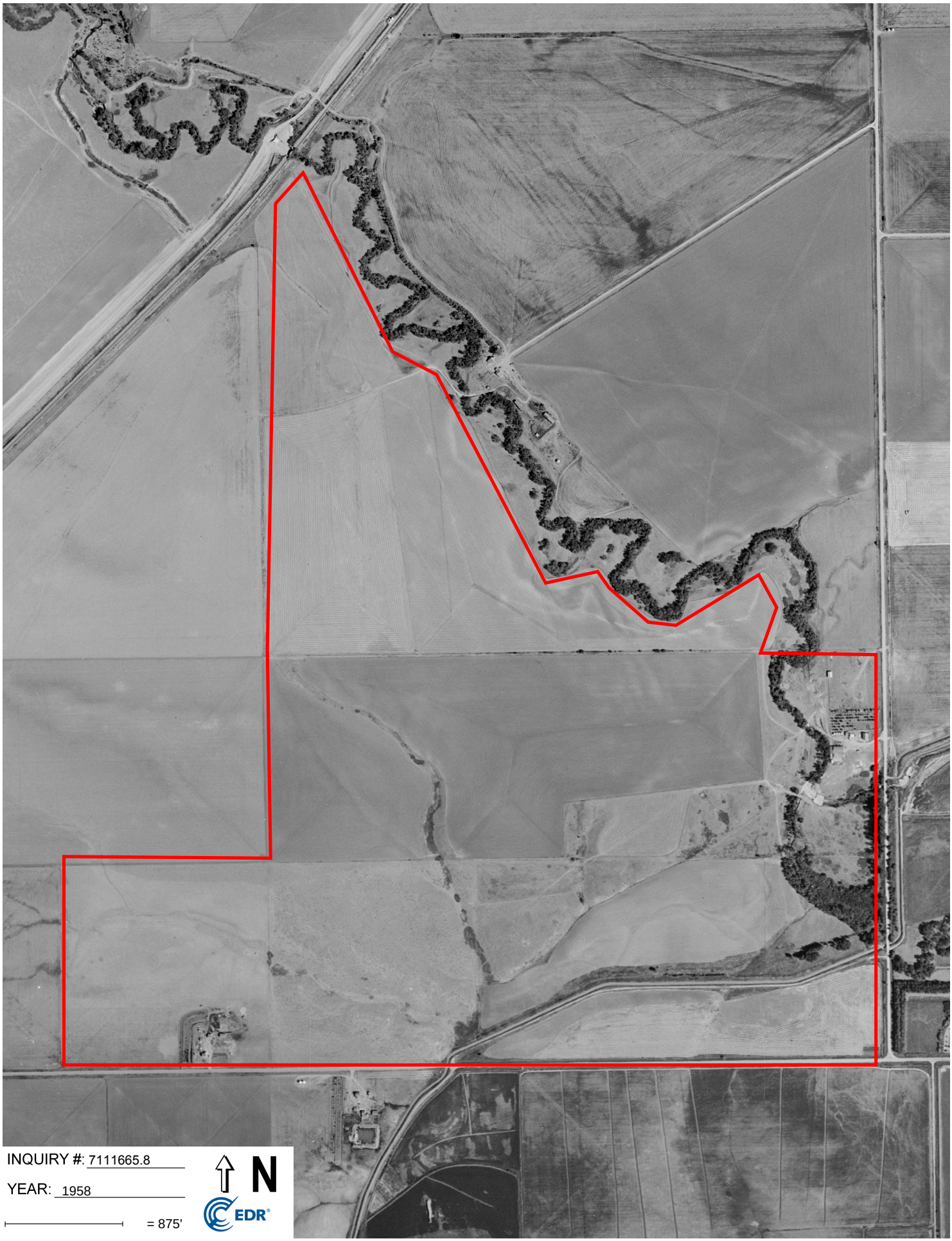
INQUIRY #: 7111665.8

YEAR: 1967

= 875'

N

EDR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YEAR: 1958
= 875'
N
EDR


INQUIRY #: 7111665.8
YEAR: 1949
= 875'
N
EDR

# Topographic Maps

Cerilon Site
4237 147th Ave. NW
Williston, ND 58801

Inquiry Number: 7111665.4
September 08, 2022

# EDR Historical Topo Map Report

## with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Historical Topo Map Report

09/08/22

**Site Name:**

Cerilon Site
4237 147th Ave. NW
Williston, ND 58801
EDR Inquiry # 7111665.4

**Client Name:**

Barr Engineering
4300 MarketPointe Drive Suite 200
Minneapolis, MN 55435
Contact: Liz Maher

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Barr Engineering were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

***Search Results:***

**P.O.#** NA
**Project:** 34531123.00

***Coordinates:***

| | |
|---|---|
| **Latitude:** | 48.028588 48° 1' 43" North |
| **Longitude:** | -103.873448 -103° 52' 24" West |
| **UTM Zone:** | Zone 13 North |
| **UTM X Meters:** | 583988.71 |
| **UTM Y Meters:** | 5320091.59 |
| **Elevation:** | 1892.00' above sea level |

**Maps Provided:**

2020
2017
2014
1976
1968, 1969

## *Topo Sheet Key*

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

### 2020 Source Sheets

Trenton
2020
7.5-minute, 24000

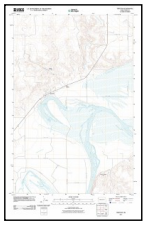
Trenton SW
2020
7.5-minute, 24000

### 2017 Source Sheets

Trenton
2017
7.5-minute, 24000

Trenton SW
2017
7.5-minute, 24000

### 2014 Source Sheets



Trenton
2014
7.5-minute, 24000

Trenton SW
2014
7.5-minute, 24000

### 1976 Source Sheets

Trenton
1976
7.5-minute, 24000
Aerial Photo Revised 1976

## *Topo Sheet Key*

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

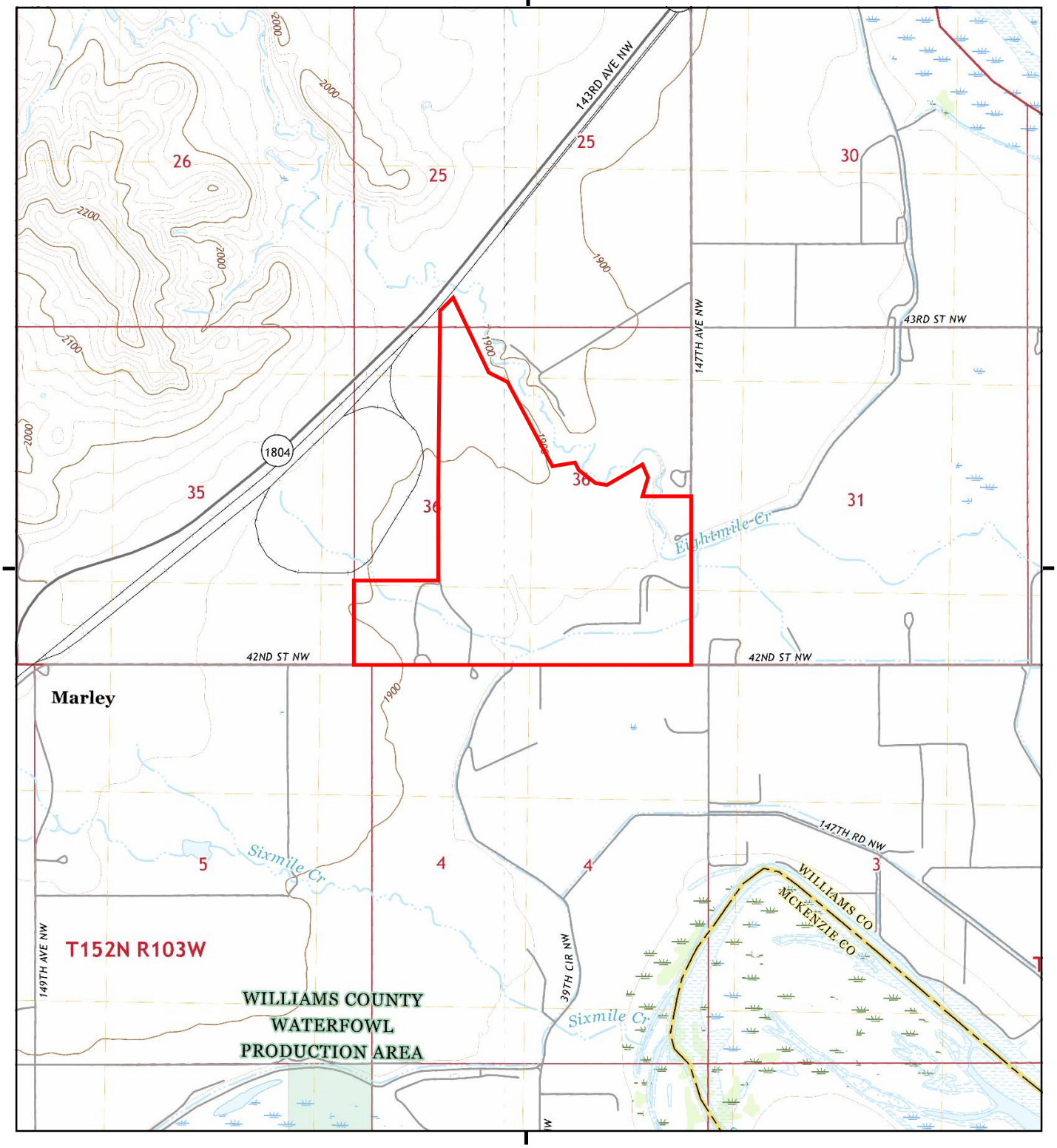
### 1968, 1969 Source Sheets

Trenton SW
1968
7.5-minute, 24000
Aerial Photo Revised 1967

Trenton
1969
7.5-minute, 24000
Aerial Photo Revised 1968

# Historical Topo Map

2020




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

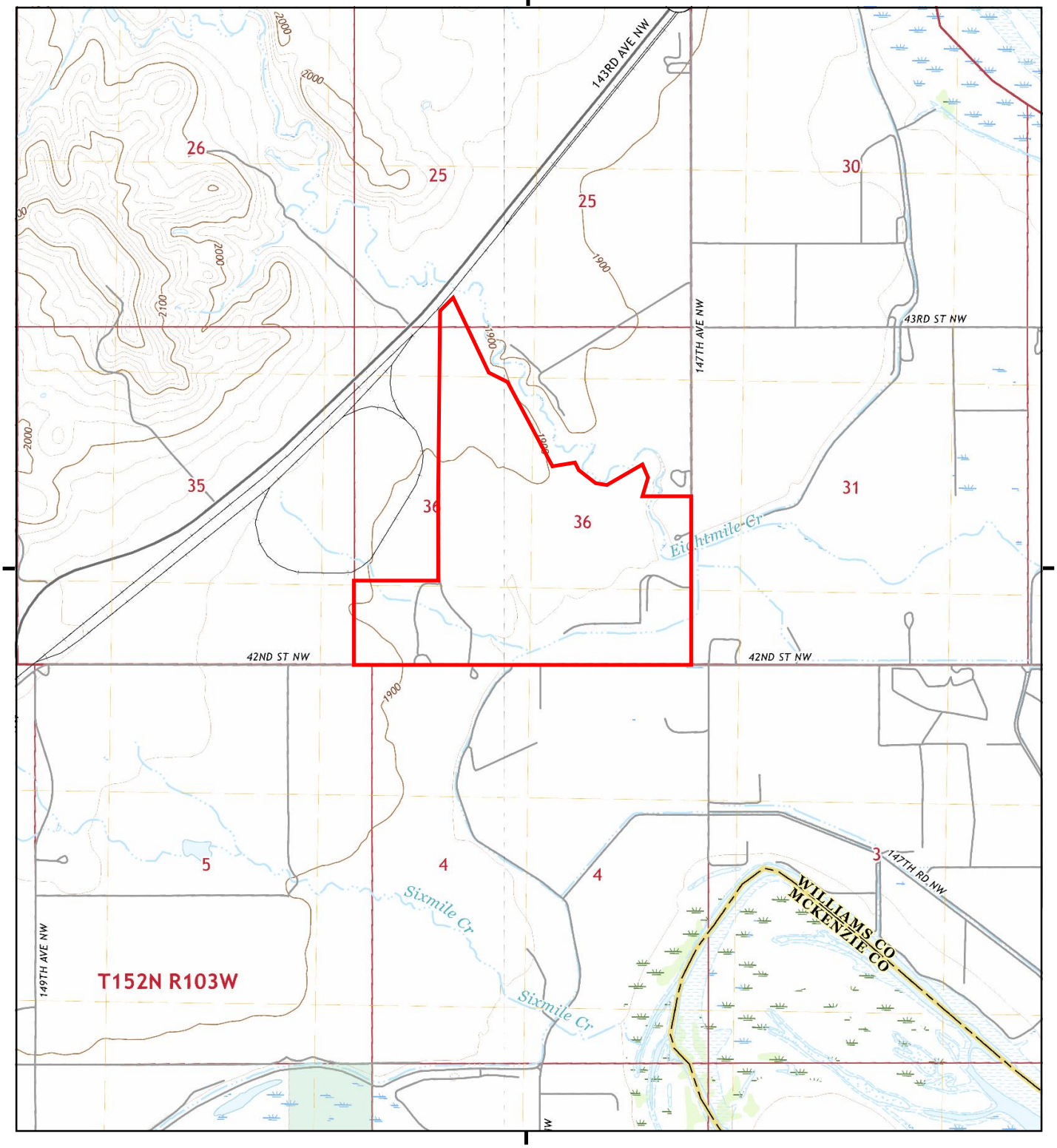
TP, Trenton, 2020, 7.5-minute
NW, Trenton SW, 2020, 7.5-minute

SITE NAME: Cerilon Site
ADDRESS: 4237 147th Ave. NW
Williston, ND 58801
CLIENT: Barr Engineering

N

# Historical Topo Map

2017




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

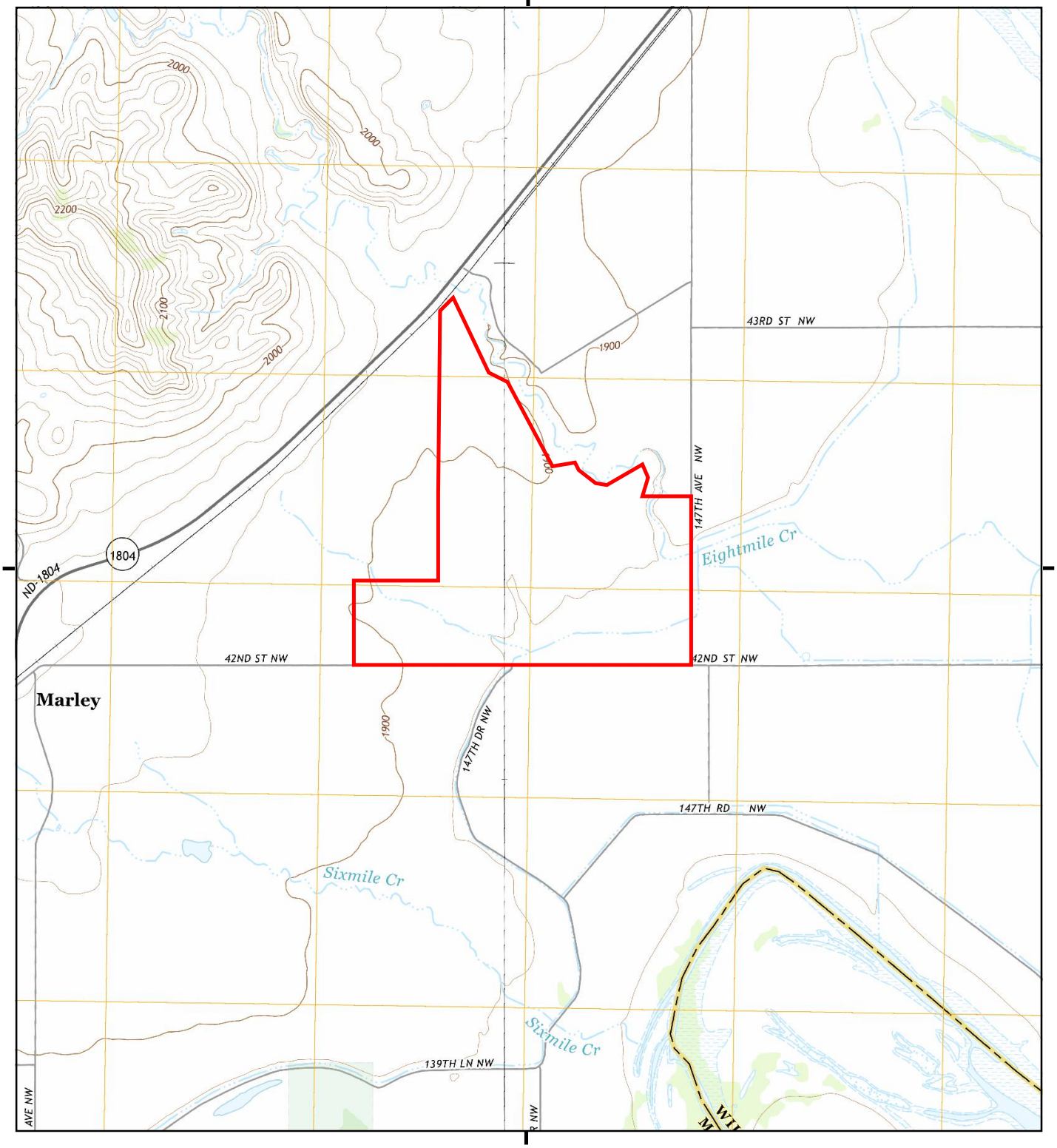
TP, Trenton, 2017, 7.5-minute
NW, Trenton SW, 2017, 7.5-minute

SITE NAME: Cerilon Site
ADDRESS: 4237 147th Ave. NW
Williston, ND 58801
CLIENT: Barr Engineering

N

# Historical Topo Map

2014




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

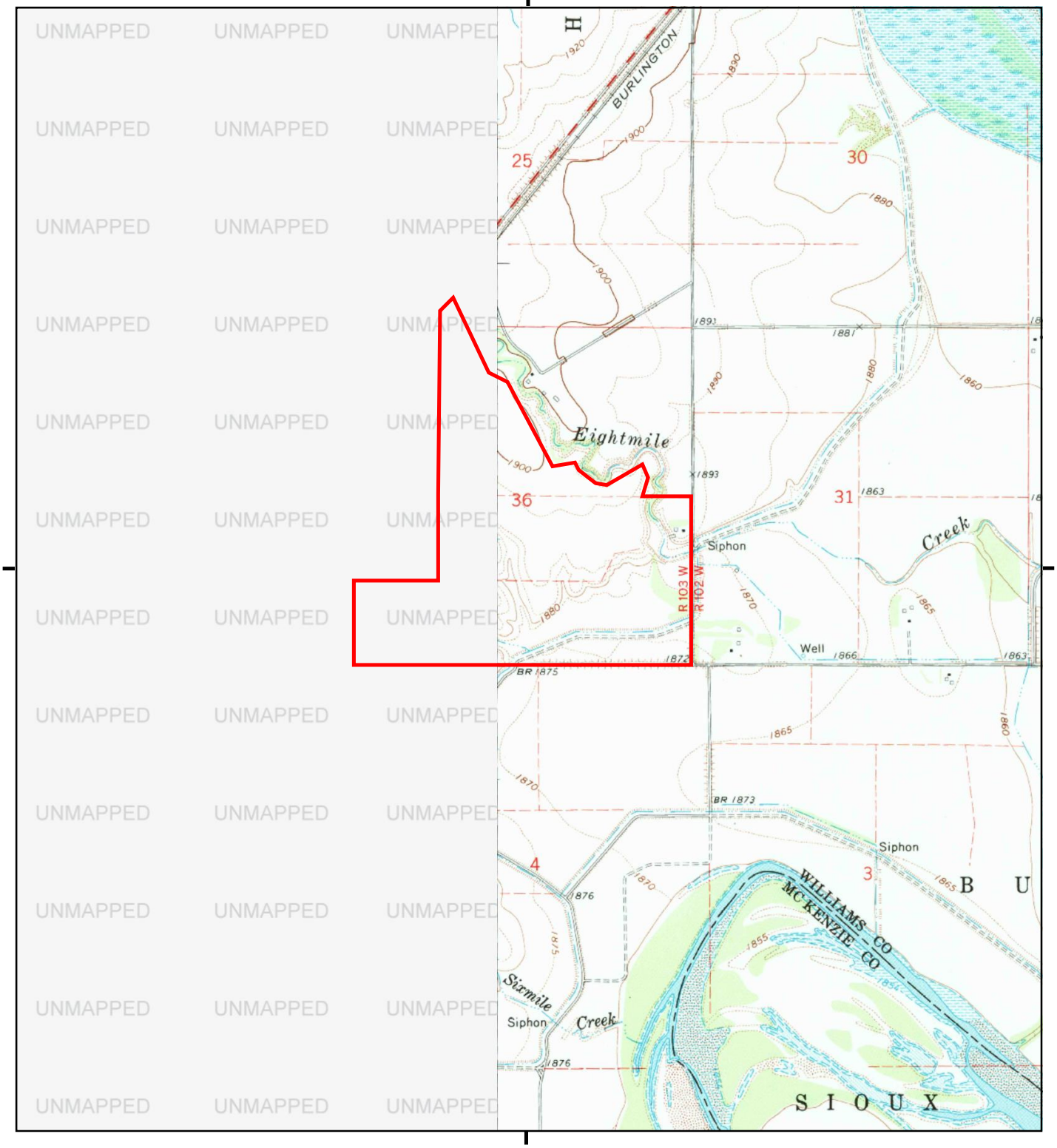
TP, Trenton, 2014, 7.5-minute
NW, Trenton SW, 2014, 7.5-minute

SITE NAME: Cerilon Site
ADDRESS: 4237 147th Ave. NW
Williston, ND 58801
CLIENT: Barr Engineering

N

# Historical Topo Map

1976




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Trenton, 1976, 7.5-minute

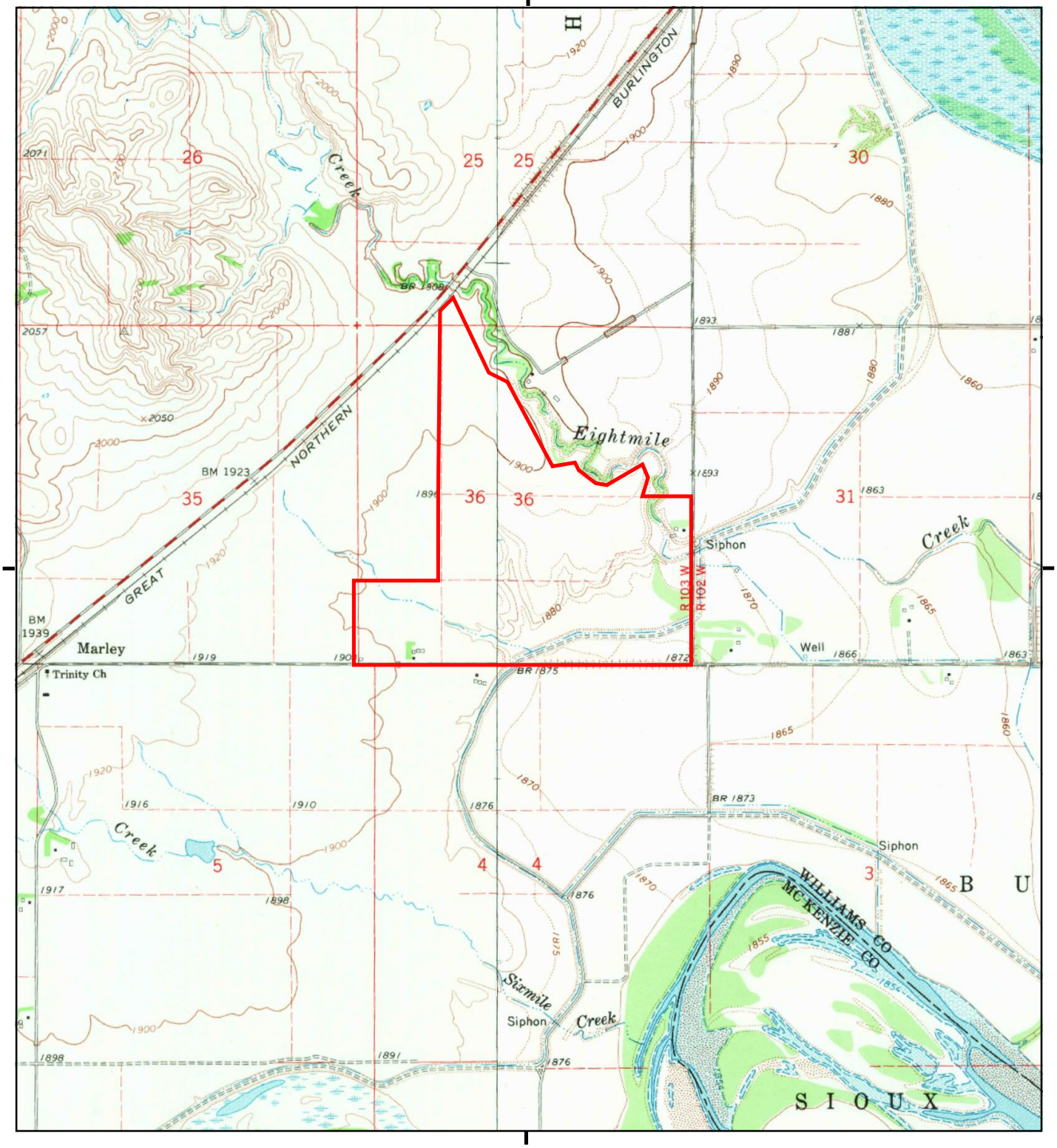
SITE NAME: Cerilon Site
ADDRESS: 4237 147th Ave. NW
Williston, ND 58801
CLIENT: Barr Engineering

N

7111665 - 4 page 8

# Historical Topo Map

1968, 1969




This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Trenton, 1969, 7.5-minute
NW, Trenton SW, 1968, 7.5-minute

SITE NAME: Cerilon Site
ADDRESS: 4237 147th Ave. NW
Williston, ND 58801
CLIENT: Barr Engineering

N

# City Directories

**Cerilon Site**
4237 147th Ave. NW
Williston, ND 58801

Inquiry Number: 7111665.5
September 09, 2022

# The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

# TABLE OF CONTENTS

## SECTION



***Thank you for your business.***
Please contact EDR at 1-800-352-0050
with any questions or comments.

# EXECUTIVE SUMMARY

## DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

## RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Brad street. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by
infoUSA®


## RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

| Year | Target Street | Cross Street | Source |
|---|---|---|---|
| 2017 | ☑ | ☑ | EDR Digital Archive |
| 2014 | ☑ | ☑ | EDR Digital Archive |
| 2010 | ☑ | ☑ | EDR Digital Archive |
| 2005 | ☑ | ☑ | EDR Digital Archive |
| 2000 | ☑ | ☑ | EDR Digital Archive |
| 1994 | ☐ | ☐ | POLK DIRECTORY CO |
| 1989 | ☐ | ☐ | POLK DIRECTORY CO |
| 1984 | ☐ | ☐ | POLK DIRECTORY CO |
| 1979 | ☐ | ☐ | POLK DIRECTORY CO |
| 1975 | ☐ | ☐ | POLK DIRECTORY CO |
| 1970 | ☐ | ☐ | POLK DIRECTORY CO |
| 1964 | ☐ | ☐ | POLK DIRECTORY CO |

# FINDINGS

## TARGET PROPERTY STREET

4237 147th Ave. NW
Williston, ND 58801

| *Year* | *CD Image* | *Source* | |
|---|---|---|---|
| **147TH AVE NW** | | | |
| 2017 | pg A1 | EDR Digital Archive | |
| 2014 | pg A3 | EDR Digital Archive | |
| 2010 | pg A5 | EDR Digital Archive | |
| 2005 | pg A7 | EDR Digital Archive | |
| 2000 | pg A9 | EDR Digital Archive | |
| **147th Ave NW** | | | |
| 1994 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1989 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1984 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1979 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1975 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1970 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1964 | - | POLK DIRECTORY CO | Street not listed in Source |

# FINDINGS

## CROSS STREETS

| *Year* | *CD Image* | *Source* | |
|---|---|---|---|
| **42ND ST NW** | | | |
| 2017 | pg. A2 | EDR Digital Archive | |
| 2014 | pg. A4 | EDR Digital Archive | |
| 2010 | pg. A6 | EDR Digital Archive | |
| 2005 | pg. A8 | EDR Digital Archive | |
| 2000 | pg. A10 | EDR Digital Archive | |
| 1994 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1989 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1984 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1979 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1975 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1970 | - | POLK DIRECTORY CO | Street not listed in Source |
| 1964 | - | POLK DIRECTORY CO | Street not listed in Source |

# City Directory Images

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | EDR Digital Archive |

# 147TH AVE NW 2017

| | |
|---|---|
| 4236 | LEE, MELISSA |
| 4237 | AUNE, RYAN J |
| 4253 | BEARCE, JILL L |
| 4307 | ROBERTUS, GERALD G |
| 4418 | PAINTED PONY CASINO |
| 4428 | CATERPILLAR CLUBHOUSE |

| Target Street | Cross Street | Source |
| --- | --- | --- |
| - | ✓ | EDR Digital Archive |

## 42ND ST NW 2017

14772 PATCH, MERNA V
14781 OSTER, VERNON F
14891 SAVAGE

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | EDR Digital Archive |

# 147TH AVE NW 2014

| | |
|---|---|
| 4236 | JOHNSON, PAUL M |
| | JOHNSRUD, KEITH J |
| | LEE, MELISSA |
| 4237 | OCCUPANT UNKNOWN, |
| 4247 | AUNE, DWIGHT E |
| 4253 | BEARCE, DANIEL T |
| 4307 | BEARCE, MARTY |
| 4314 | BEARCE, ROGER E |
| 4377 | HURLEY, KEVIN L |
| 4418 | PAINTED PONY CASINO |
| 4428 | CATERPILLAR CLUBHOUSE |
| | SCHROEDER, JENNIFER |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | EDR Digital Archive |

## 42ND ST NW 2014

12906 KJORSTAD, MARY
14637 OCCUPANT UNKNOWN,
14695 WRIGHT, SUSAN C
14772 PATCH, MERNA V
14781 OSTER, VERNON F
14891 PULVER, STEPHEN C
SAVAGE SERVICES

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | EDR Digital Archive |

# 147TH AVE NW 2010

| | |
|---|---|
| 4236 | JOHNSRUD, KEITH J |
| | WOOTEN, TJ J |
| 4237 | AUNE, RYAN J |
| 4253 | BEARCE, DANIEL T |
| 4307 | BEARCE, ELWYN H |
| 4314 | BEARCE, ROGER E |
| 4377 | HURLEY, KEVIN L |
| 4428 | HELDE, KAYLA L |
| | SCHROEDER, JENNIFER |
| | SLATER, JUSTIN |

| Target Street | Cross Street | Source |
| --- | --- | --- |
| - | ✓ | EDR Digital Archive |

## 42ND ST NW 2010

12906 KJORSTAD, DIANE A
14211 FORTHUN, DENNIS W
14382 COPE, CE E
14501 OCCUPANT UNKNOWN,
14637 OSTERLUND, JERRY
14695 WRIGHT, GLENN T
14772 OCCUPANT UNKNOWN,
14781 OSTER, VERNON F
VERNON OSTER FARMS

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | EDR Digital Archive |

# 147TH AVE NW 2005

| | |
|---|---|
| 4236 | JOHNSRUD, KEITH J |
| 4237 | AUNE, RYAN J |
| | SHADOW INDUSTRIES |
| 4253 | BEARCE, DANIEL T |
| | DAN BEARCE |
| 4307 | BEARCE, ELWYN H |
| 4314 | BEARCE, ROGER E |
| 4377 | HURLEY, KEVIN L |
| 4428 | GRILE, JOMAE |
| | HOVE, DUSTIN |
| | OLSON, MELVIN |
| | PARTRIDGE, BARBARA |

| Target Street | Cross Street | Source |
|---|---|---|
| - | ✓ | EDR Digital Archive |

## 42ND ST NW 2005

| | |
|---|---|
| 12906 | KJORSTAD SELMER |
| | KJORSTAD, SELMER |
| 14211 | FORTHUN, DENNIS W |
| 14382 | COPE, CE E |
| 14501 | NORPEL, CHAD K |
| 14637 | OSTERLUND, JERRY |
| 14685 | OCCUPANT UNKNOWN, |
| 14695 | WRIGHT, SUSAN C |
| 14772 | OCCUPANT UNKNOWN, |
| 14781 | OSTER, VERNON F |

| Target Street | Cross Street | Source |
|---|---|---|
| ✓ | - | EDR Digital Archive |

## 147TH AVE NW 2000

4237 AUNE, DWIGHT
4253 BEARCE, DAN
4307 BEARCE, ELWYN H

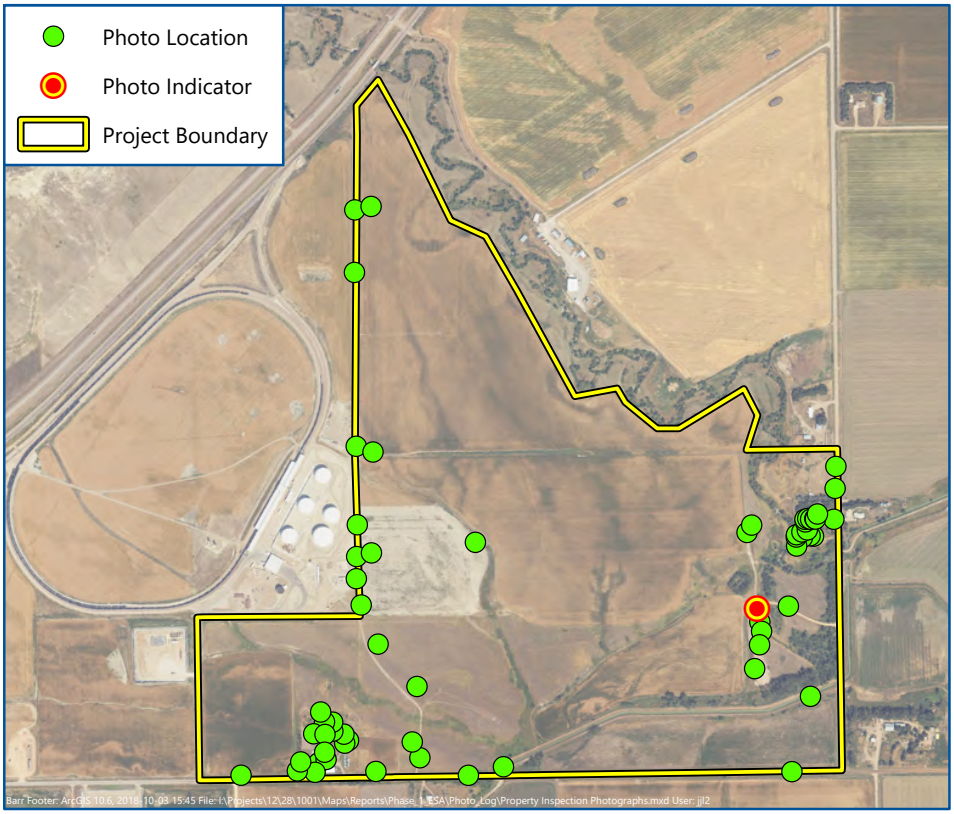
| Target Street | Cross Street | Source |
| --- | --- | --- |
| - | ✓ | EDR Digital Archive |

## 42ND ST NW 2000

14637 OSTERLUND, JERRY
14772 PATCH, WALTER

# Appendix E

## Property Inspection Photographs


**Date**: 9/27/2022

**Photo Direction**: Southwest

**Comment**: Aune 1-36 Well Pad

N

0 1,500 3,000

Feet

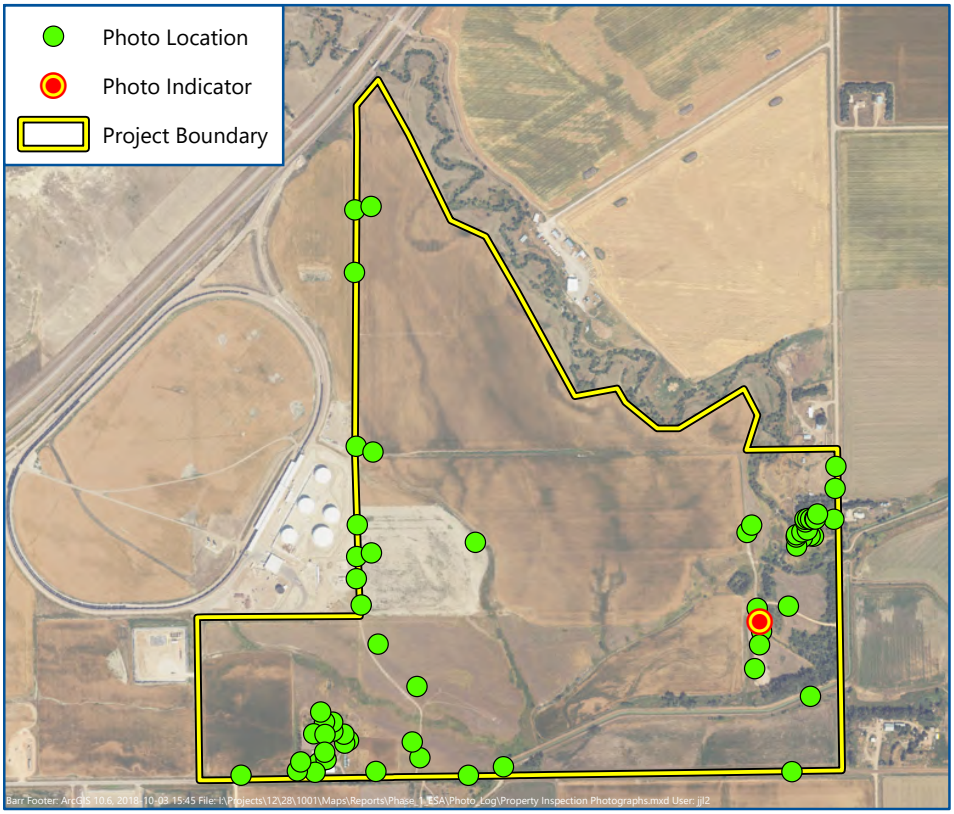
*Imagery: USDA NAIP (2022)*

Map 1 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Aune 1-36 Well Pad

N

0 1,500 3,000

Feet

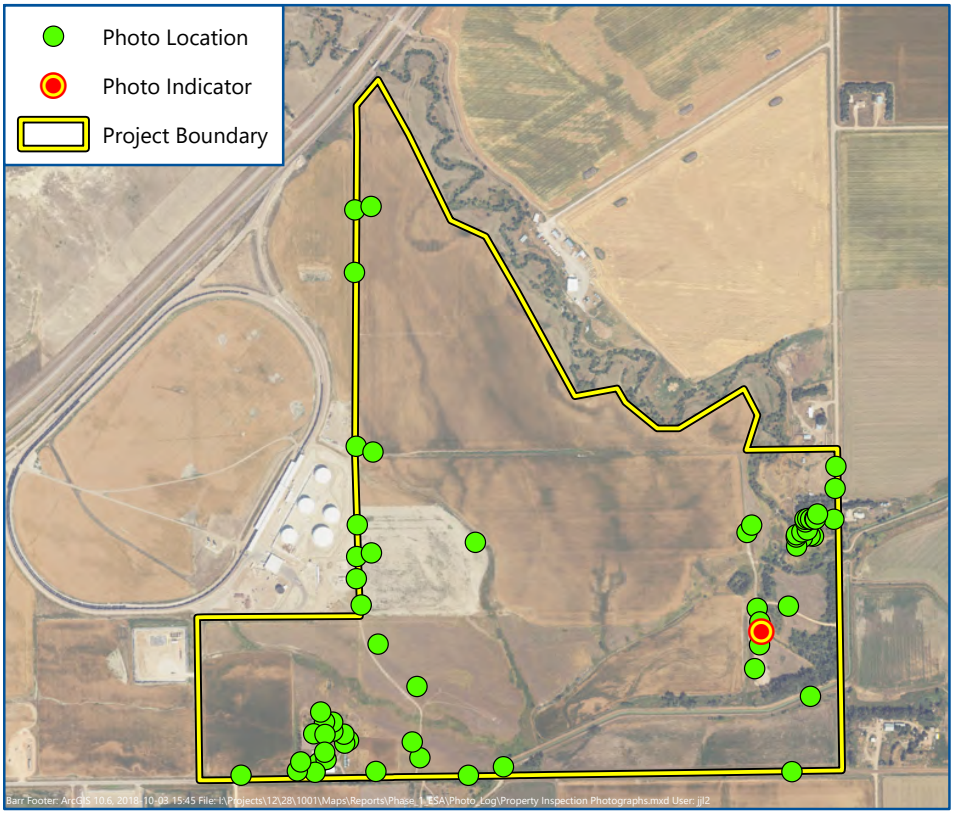
*Imagery: USDA NAIP (2022)*

Map 2 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Aune 1-36 Tank Battery

N

0 1,500 3,000

Feet

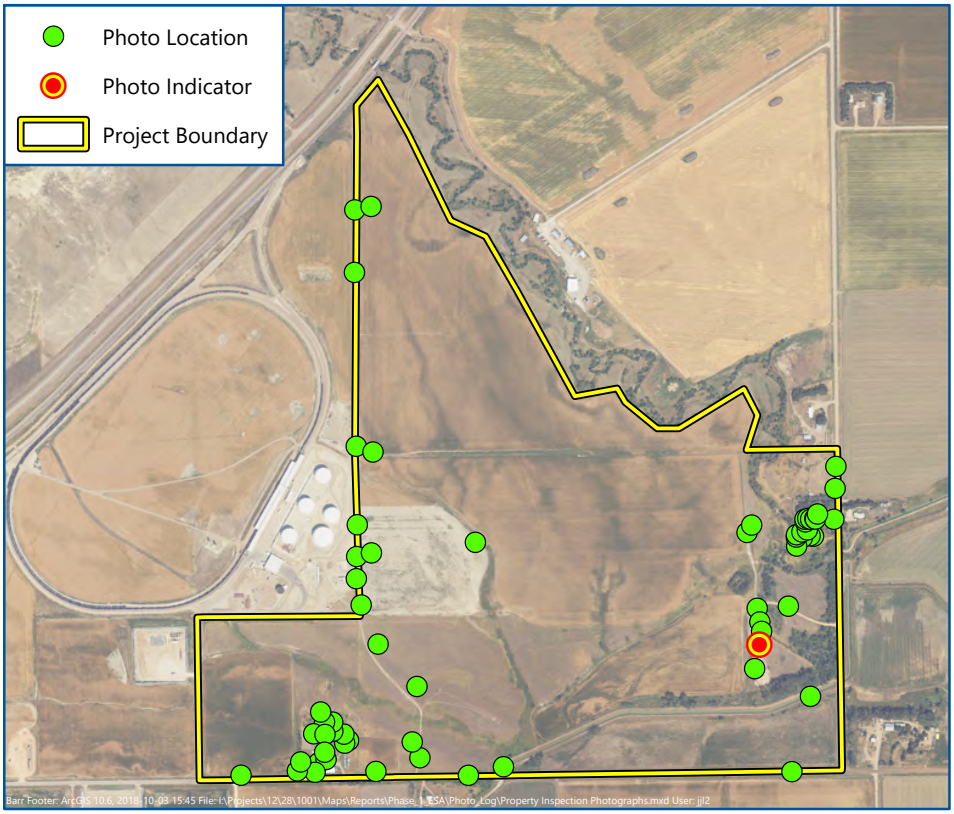
*Imagery: USDA NAIP (2022)*

Map 3 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Southwest

**Comment**: Empty tank, scrap metal, chemical containers

N

0 1,500 3,000

Feet

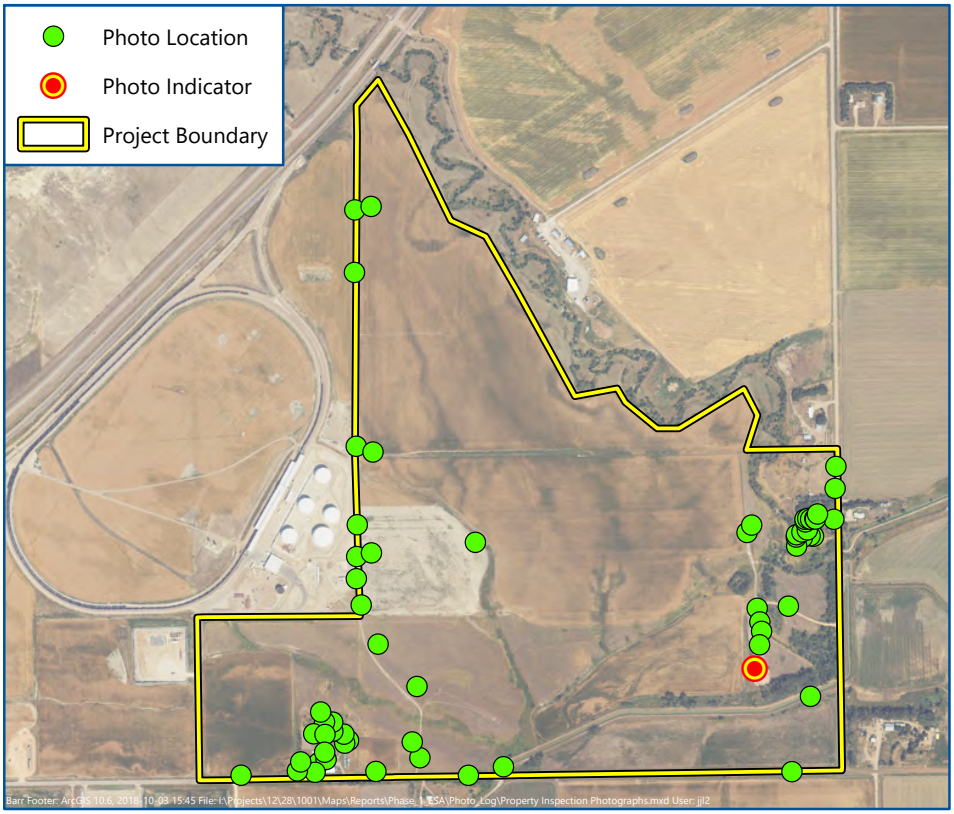
*Imagery: USDA NAIP (2022)*

Map 4 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Aune 1-36 Pump Jack

N

0 1,500 3,000

Feet

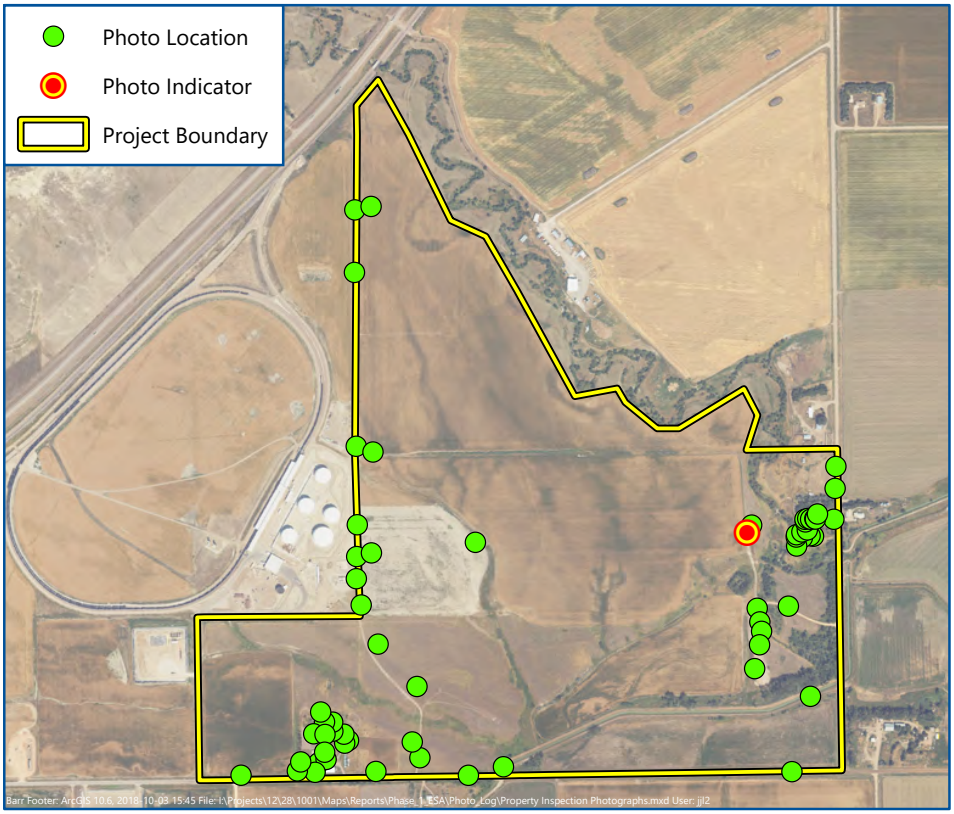
*Imagery: USDA NAIP (2022)*

Map 5 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Cropped field

N

0 1,500 3,000

Feet

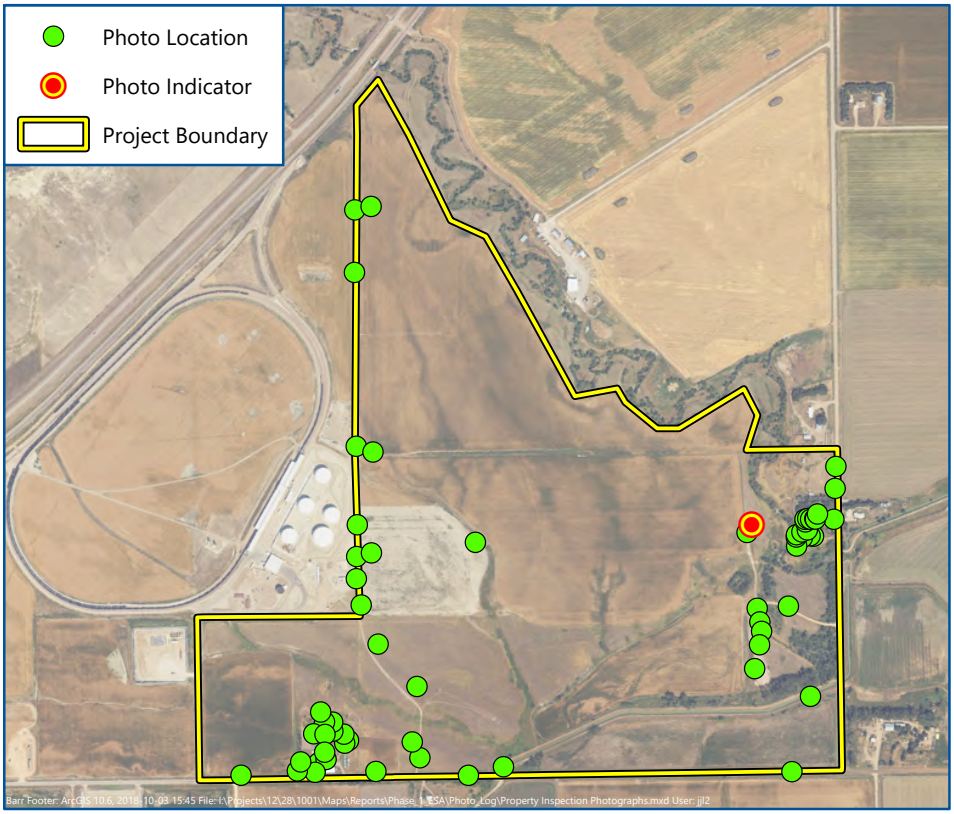
*Imagery: USDA NAIP (2022)*

Map 6 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: West edge of property, backside of farm

N

0 1,500 3,000

Feet

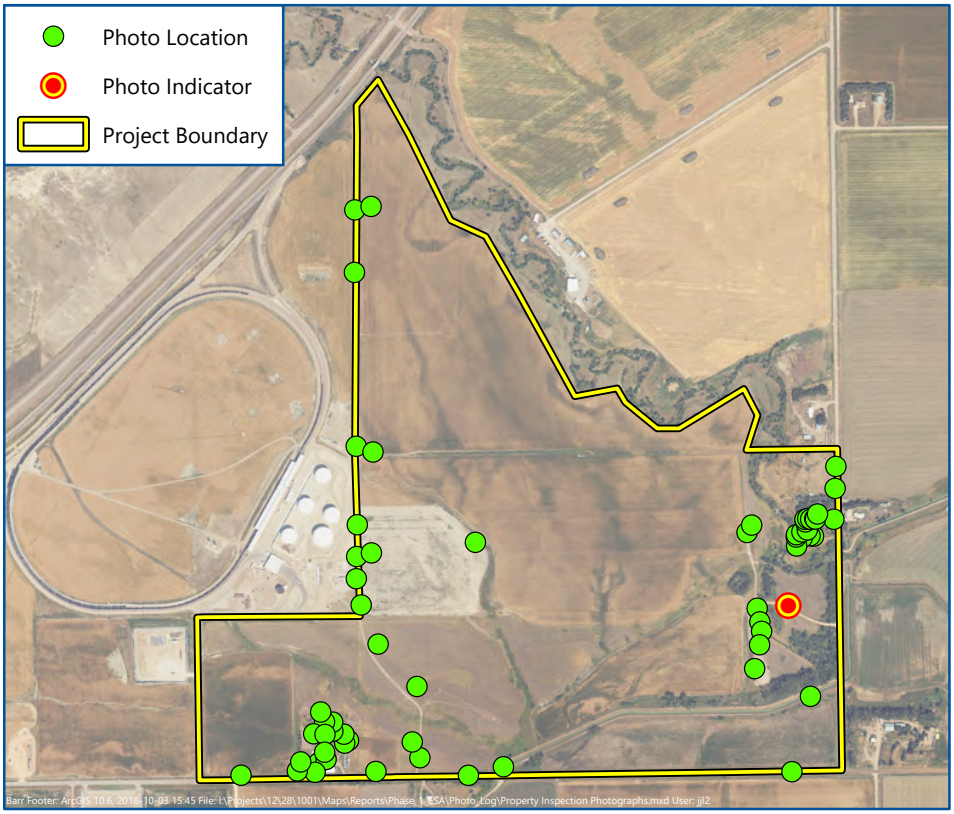
*Imagery: USDA NAIP (2022)*

Map 7 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Empty field, south side of farmstead

N

0 1,500 3,000

Feet

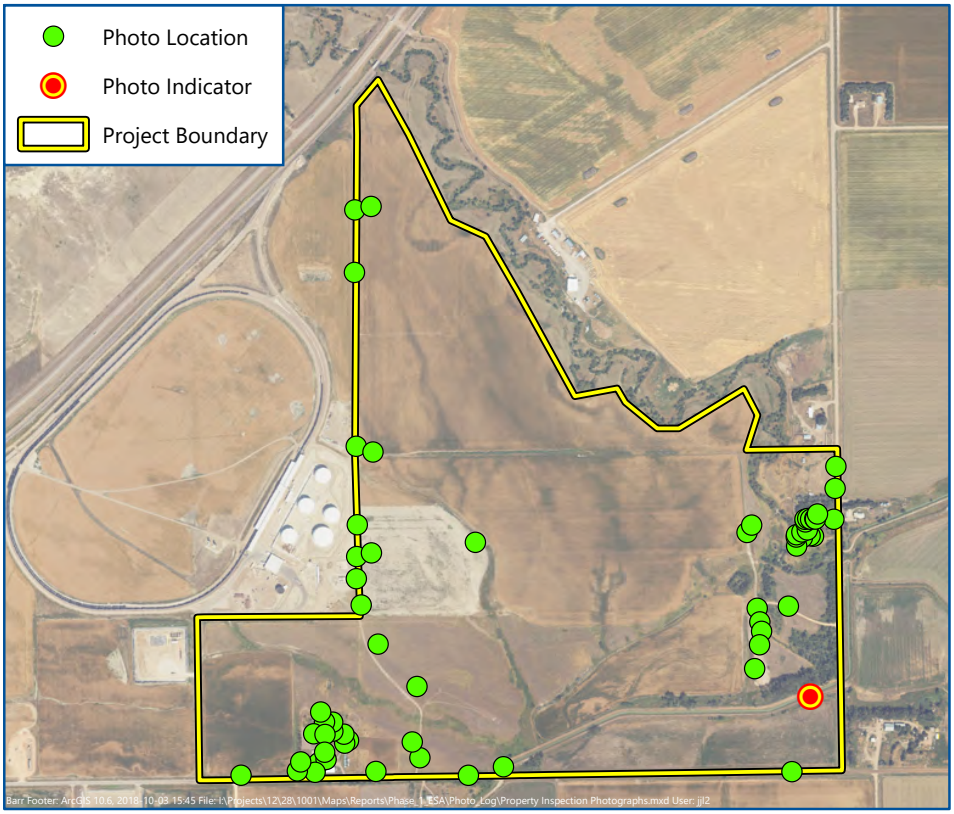
*Imagery: USDA NAIP (2022)*

Map 8 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Manmade stream

N

0 1,500 3,000

Feet

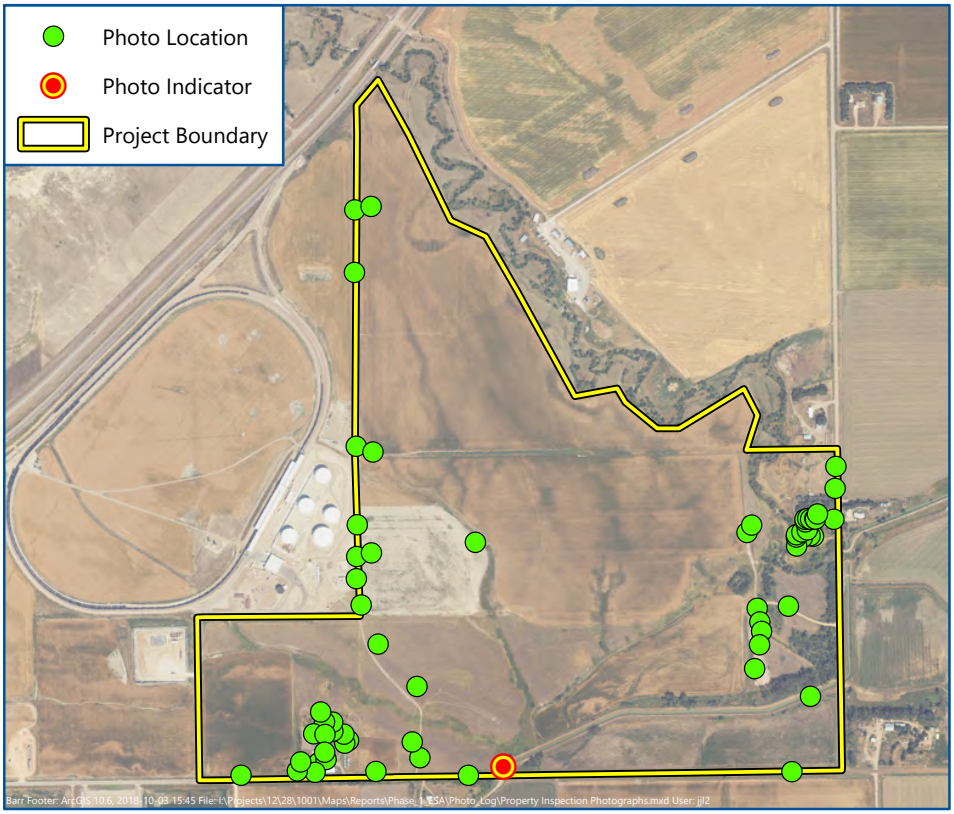
*Imagery: USDA NAIP (2022)*

Map 9 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Made-made stream and pasture

N

0 1,500 3,000

Feet

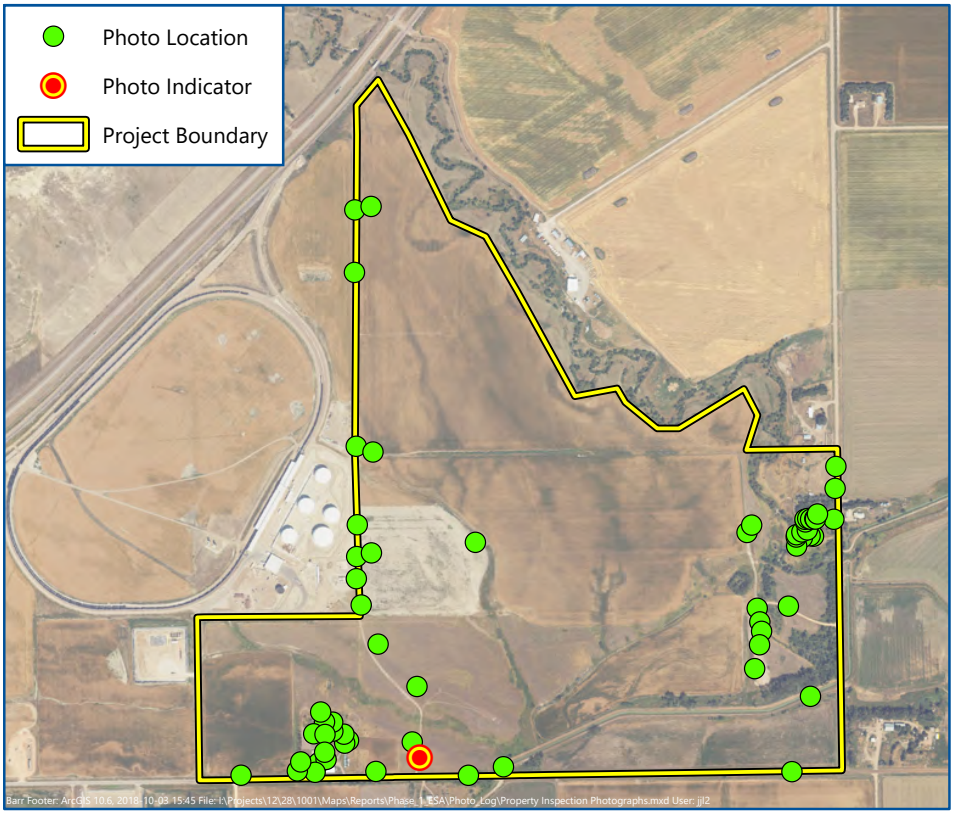
*Imagery: USDA NAIP (2022)*

Map 10 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Pasture

N

0 1,500 3,000

Feet

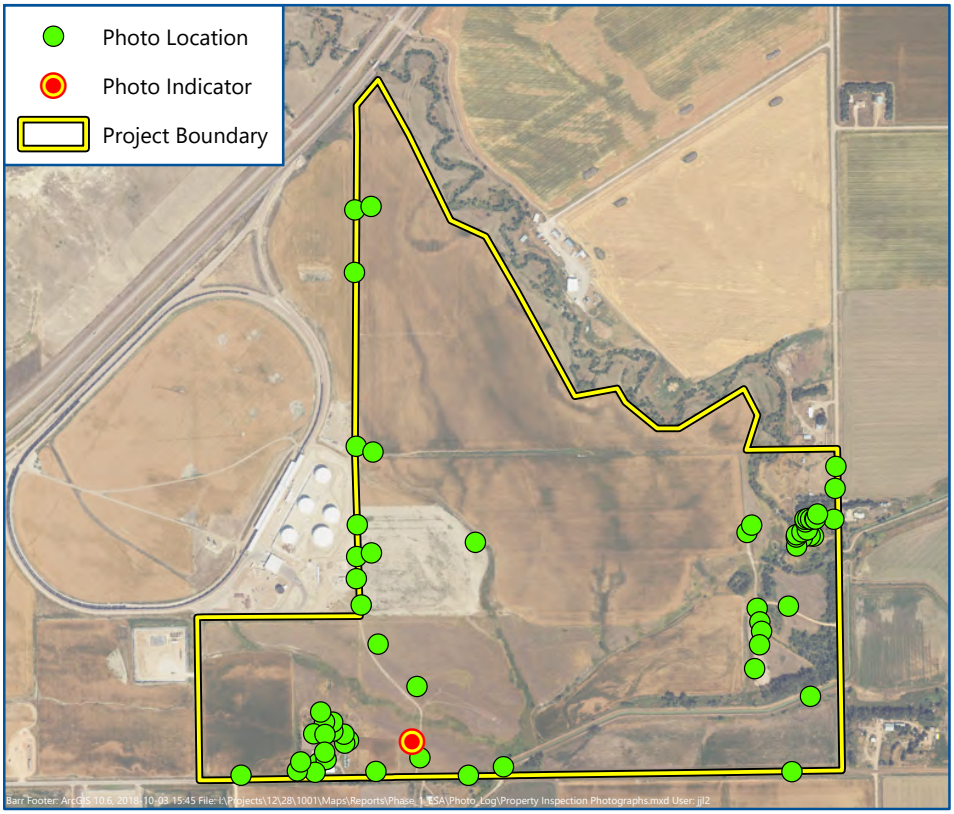
*Imagery: USDA NAIP (2022)*

Map 11 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Farm equipment on Oster farmstead

N

0 1,500 3,000

Feet

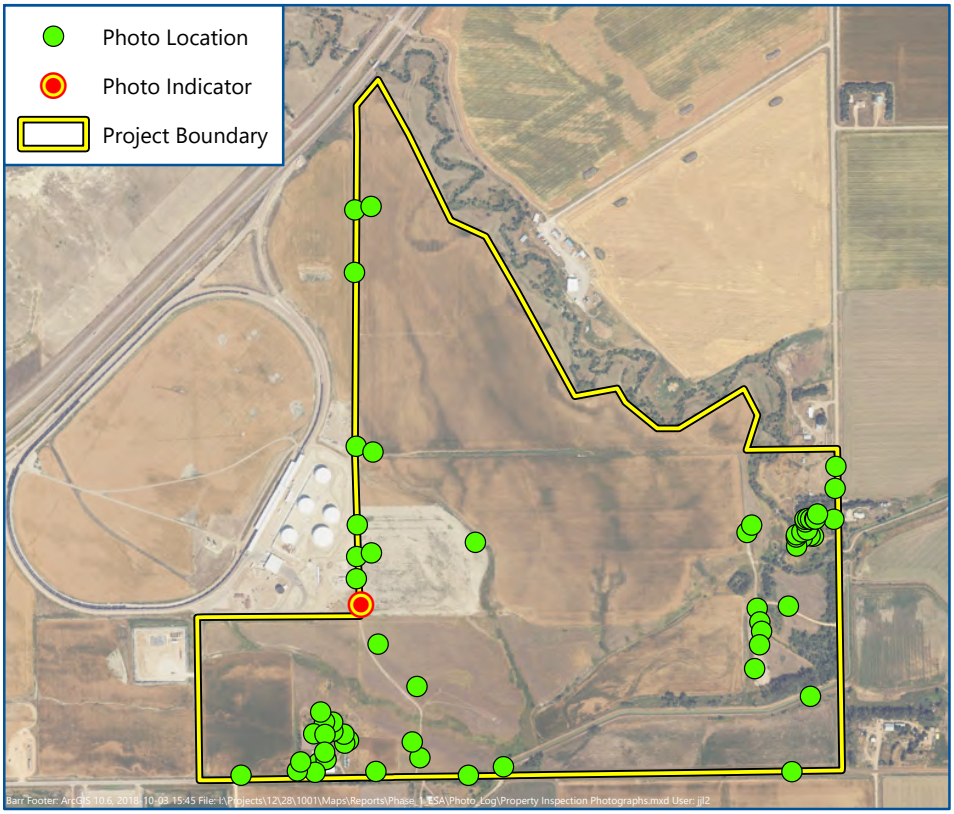
*Imagery: USDA NAIP (2022)*

Map 12 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Savage Terminal, multiple tanks visible

N

0 1,500 3,000

Feet

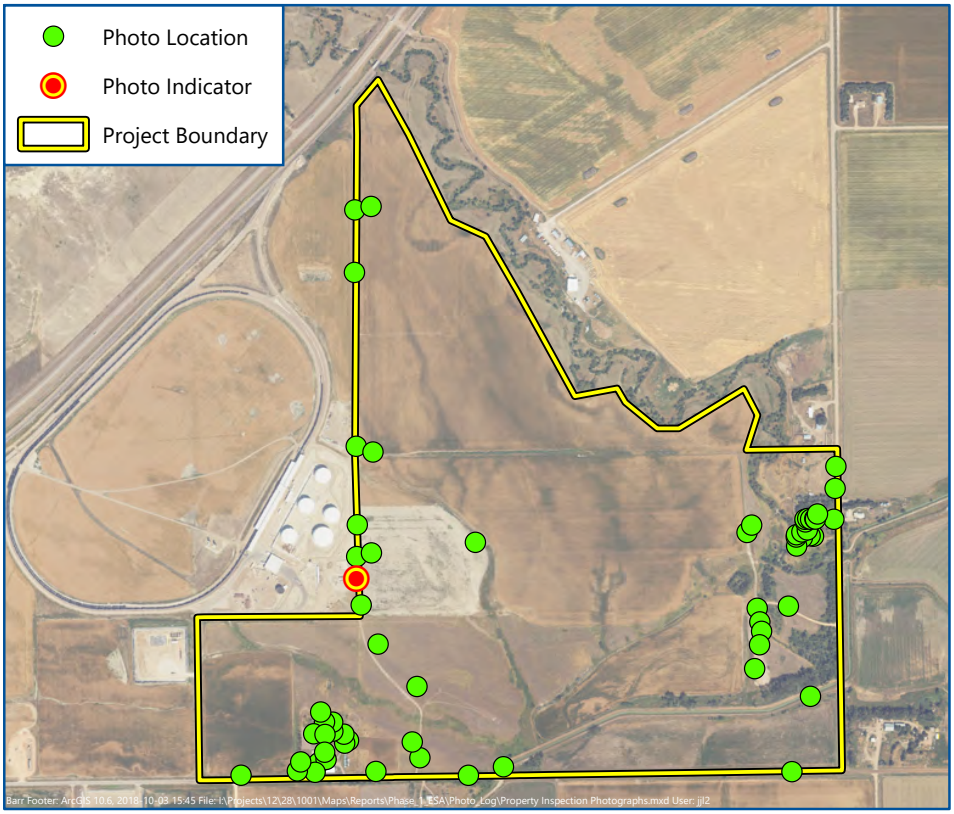
*Imagery: USDA NAIP (2022)*

Map 13 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Savage Terminal

N

0 1,500 3,000

Feet

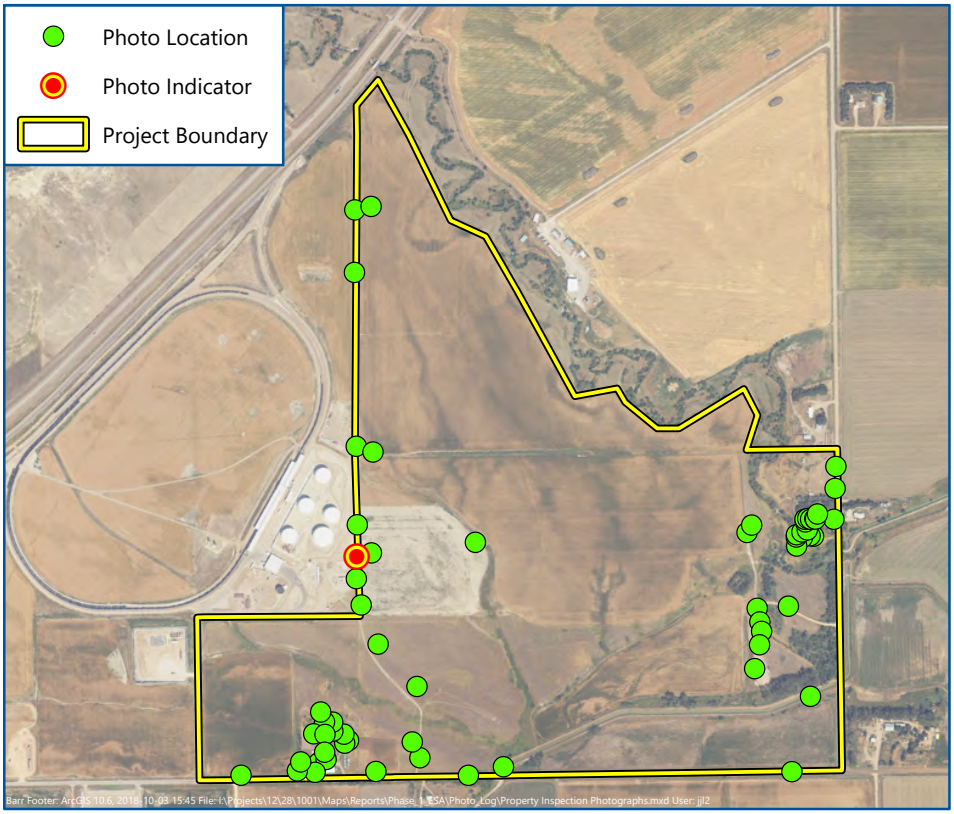
*Imagery: USDA NAIP (2022)*

Map 14 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Southwest

**Comment**: Savage Terminal

N

0 1,500 3,000

Feet

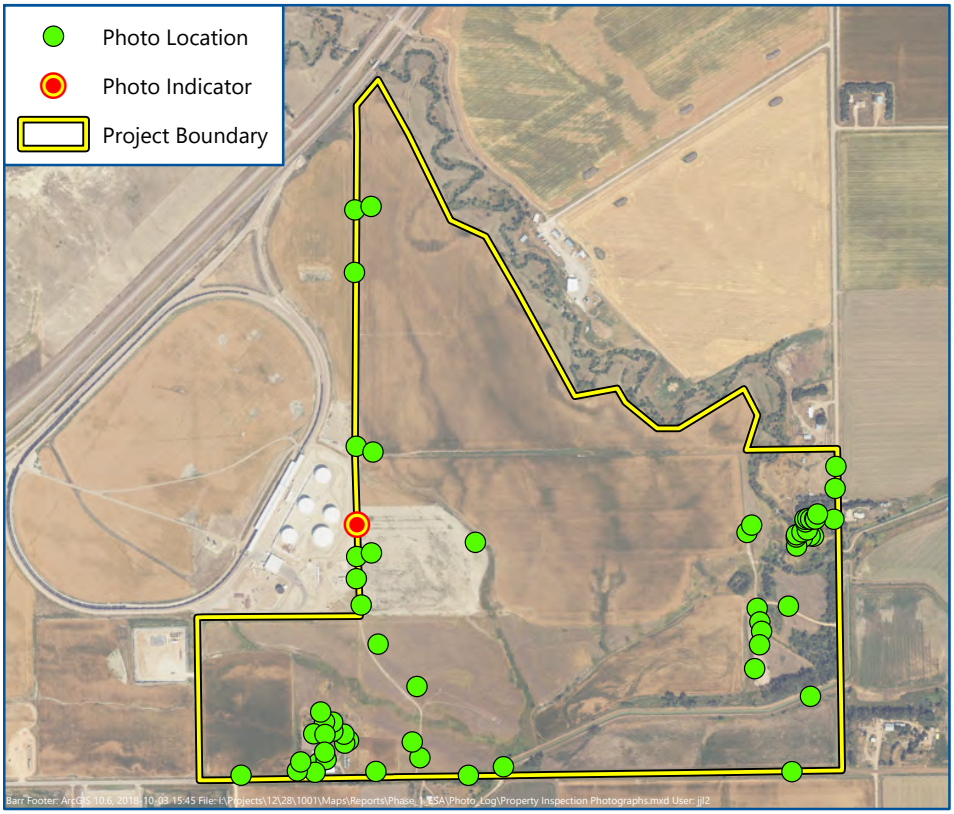
*Imagery: USDA NAIP (2022)*

Map 15 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Savage Terminal, tanks located within berm

N

0 1,500 3,000

Feet

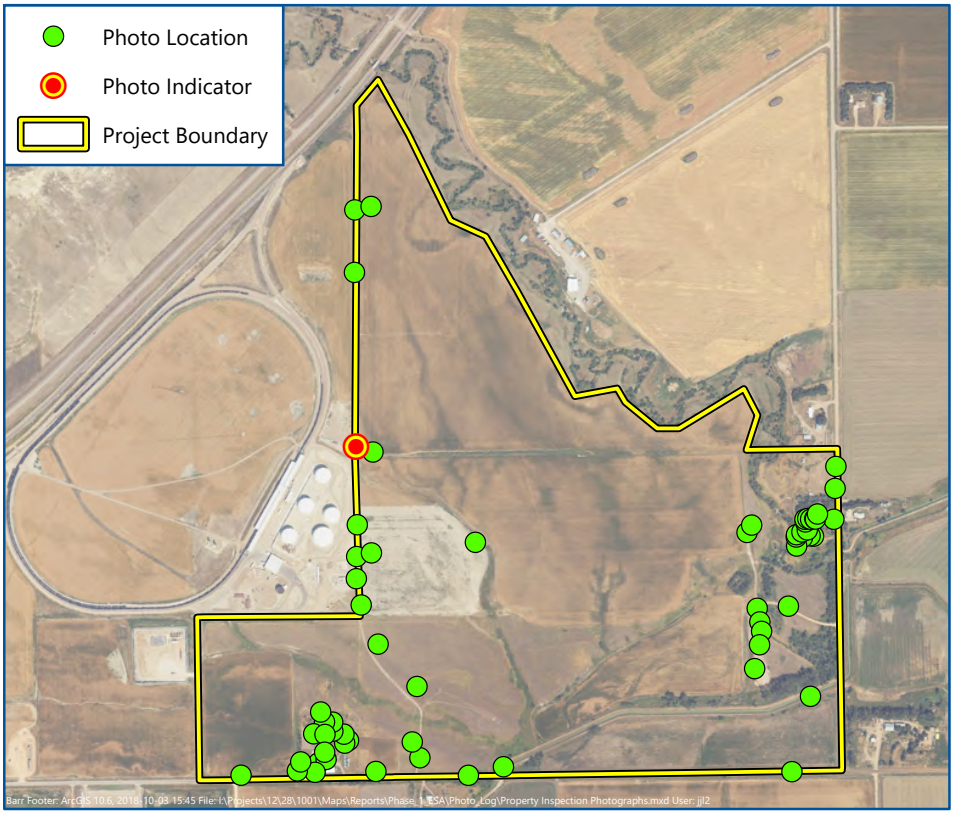
*Imagery: USDA NAIP (2022)*

Map 16 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Savage Terminal, construction materials and piping

N

0 1,500 3,000

Feet

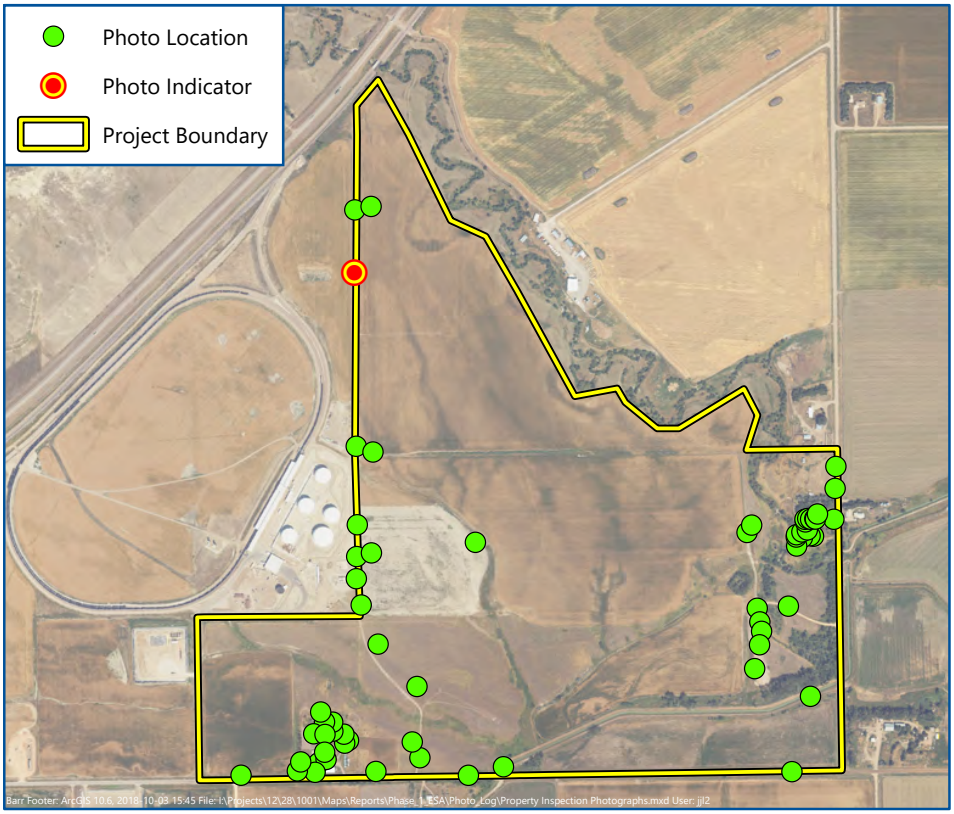
*Imagery: USDA NAIP (2022)*

Map 17 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Dirt pile, visible black tarp and plastic fence within sediment. Located outside of Property boundary.

N

0 1,500 3,000

Feet

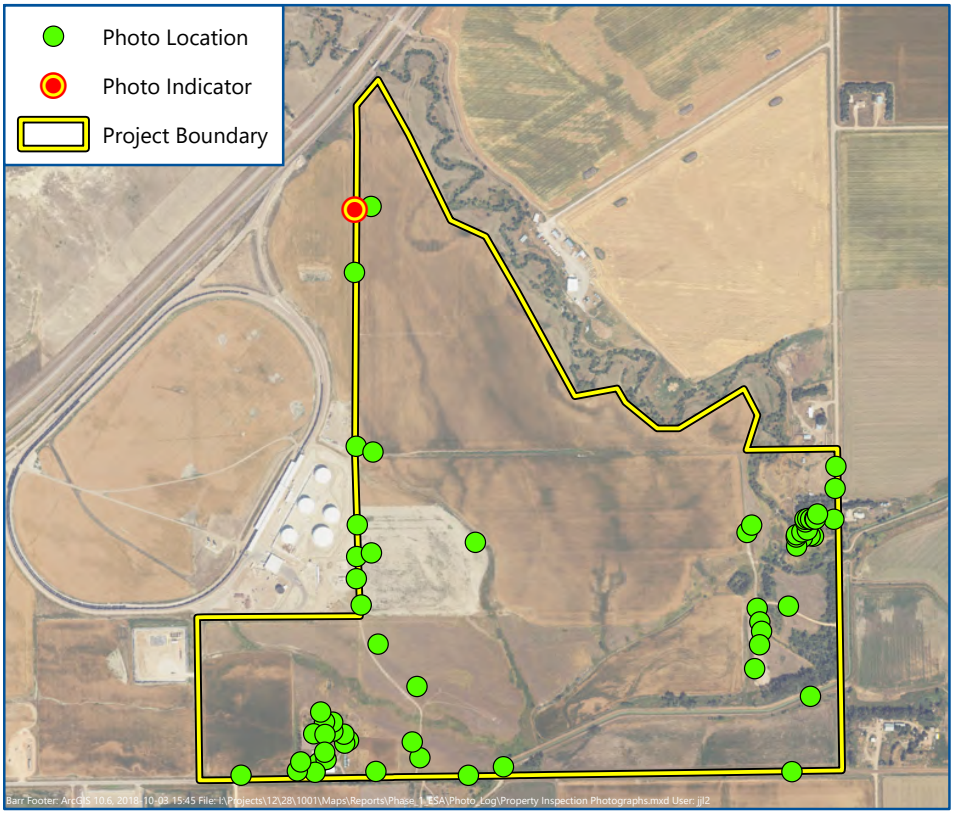
*Imagery: USDA NAIP (2022)*

Map 18 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Four propane tanks on railroad property, west of Property boundary

N

0 1,500 3,000

Feet

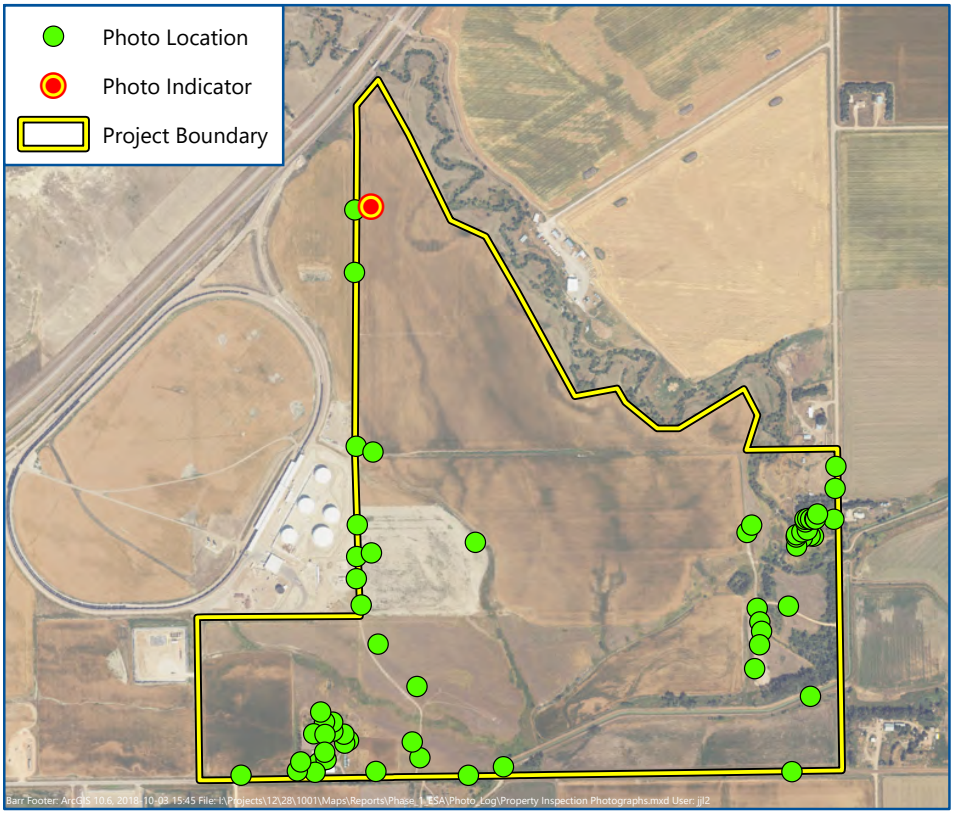
*Imagery: USDA NAIP (2022)*

Map 19 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Cropped field

N

0 1,500 3,000

Feet

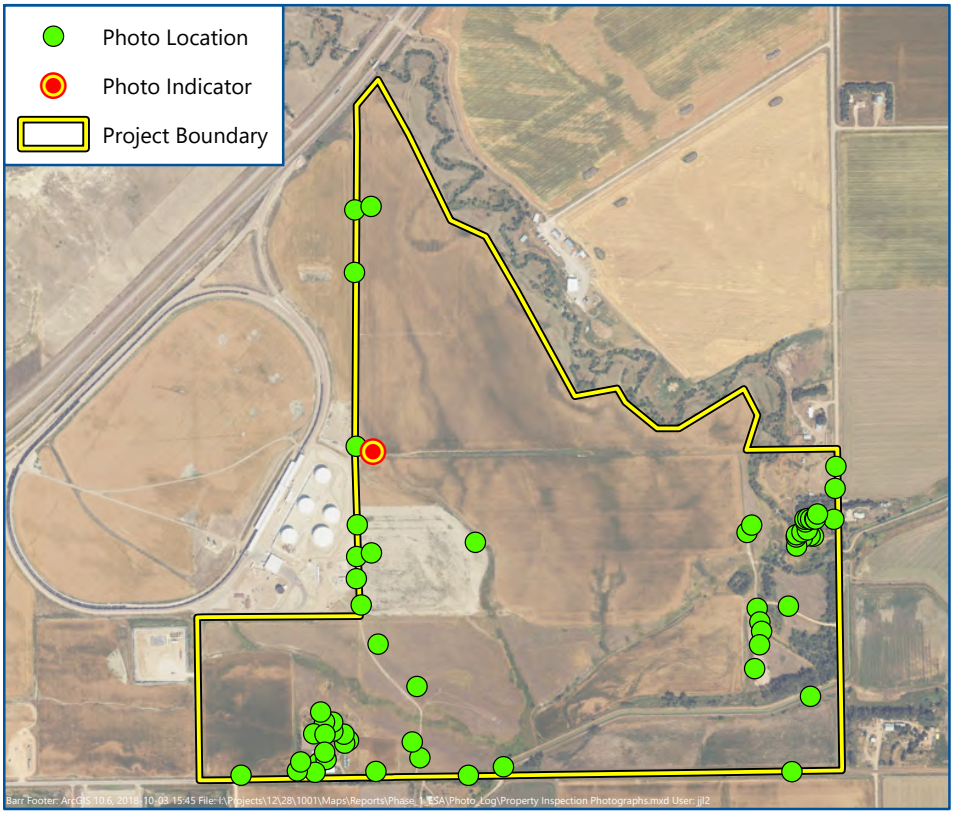
*Imagery: USDA NAIP (2022)*

Map 20 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Irrigation equipment

N

0 1,500 3,000

Feet

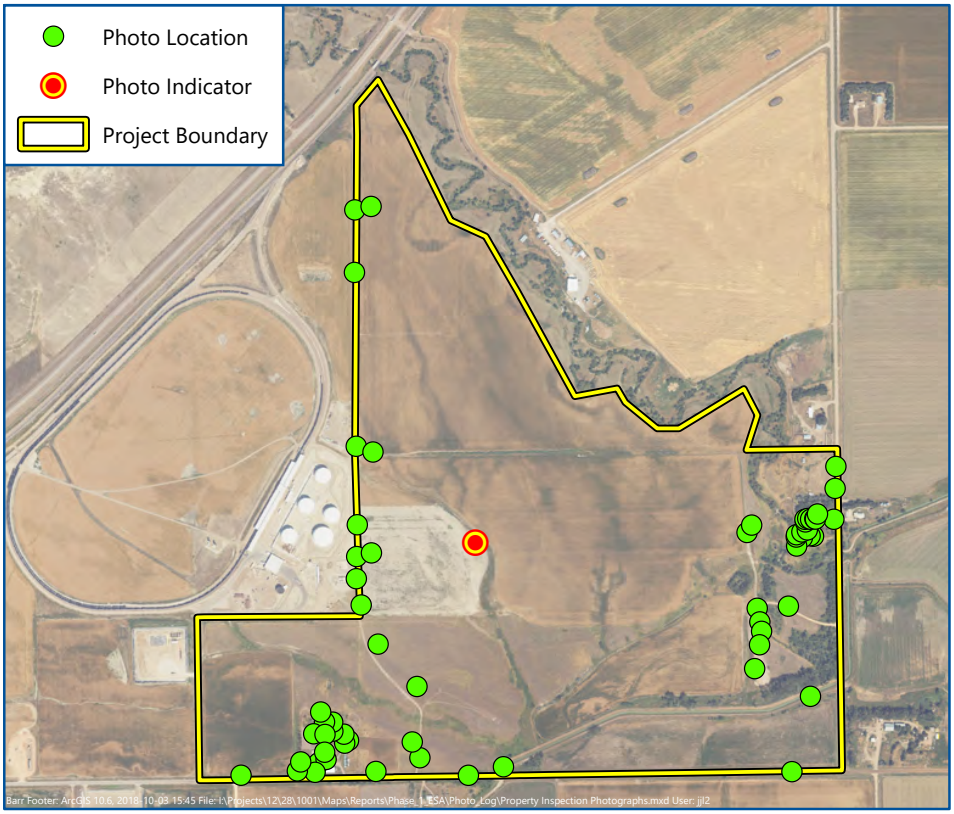
*Imagery: USDA NAIP (2022)*

Map 21 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Southeast

**Comment**: Area of little growth, eastern boundary follows drainage

N

0 1,500 3,000

Feet

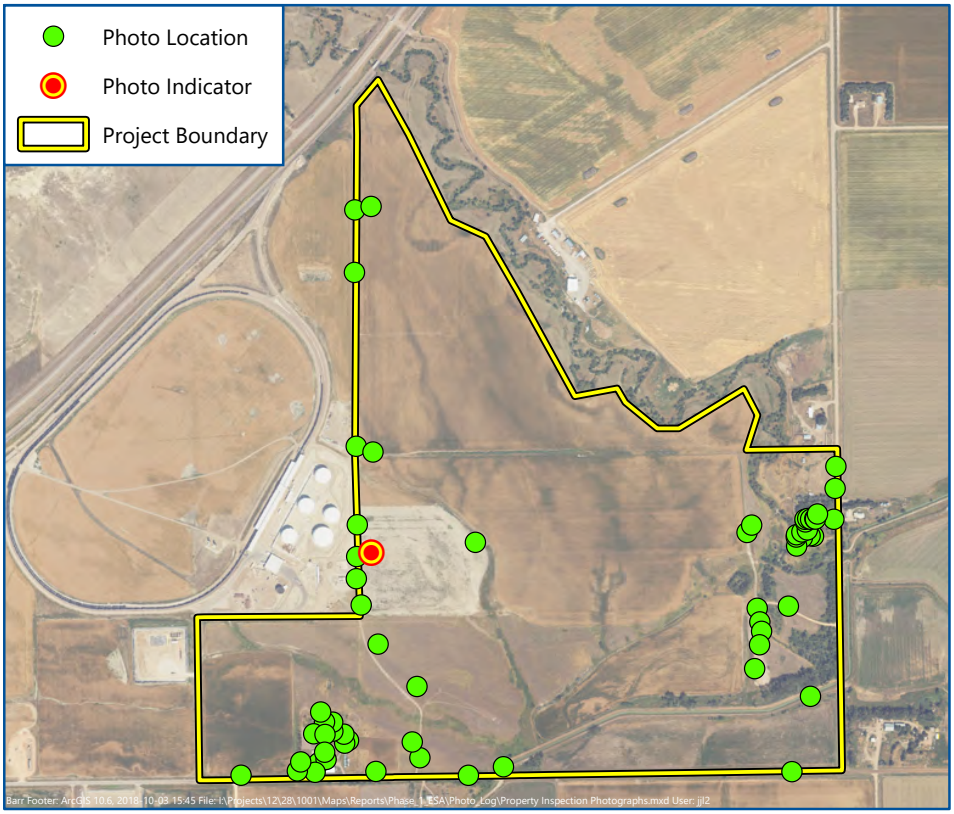
*Imagery: USDA NAIP (2022)*

Map 22 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Area of little growth in field, mainly Russian thistle

N

0 1,500 3,000

Feet

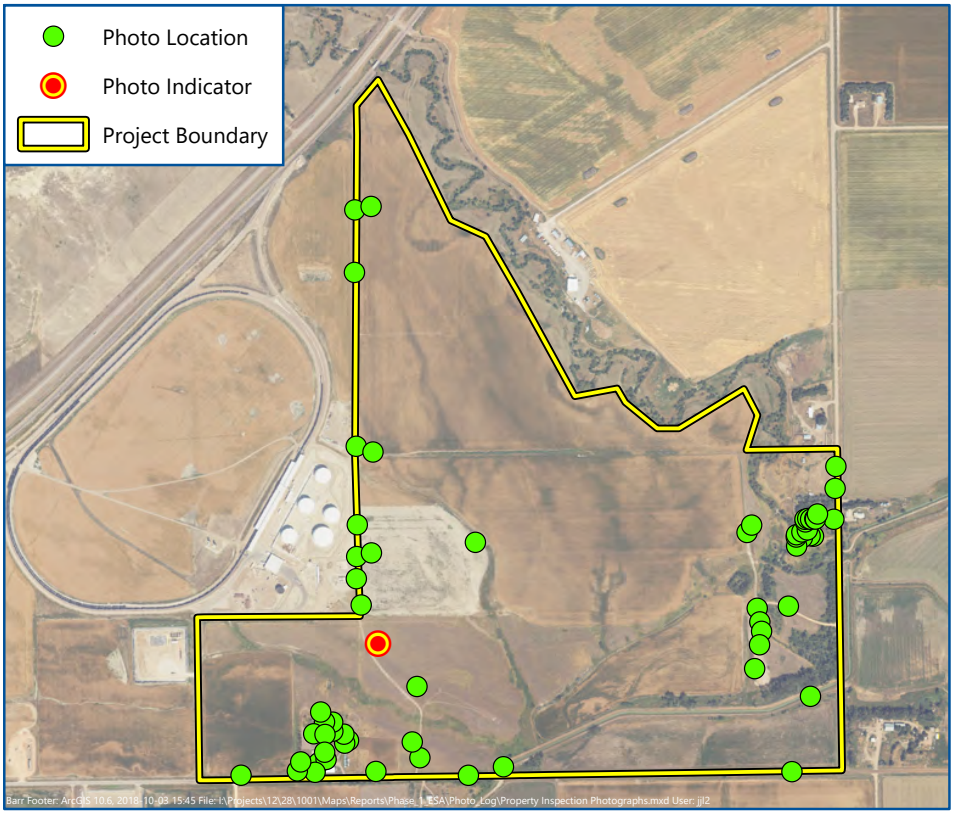
*Imagery: USDA NAIP (2022)*

Map 23 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Southeast

**Comment**: Pasture

N

0 1,500 3,000

Feet

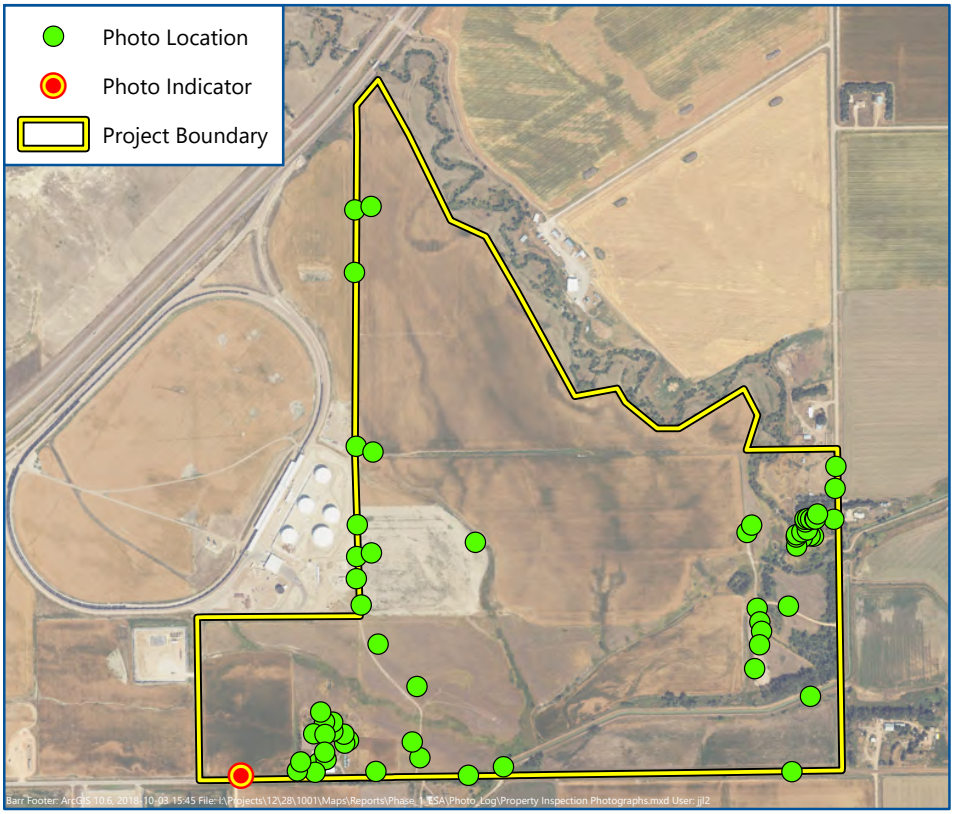
*Imagery: USDA NAIP (2022)*

Map 24 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Cropped field

N

0 1,500 3,000

Feet

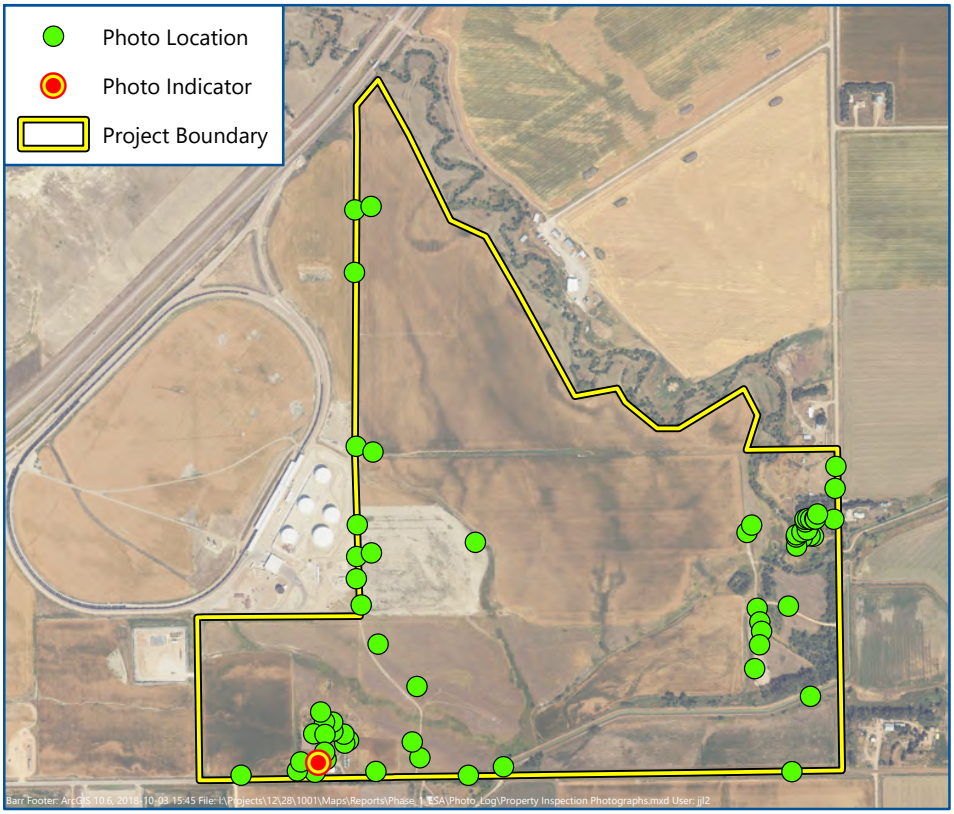
*Imagery: USDA NAIP (2022)*

Map 25 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Two above ground storage tanks

N

0 1,500 3,000

Feet

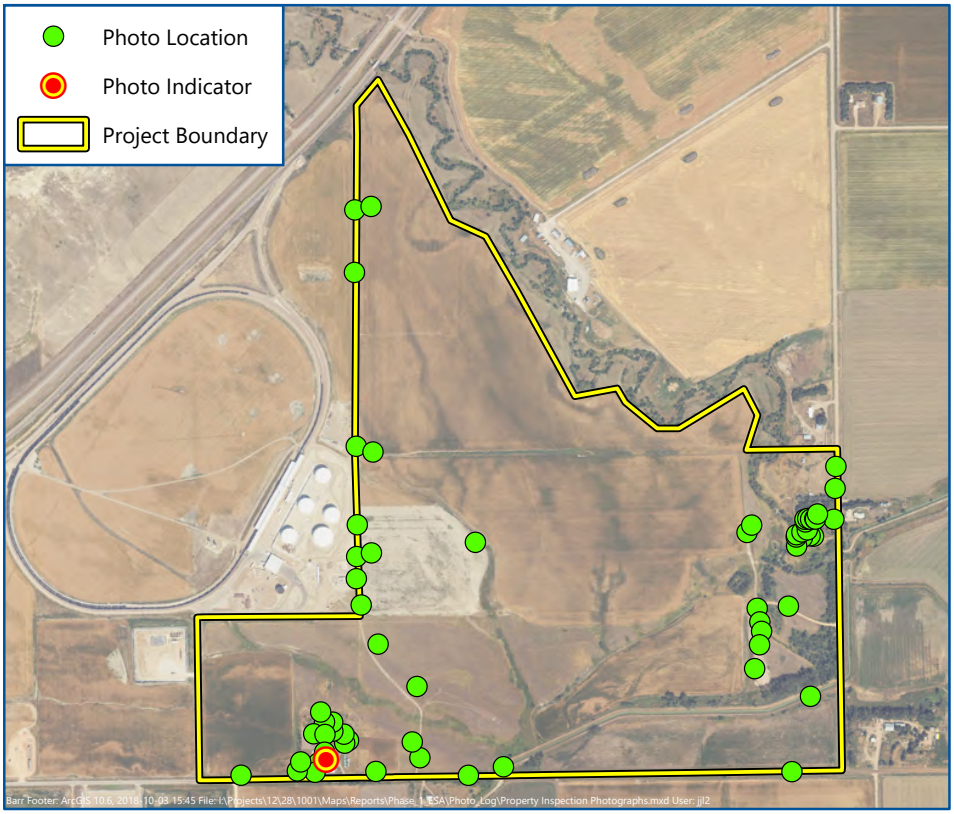
*Imagery: USDA NAIP (2022)*

Map 26 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: South

**Comment**: Above ground storage tank. Location of historic below ground stroage tank east of current visible tank.

N

0 1,500 3,000

Feet

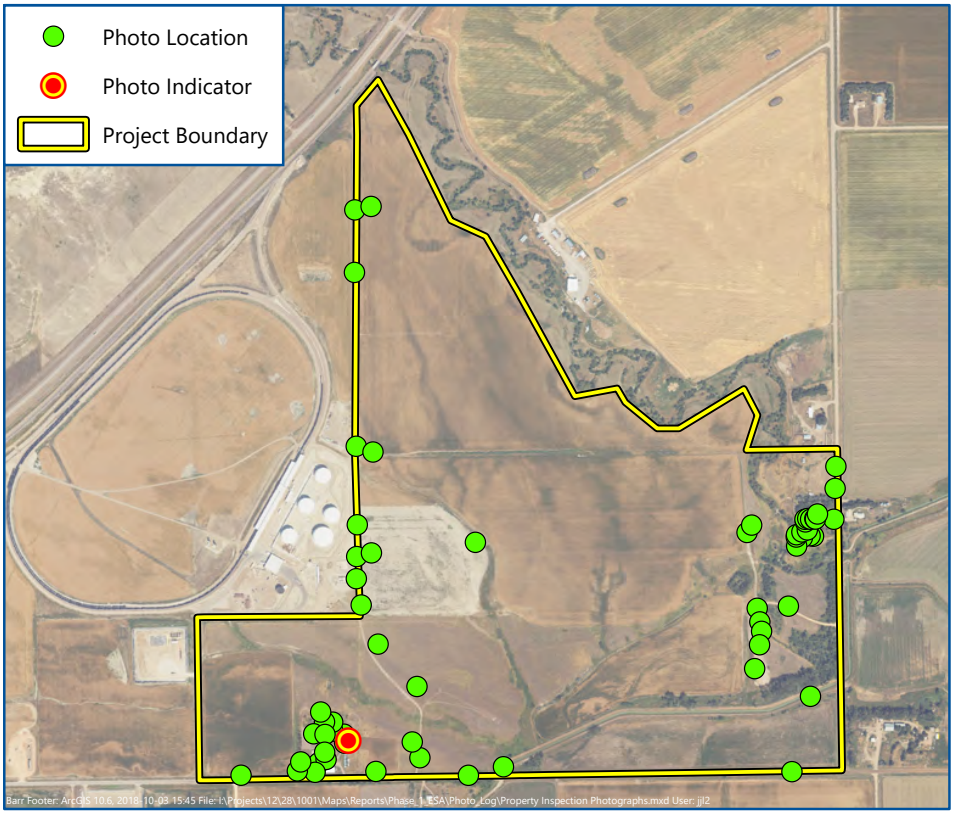
*Imagery: USDA NAIP (2022)*

Map 27 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: South

**Comment**: Grain bins, farm equipment, stacked metal piping

N

0 1,500 3,000

Feet

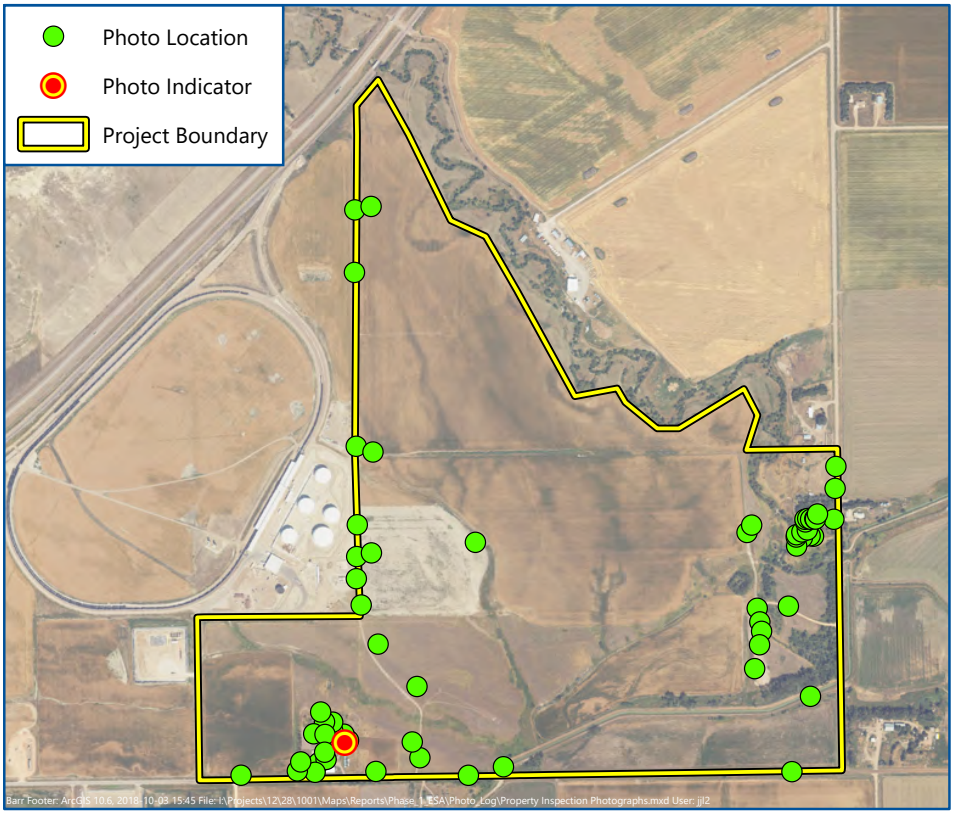
*Imagery: USDA NAIP (2022)*

Map 28 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Dirt pile, pieces of concrete visible

N

0 1,500 3,000

Feet

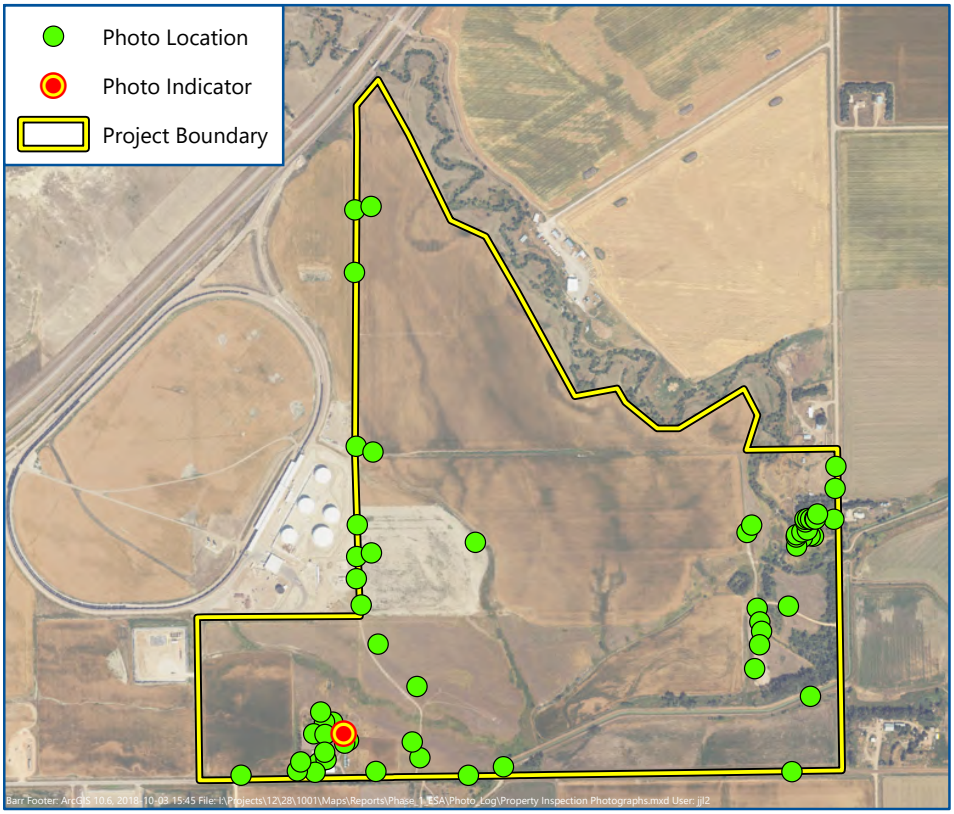
*Imagery: USDA NAIP (2022)*

Map 29 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Small debris pile, wood pallets, scrap metal

N

0 1,500 3,000

Feet

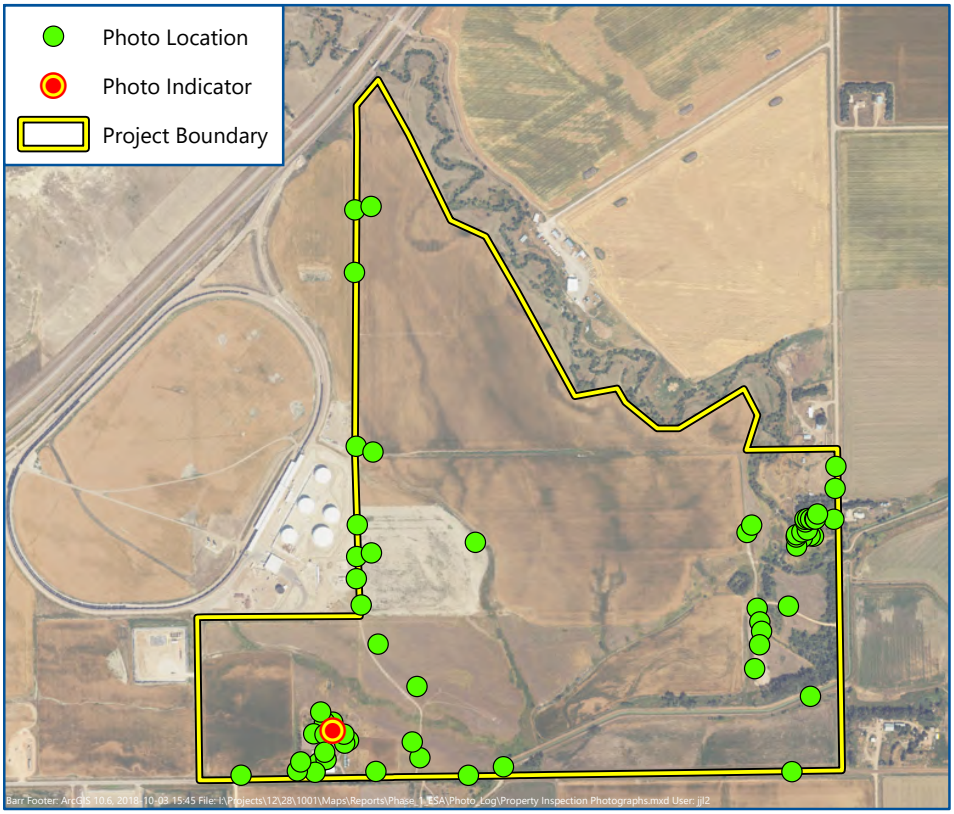
*Imagery: USDA NAIP (2022)*

Map 30 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Farm equipment

N

0 1,500 3,000

Feet

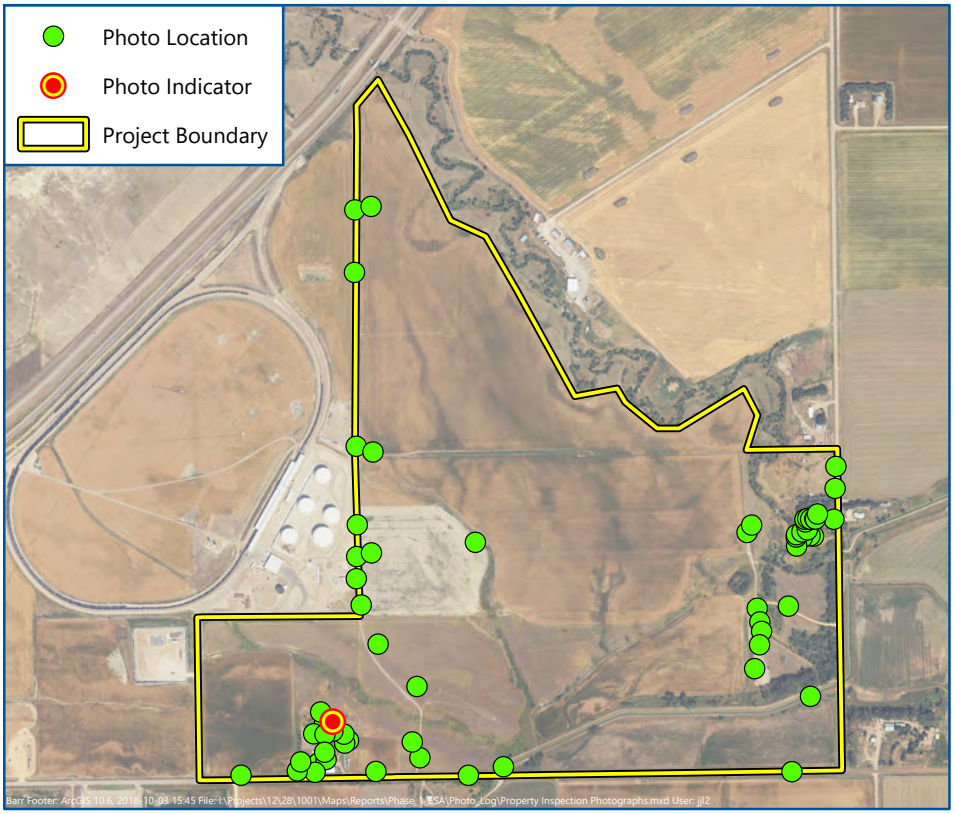
*Imagery: USDA NAIP (2022)*

Map 31 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Debris pile, old appliances and furniture

N

0 1,500 3,000

Feet

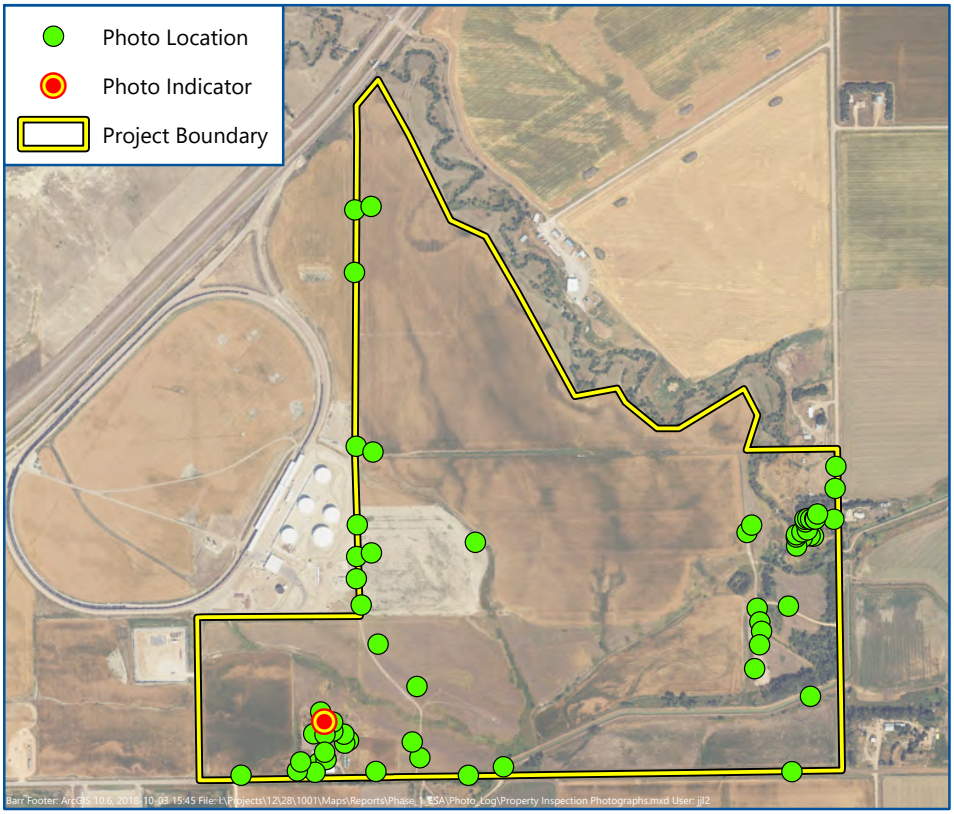
*Imagery: USDA NAIP (2022)*

Map 32 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Old shed filled with debris, wood pallets, scrap metal, farm equipment parts

N

0 1,500 3,000

Feet

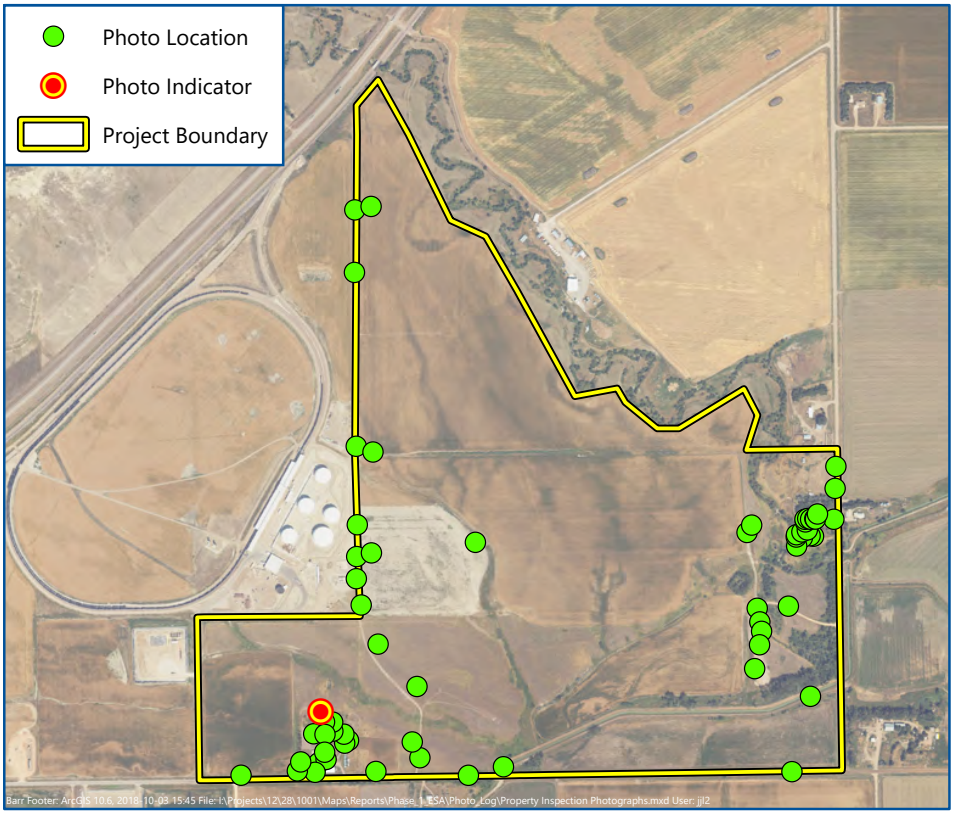
*Imagery: USDA NAIP (2022)*

Map 33 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Old water tank, pile of tires, farm equipment

N

0 1,500 3,000

Feet

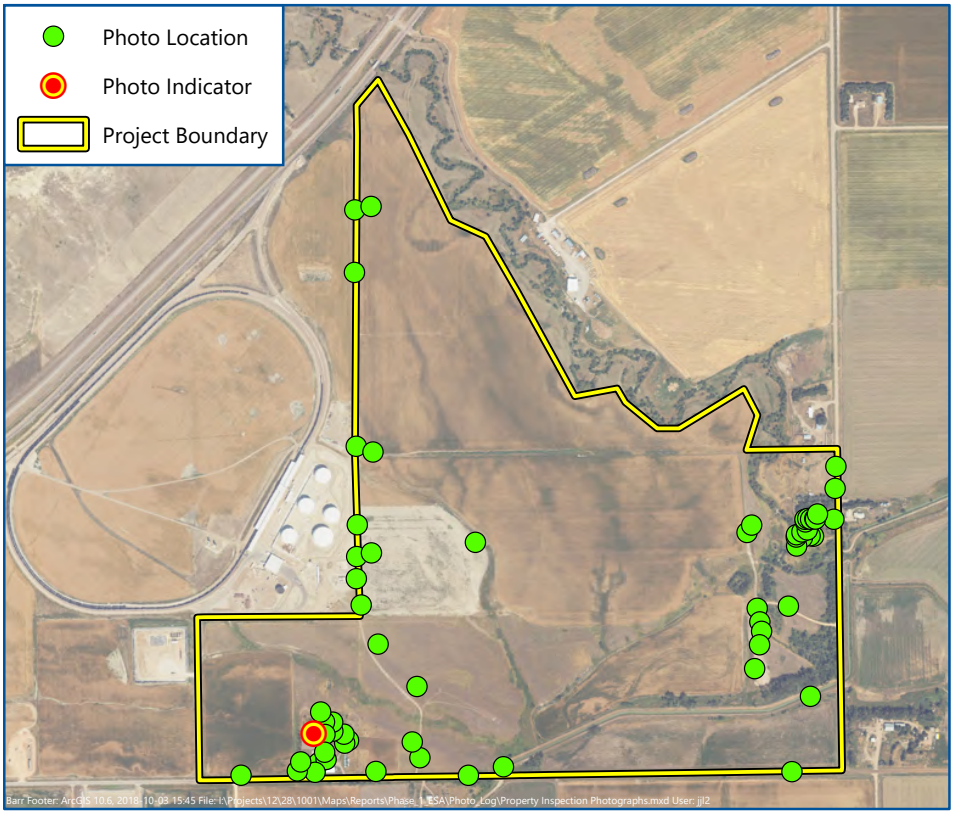
*Imagery: USDA NAIP (2022)*

Map 34 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: South

**Comment**: Three sheds and main house, tilled land used as garden in various years

N

0 1,500 3,000

Feet

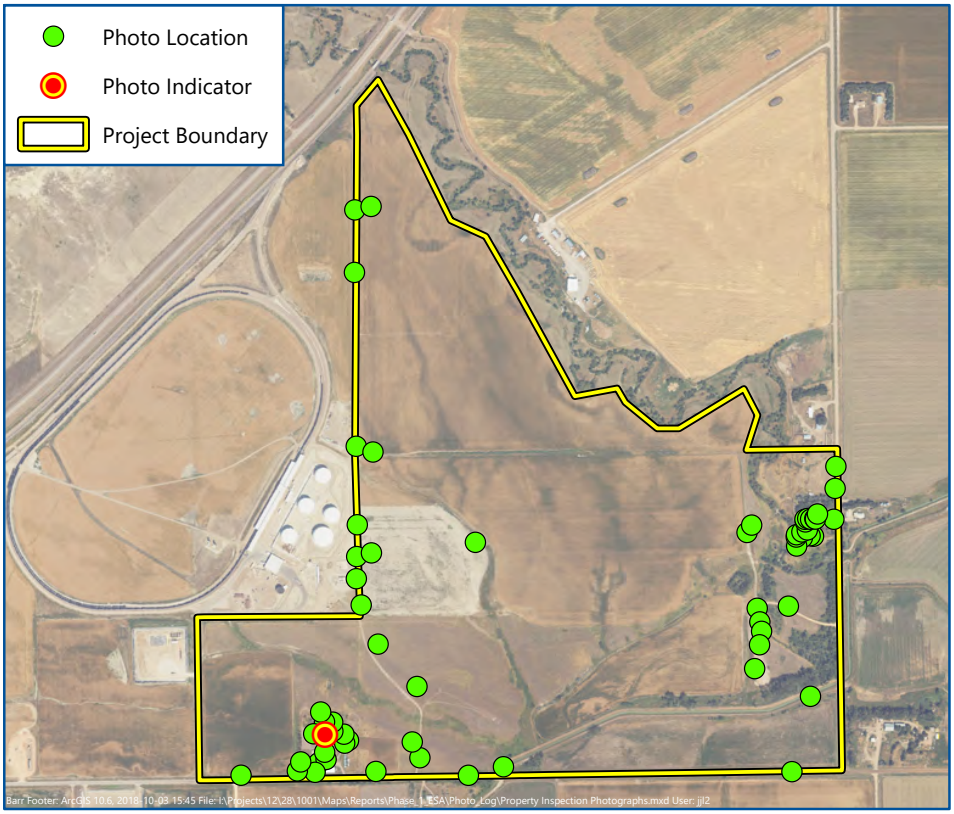
*Imagery: USDA NAIP (2022)*

Map 35 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Old shed filled with debris, old propane tank, four unmarked plastic drums, four motor oil metal drums, multiple 5-gallon buckets of pivot oil

N

0 1,500 3,000

Feet

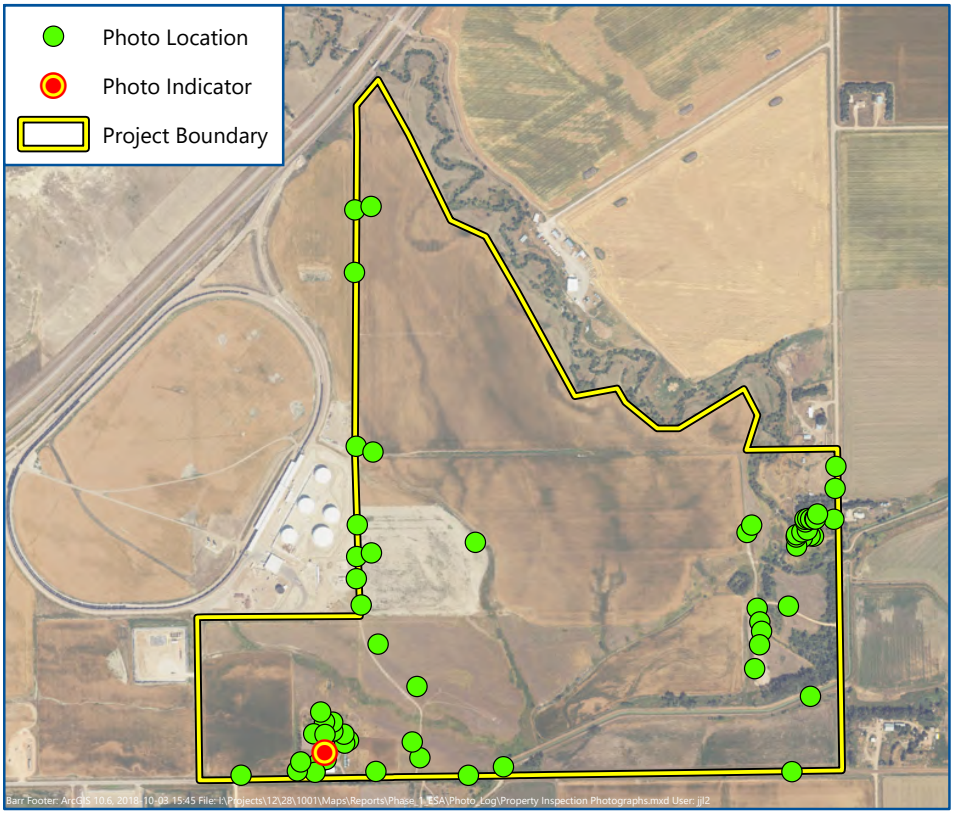
*Imagery: USDA NAIP (2022)*

Map 36 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Shed, old above ground stoats tank inside

N

0 1,500 3,000

Feet

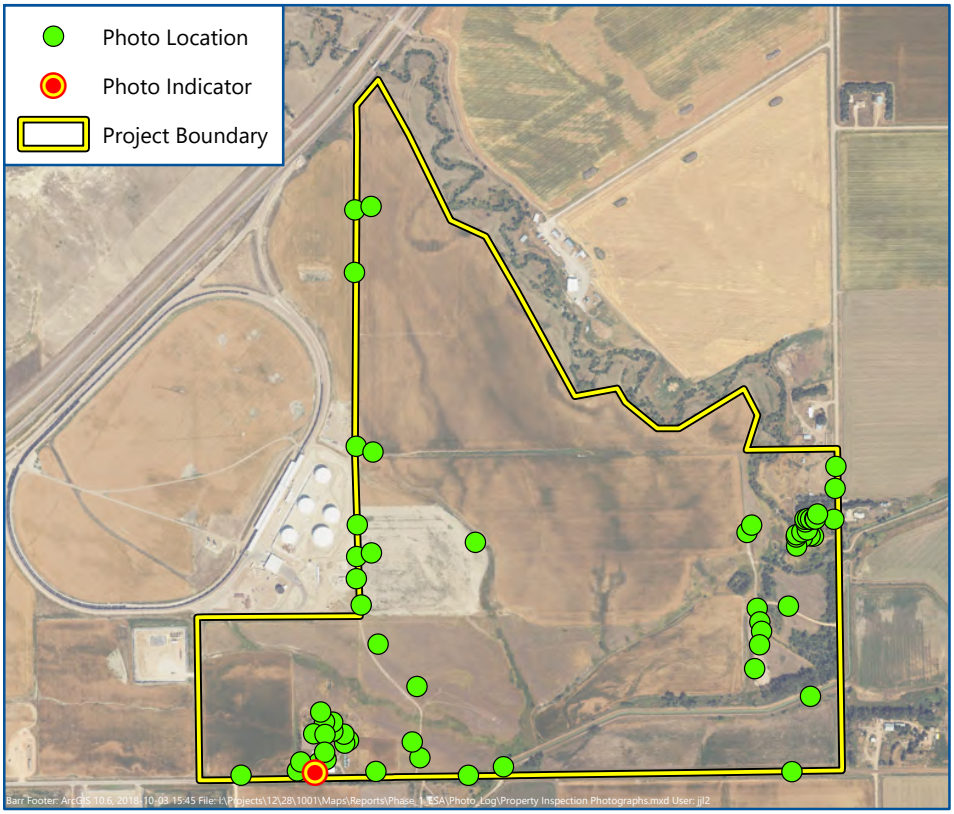
*Imagery: USDA NAIP (2022)*

Map 37 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Metal barn

N

0 1,500 3,000

Feet

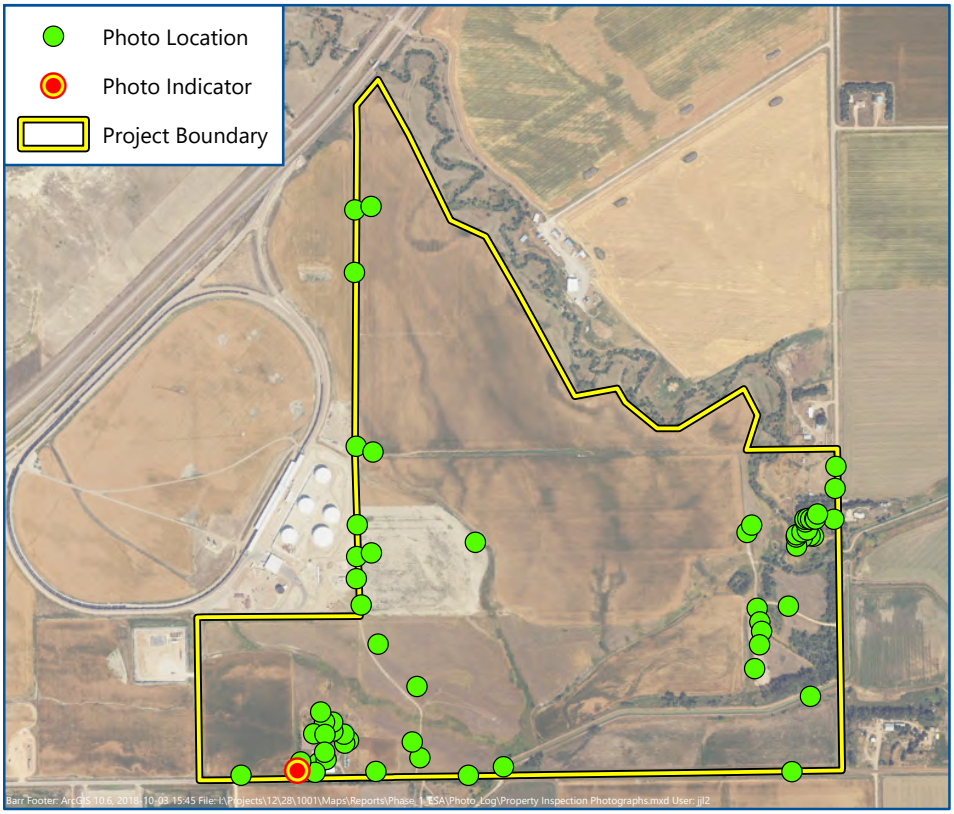
*Imagery: USDA NAIP (2022)*

Map 38 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Water main

N

0 1,500 3,000

Feet

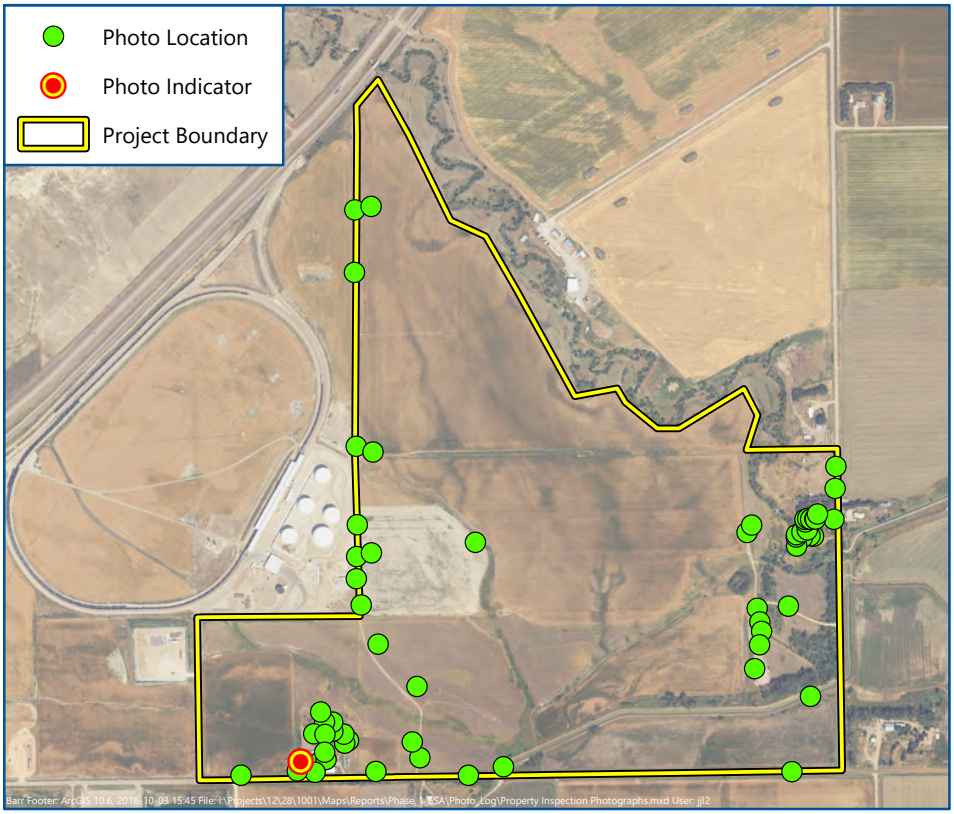
*Imagery: USDA NAIP (2022)*

Map 39 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Propane tank behind Oster residence

N

0 1,500 3,000

Feet

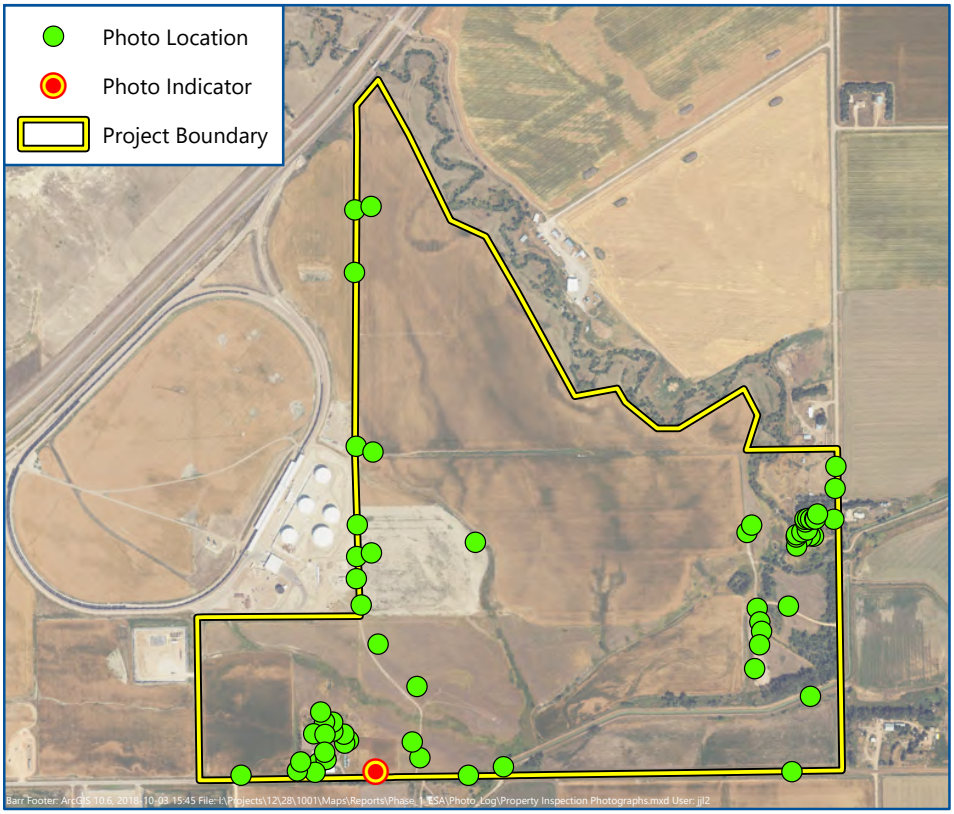
*Imagery: USDA NAIP (2022)*

Map 40 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Pasture, parked farm equipment

N

0 1,500 3,000

Feet

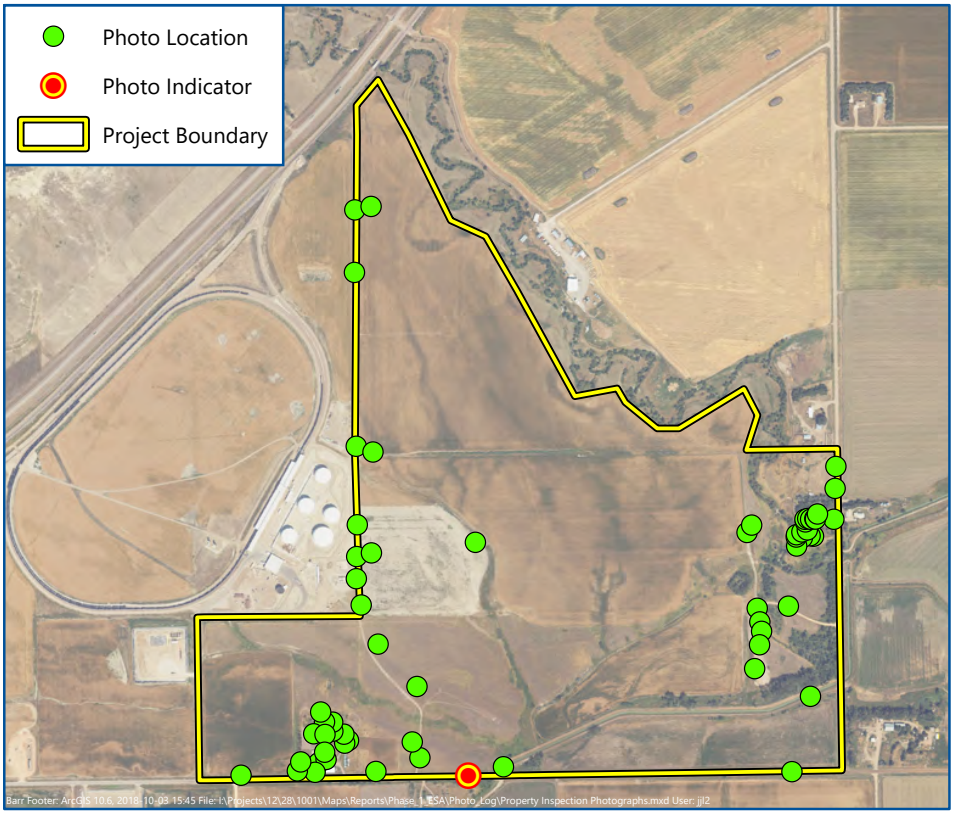
*Imagery: USDA NAIP (2022)*

Map 41 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Pasture

N

0 1,500 3,000

Feet

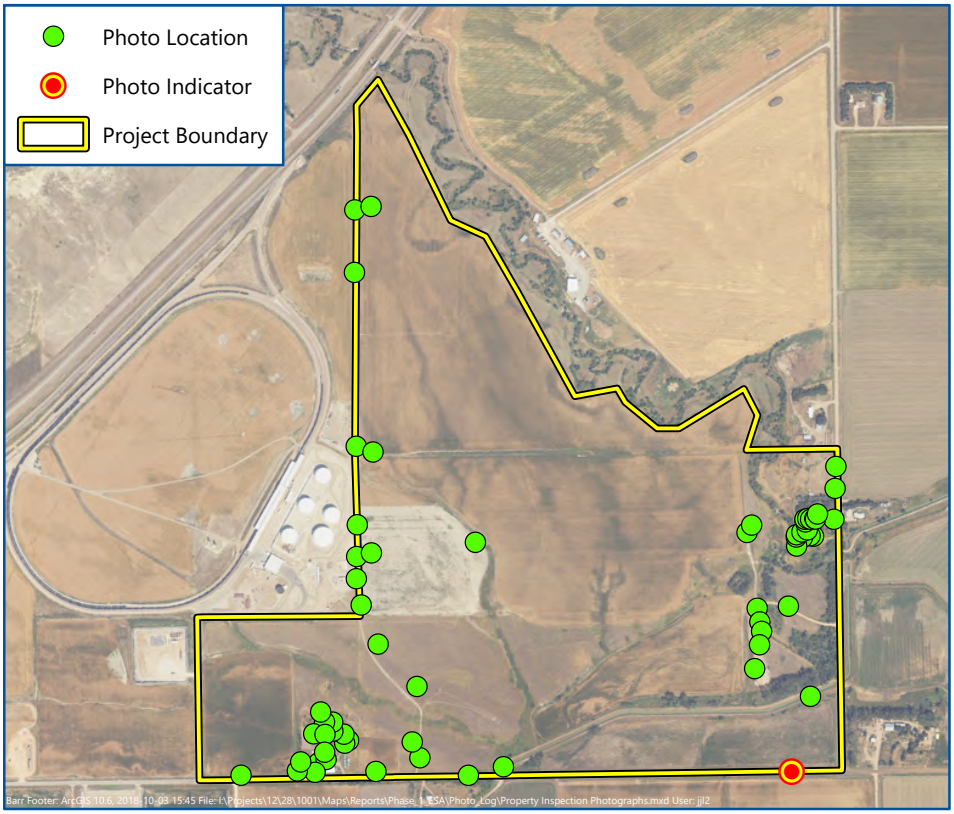
*Imagery: USDA NAIP (2022)*

Map 42 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Empty pasture

N

0 1,500 3,000

Feet

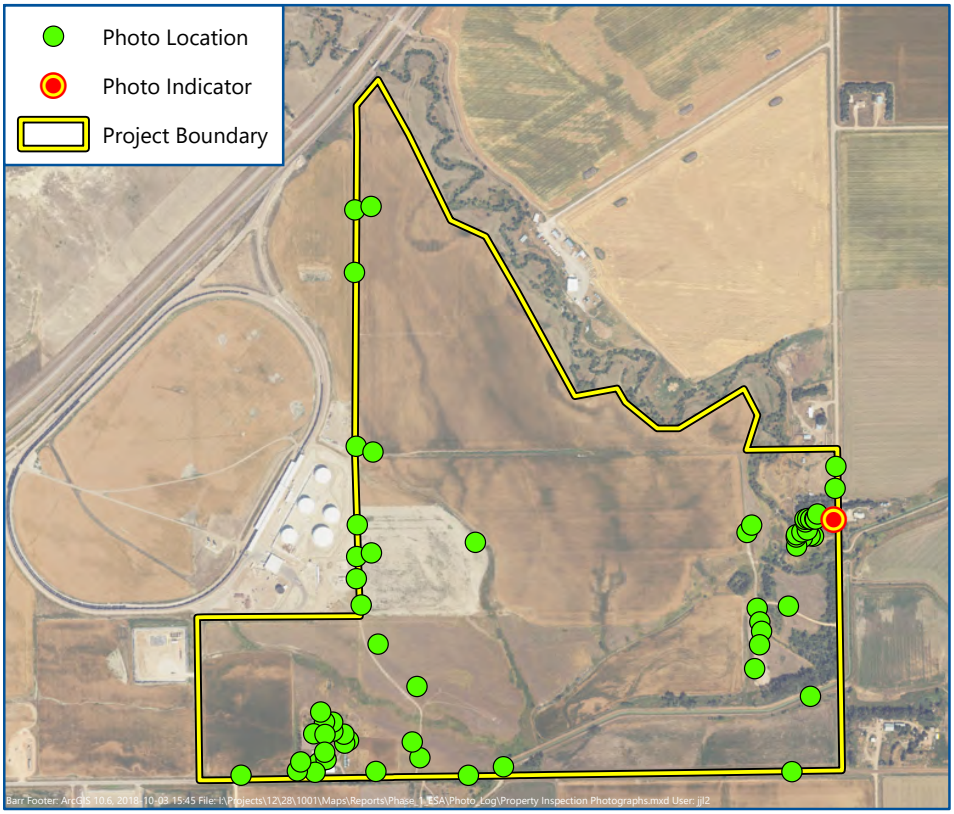
*Imagery: USDA NAIP (2022)*

Map 43 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Aune farmstead

N

0 1,500 3,000

Feet

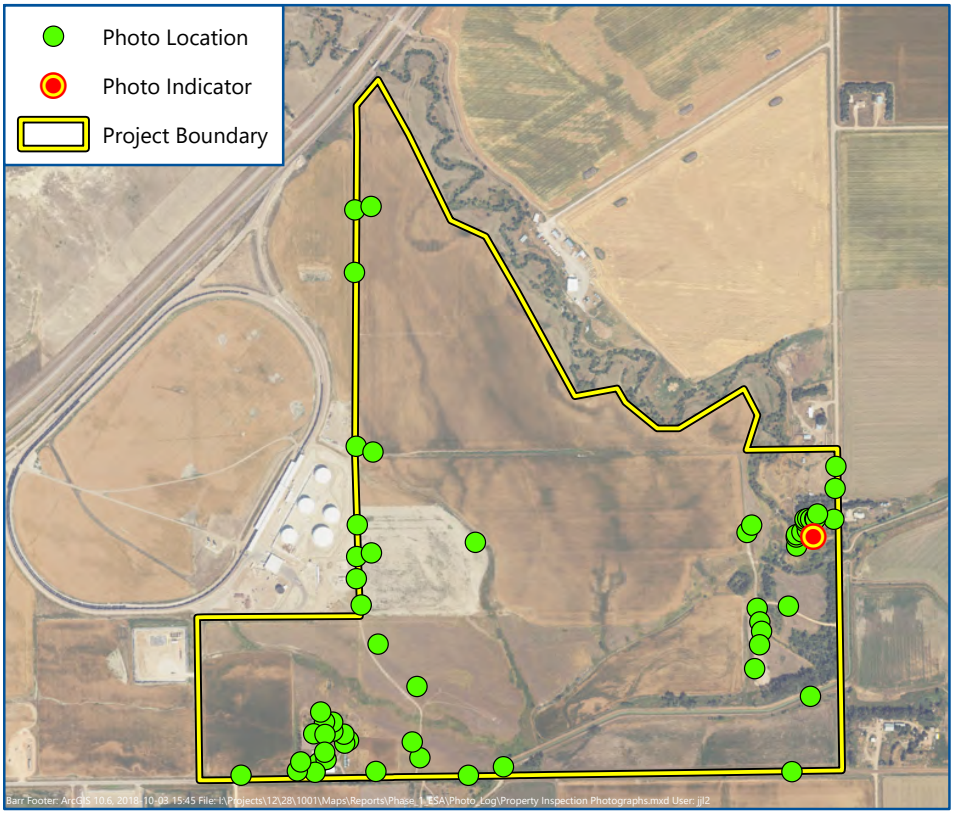
*Imagery: USDA NAIP (2022)*

Map 44 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: South

**Comment**: Roof of old shed

N

0 1,500 3,000

Feet

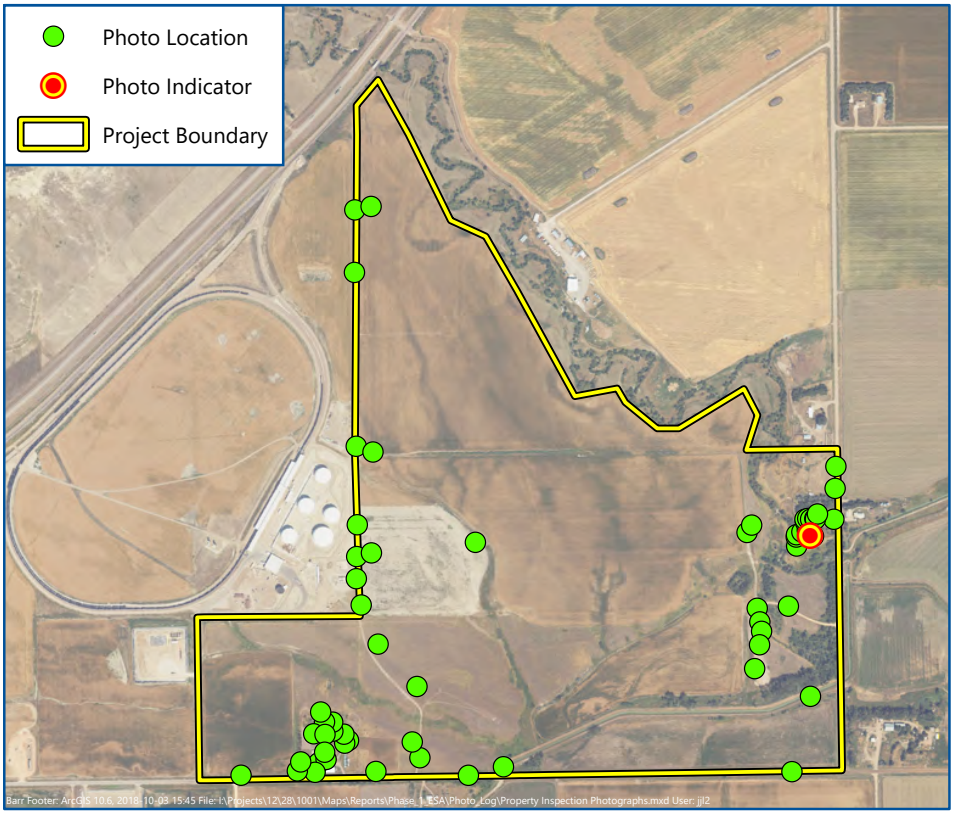
*Imagery: USDA NAIP (2022)*

Map 45 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Metal shed and old wooden shed

N

0 1,500 3,000

Feet

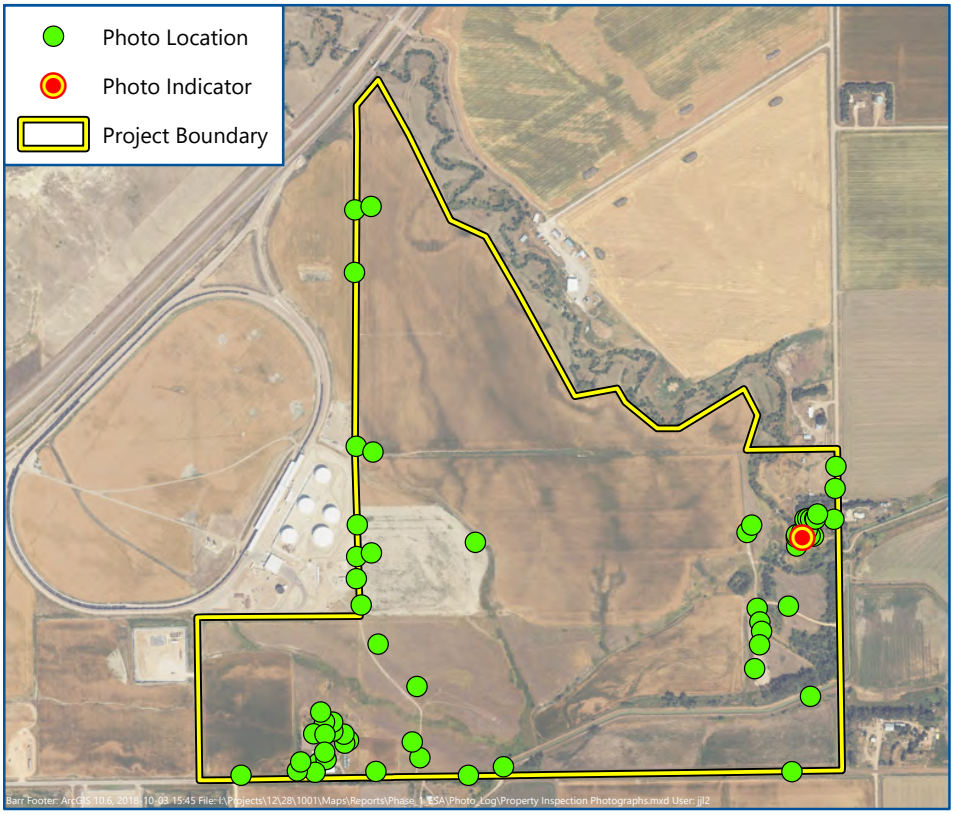
*Imagery: USDA NAIP (2022)*

Map 46 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: South

**Comment**: Debris pile in front of shed, scrap metal and old equipment parts

N

0 1,500 3,000

Feet

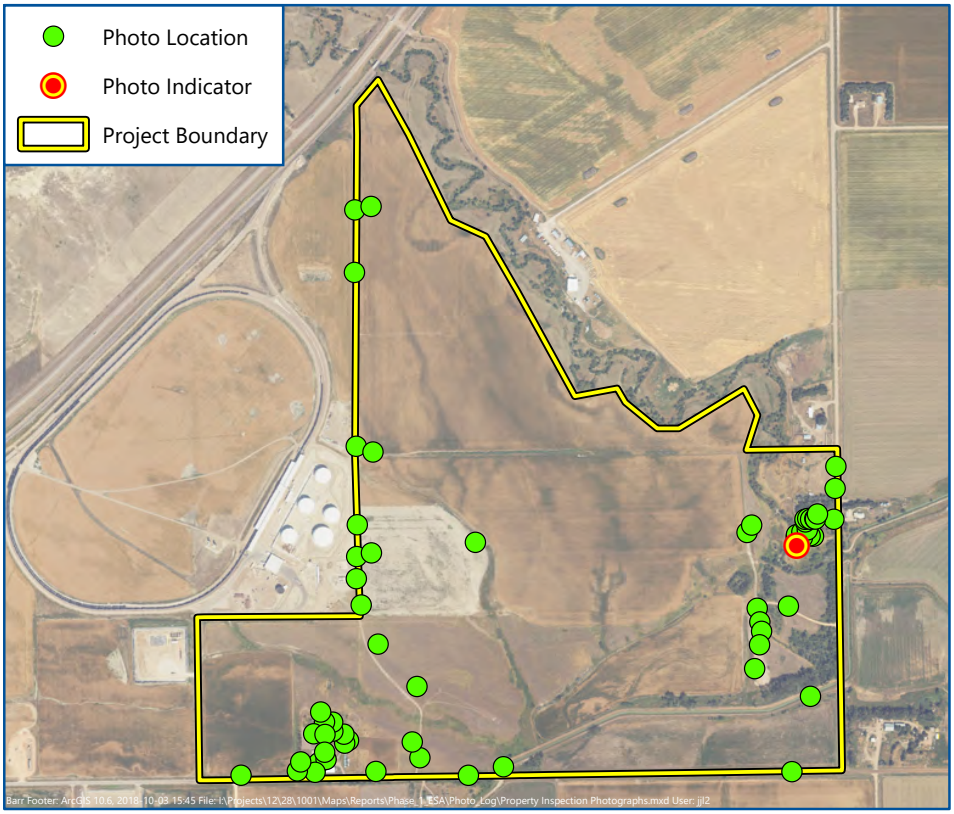
*Imagery: USDA NAIP (2022)*

Map 47 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Propane tank, evidence of another propane tank to the west that has been removed, and debris pile

N

0 1,500 3,000

Feet

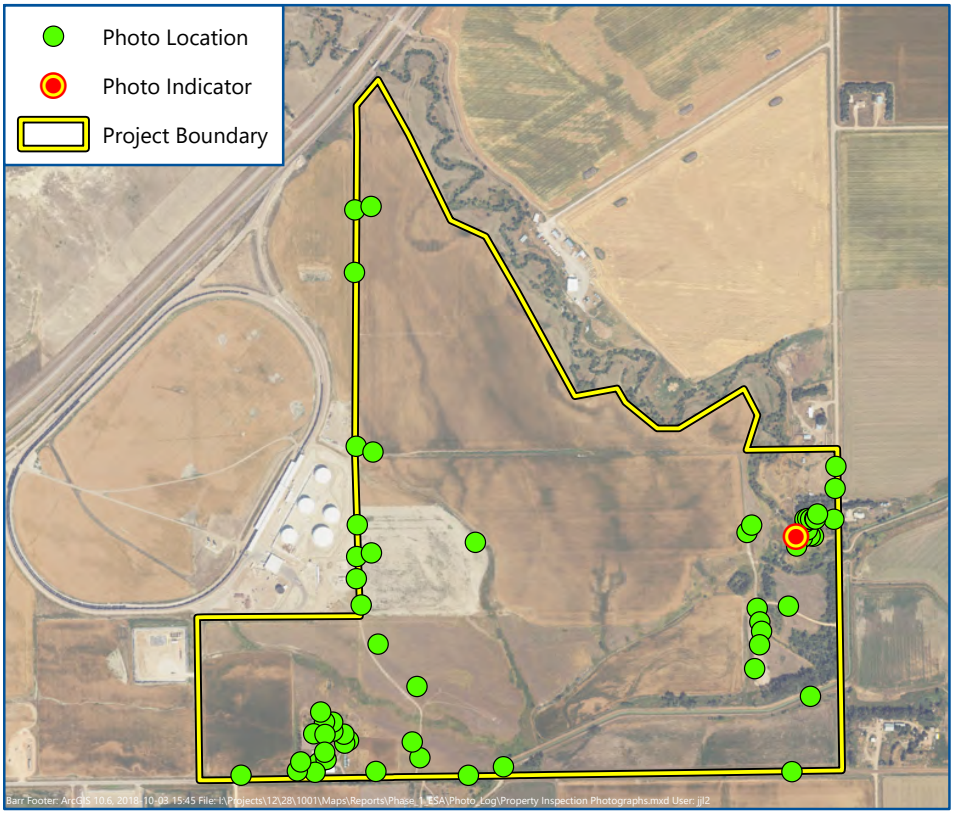
*Imagery: USDA NAIP (2022)*

Map 48 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Old shed filled with scrap metal, tires, and other debris

N

0 1,500 3,000

Feet

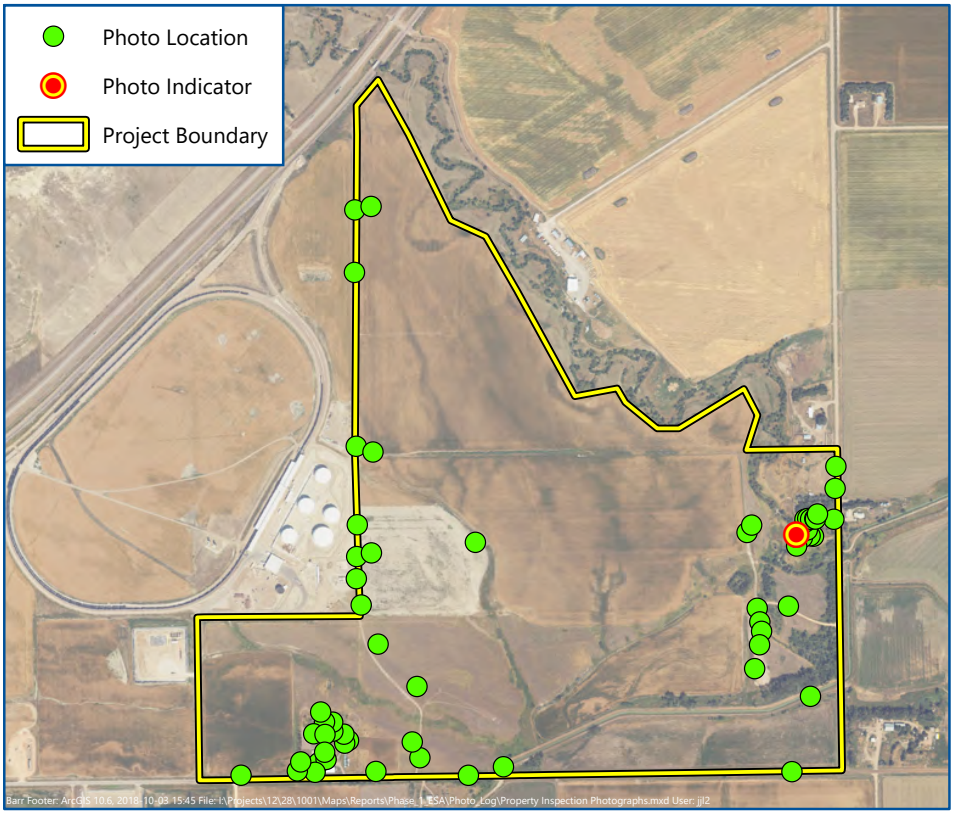
*Imagery: USDA NAIP (2022)*

Map 49 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Old building walls and windows, two unmarked metal drums

N

0 1,500 3,000

Feet

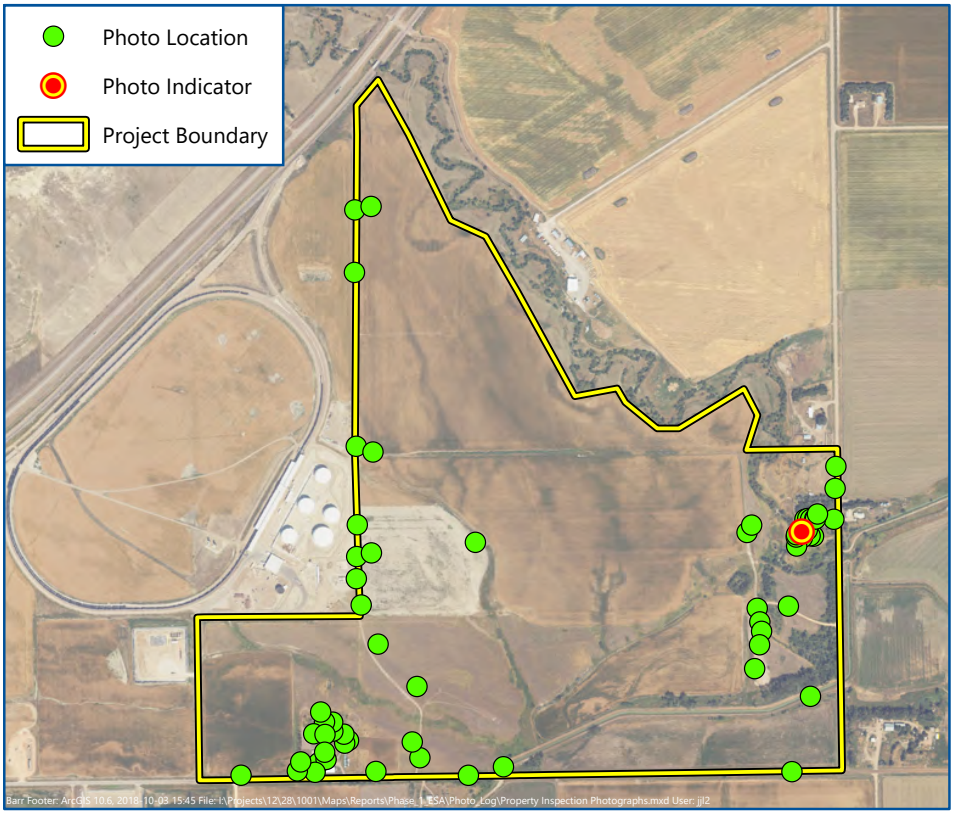
*Imagery: USDA NAIP (2022)*

Map 50 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Pile of old siding and old appliances adjacent to barn

N

0 1,500 3,000

Feet

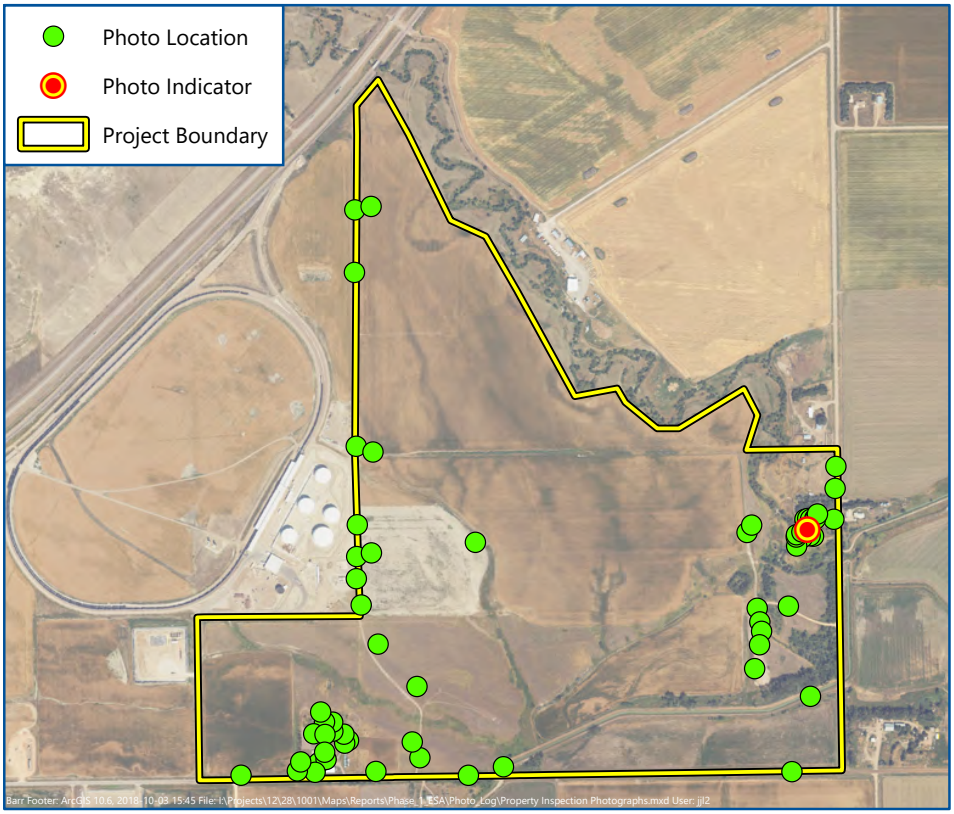
*Imagery: USDA NAIP (2022)*

Map 51 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Metal barn, petroleum gas tank sitting in front

N

0 1,500 3,000

Feet

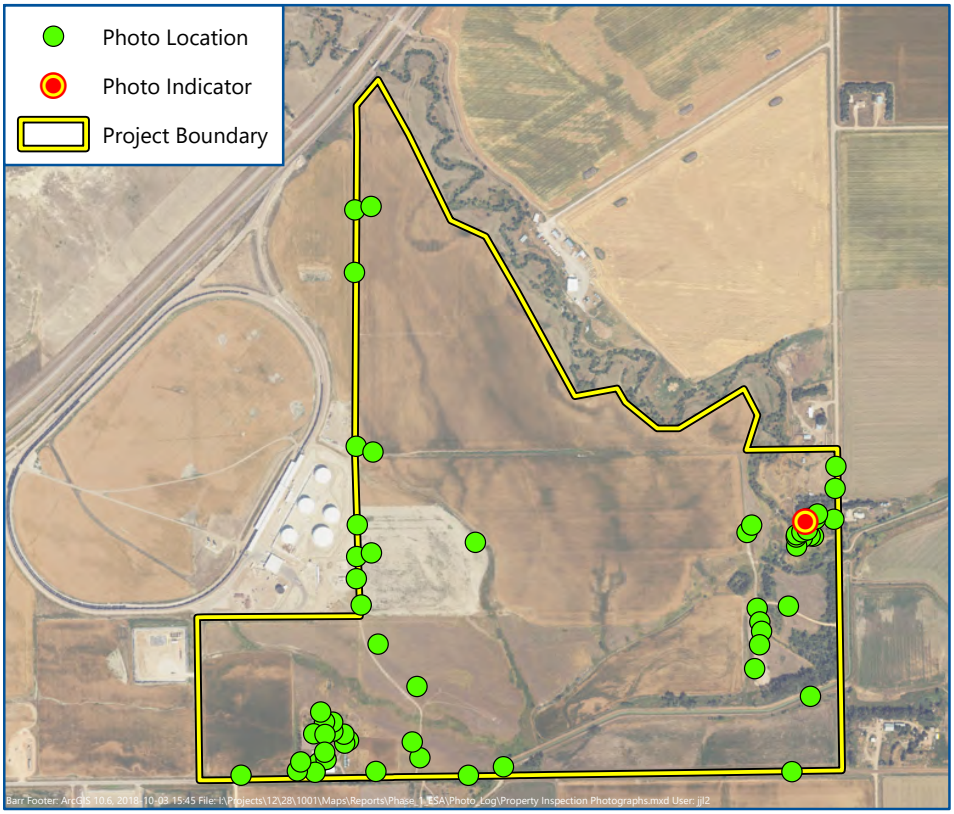
*Imagery: USDA NAIP (2022)*

Map 52 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Southwest

**Comment**: Storage container north of main barn

N

0 1,500 3,000

Feet

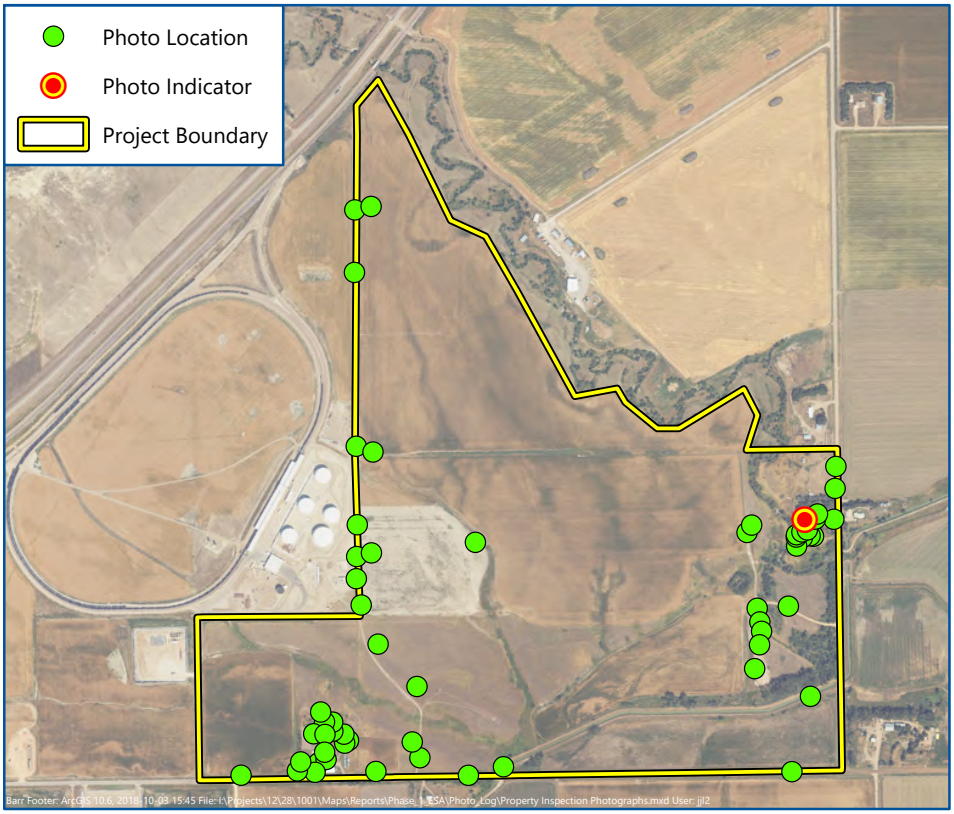
*Imagery: USDA NAIP (2022)*

Map 53 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northwest

**Comment**: Empty grain bins and small storage container

N

0 1,500 3,000

Feet

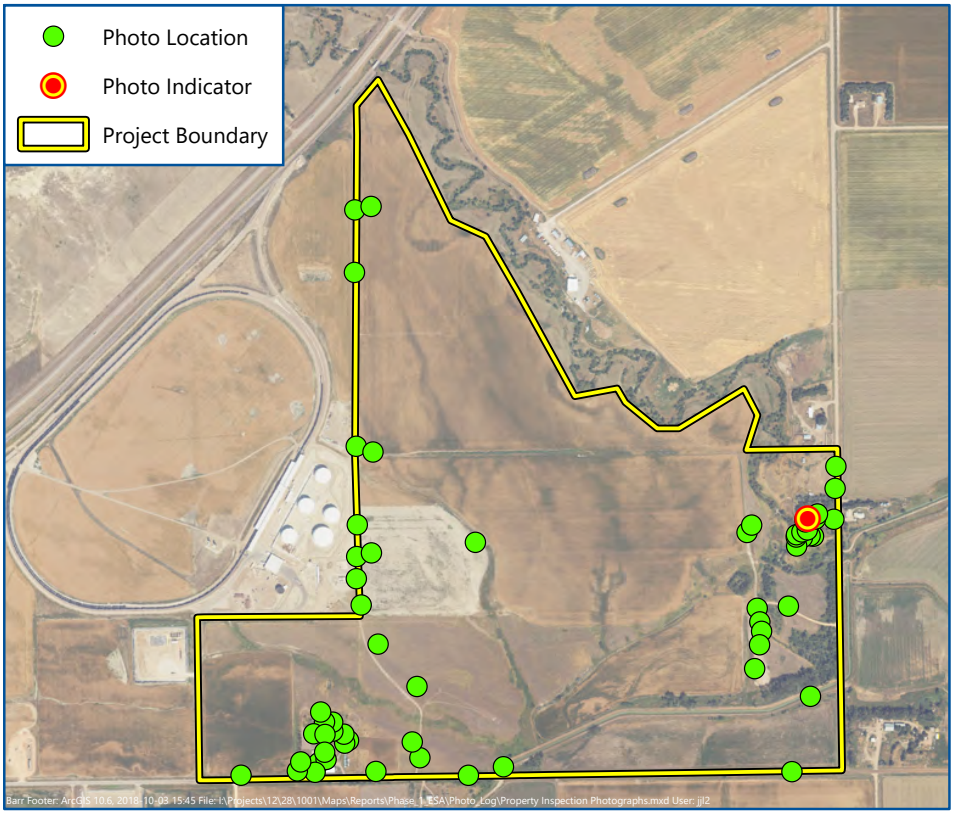
*Imagery: USDA NAIP (2022)*

Map 54 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Old shed filled with scrap metal and wood debris, one unmarked plastic drum

N

0 1,500 3,000

Feet

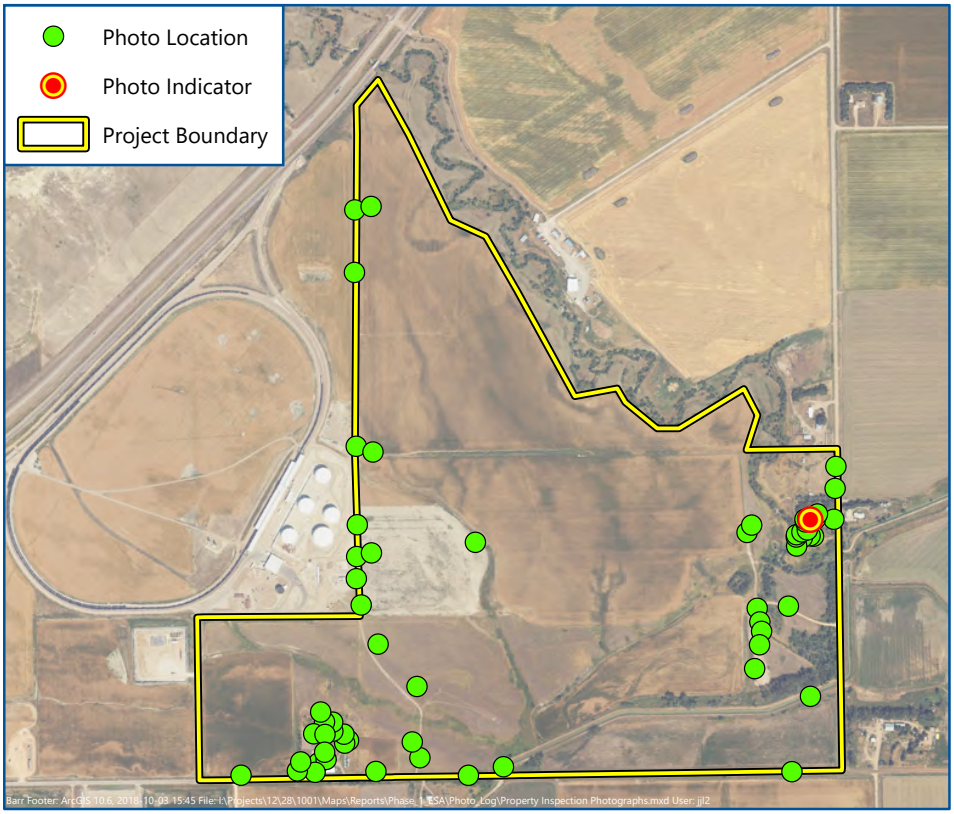
*Imagery: USDA NAIP (2022)*

Map 55 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Old metal shed, pile of tires on west side

N

0 1,500 3,000

Feet

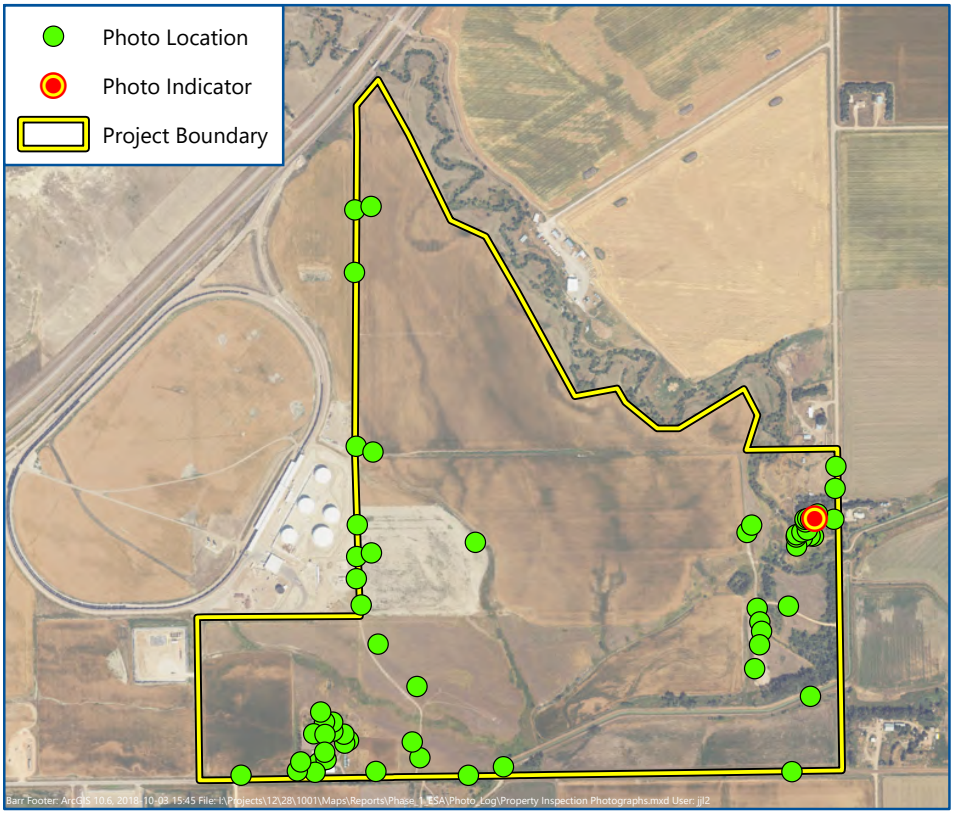
*Imagery: USDA NAIP (2022)*

Map 56 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: Small garden shed

N

0 1,500 3,000

Feet

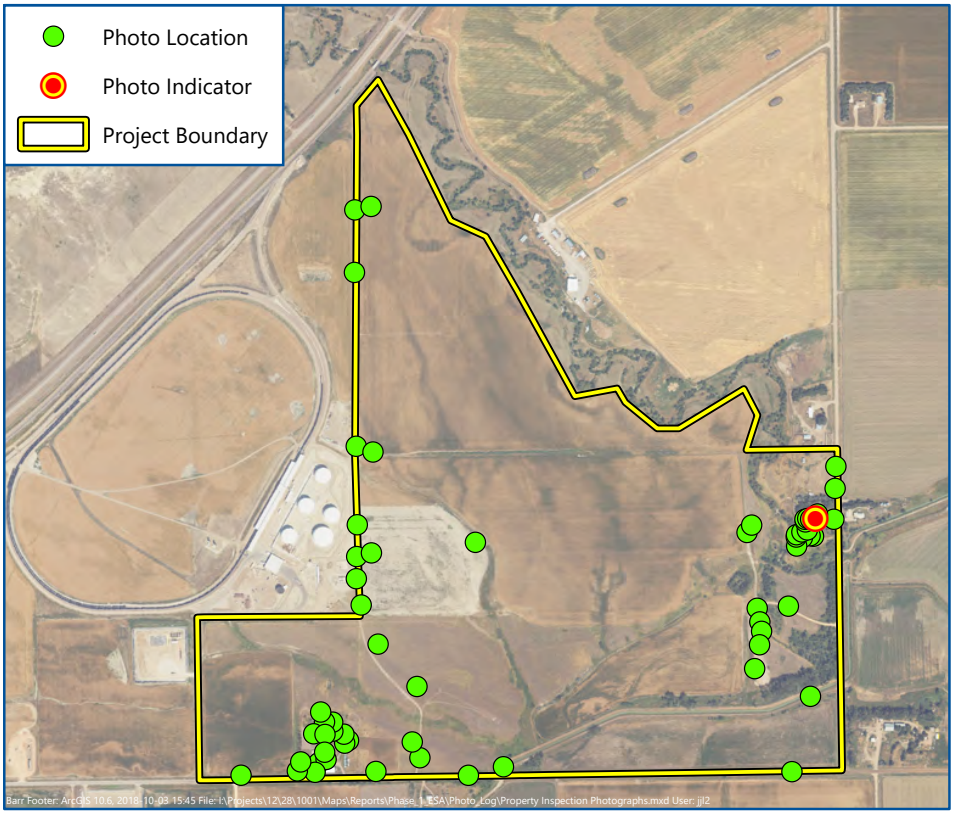
*Imagery: USDA NAIP (2022)*

Map 57 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: East

**Comment**: Back of Aune farmstead

N

0 1,500 3,000

Feet

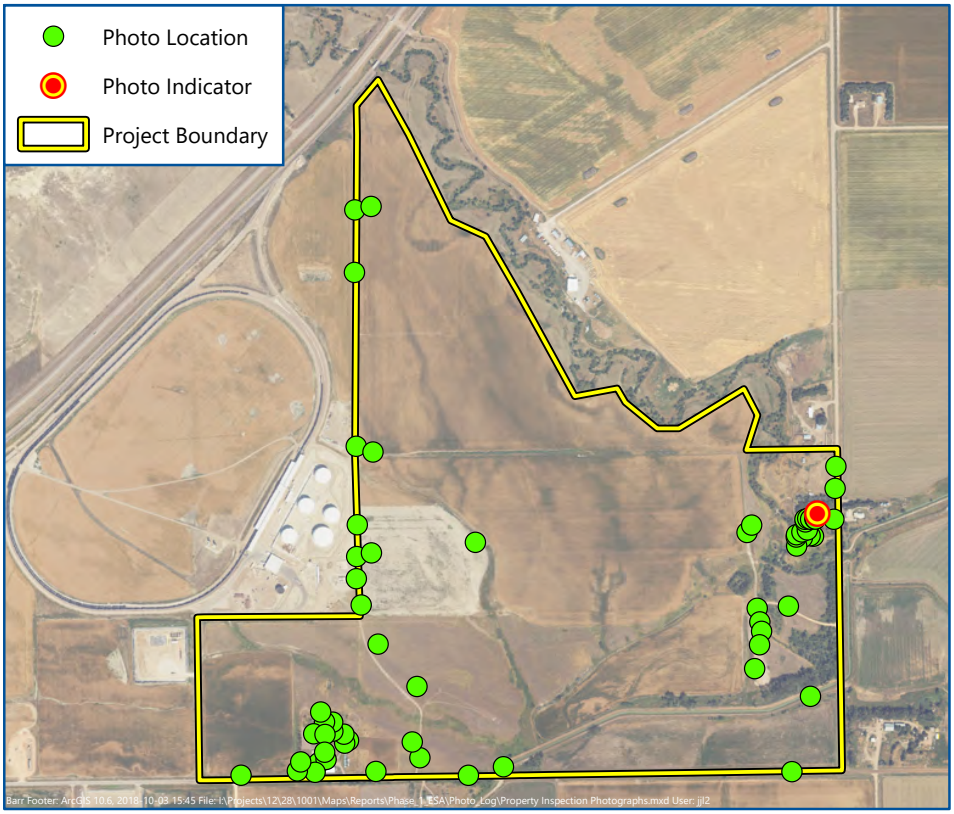
*Imagery: USDA NAIP (2022)*

Map 58 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: North

**Comment**: One propane tank

N

0 1,500 3,000

Feet

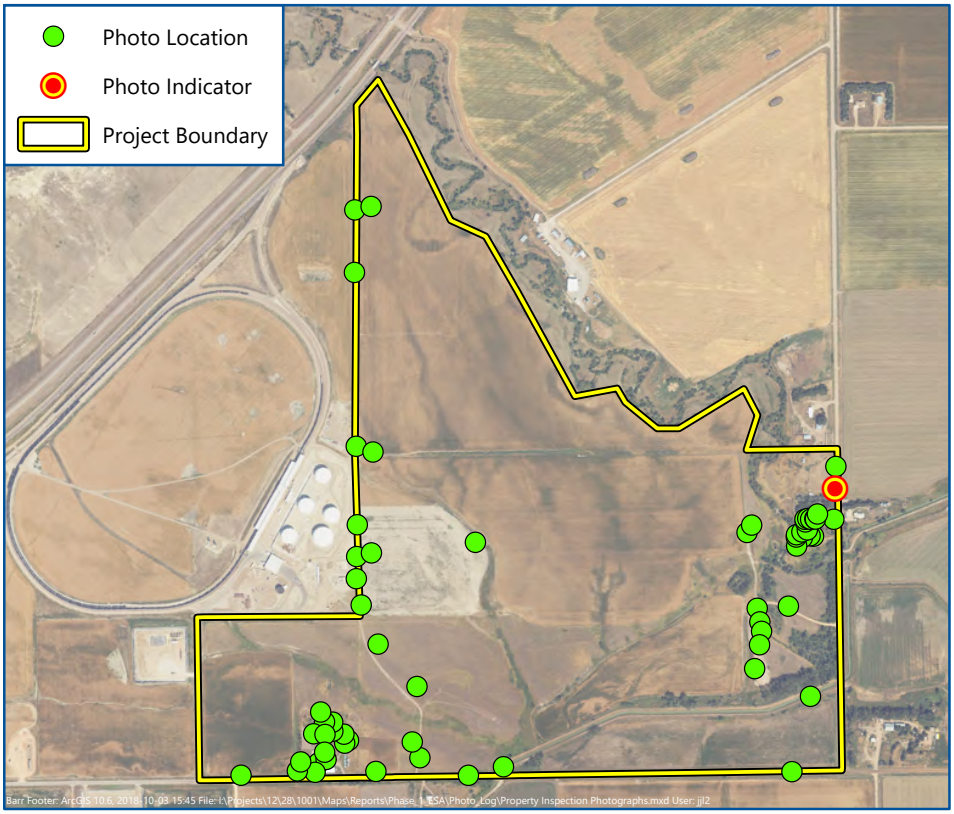
*Imagery: USDA NAIP (2022)*

Map 59 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Old camper and boat, two old plastic storage containers, scrap metal

N

0 1,500 3,000

Feet

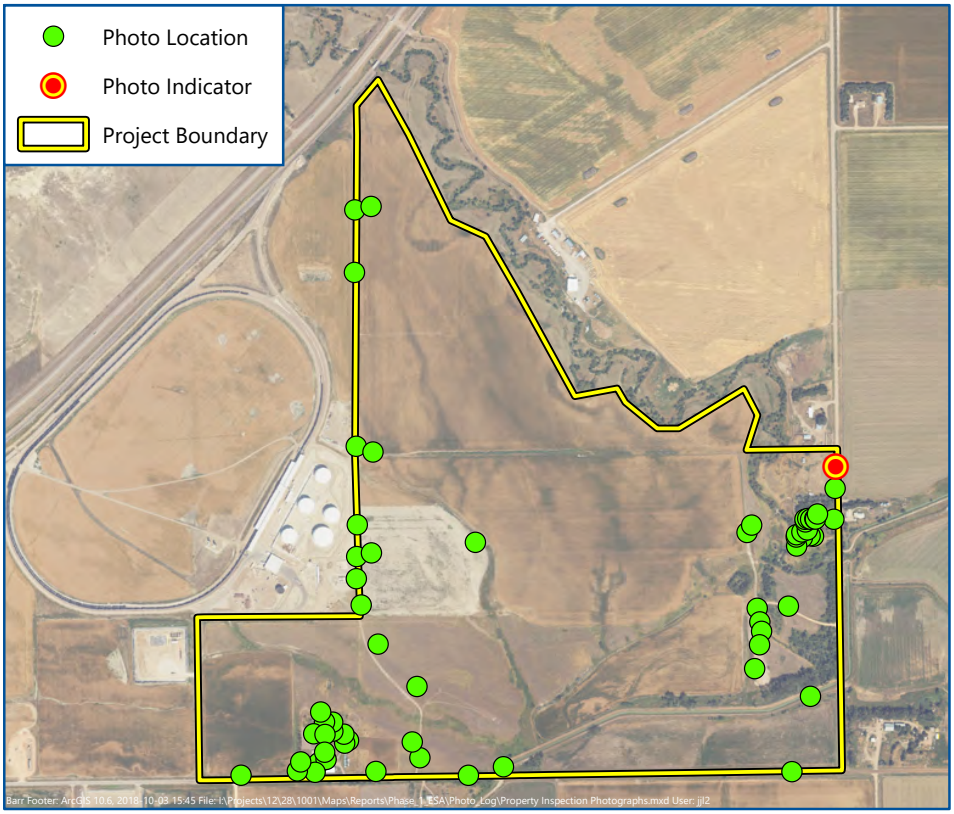
*Imagery: USDA NAIP (2022)*

Map 60 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: West

**Comment**: Grain bins

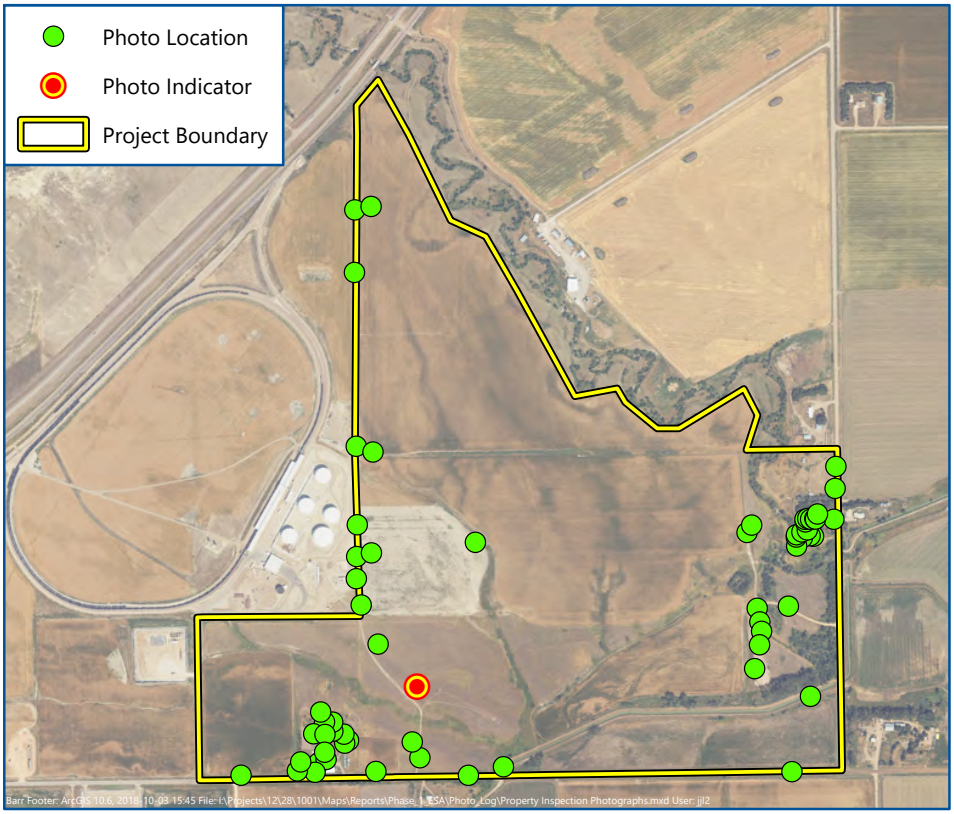
*Imagery: USDA NAIP (2022)*

Map 61 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota




**Date**: 9/27/2022

**Photo Direction**: Northeast

**Comment**: Former Trenton State #1 well pad

N

0 1,500 3,000

Feet

*Imagery: USDA NAIP (2022)*

Map 62 of 62

**PROPERTY INSPECTION PHOTOGRAPHS**

Cerilon GTL ND Inc.

Williams County, North Dakota

# Appendix F

## Qualifications

**JAMES S. AIKEN, PG, RG**
**Vice President, Senior Hydrogeologist**

## Experience

Jim Aiken has more than 30 years of experience helping industrial and energy clients solve complex permitting and site development issues related to water supplies, soil and groundwater contamination, and due diligence for large acquisitions/divestitures of power generation plants, manufacturing facilities, agricultural assets, mines, underground injection wells, production wells, and renewable energy projects.

His experience encompasses over one hundred Phase I and Phase II Investigations as well as PFAS investigation and remediation for a variety of manufacturing, power, fuels, and agricultural clients. His work also involves solid-waste investigation and permitting; environmental review; water-supply issues and engineering support; facility compliance; environmental management; economic analysis; and expert testimony for litigation support. Specific examples of his experience is described below.

- Phase I and Phase II Investigation leader for due diligence for a proposed hydrogen hub near Beulah, ND. The investigation included the identification of over 20 recognized environmental conditions at the 200 acre existing facility including two landfills, an active RCRA corrective action site, and investigation of soil, groundwater and process water. Several new areas of potential contamination were discovered and investigated. Project also included estimation of Asset Retirement Obligations under Sarbanes-Oxley Act as well as preparation of a permit priority matrix for regulatory approvals needed to convert the facility to reform hydrogen and ammonia from natural gas.
- Principal-In-Charge for Phase I ESA on the Ready Wyoming Transmission Corridor Project for Black Hills Energy, near Cheyenne Wyoming. Project involved aerial photograph and site reconnaissance over 200 miles of corridor and 4 substation properties.
- Principal–in-charge of groundwater monitoring and reporting of tritium data for Prairie Island Nuclear Generation Plant, located near Red Wing, MN
- Principal-in-charge for a 5,000-acre Phase 1 ESA for due diligence for acquisition of a large-scale animal feed operation in Michigan. The Phase 1 led to multiple Phase II site investigations for soil and groundwater contamination from metals, VOCs, SVOCs, and per-&poly- fluoroalkyl substances (PFAS) related to a former tannery compost facility and related land spreading sites.
- Conducted a large-scale Phase I ESA and Regulatory Permit Review for the decommissioning and demolition of Great River Energy's Stanton Station, located near Stanton, ND.
- Conducted a detailed divestiture Phase I ESA for Great River Energy's Elk River Station located in Elk River MN.
- Principal-In-Charge for Geologic Storage Investigation for confidential client in North Dakota. Evaluated structural and stratigraphic traps for underground injection and storage of propane.
- Evaluated Carbon Storage and Capture of CO2 within the Halliday Dome for C12 Energy near Beulah, ND.
- Developed a mega-Phase 1 Environmental Site Assessment, work plan and groundwater modeling approach for a risk-based evaluation of groundwater flux to close a coal yard and several CCR ponds at Xcel's Black Dog Power Plant in Burnsville, MN.
- Led an initial spill response investigation and interim response action for a spill of firewater foam (AFFF) containing per-fluoroalkyl substances (PFAS) from a manufacturing facility in Missouri.

Developed plans, reports, and worked with client representatives to contain the firewater on site and excavate contaminants from a 1,300 ft. long ditch. Developed a field "shake" test for soils, guided the team in development of erosion and stormwater control measures, stockpiled soil management, surface water sampling, and soil verification sampling that demonstrated that the response actions were adequate to remediate the release.

- Principal-in-charge for closure of CCR disposal area at Otter Tail Power's Hoot Lake Station by removal of former ash site. Worked with client and contractor to evaluate ash disposal area and led team that provided oversight of the ash removal and groundwater monitoring.
- Principal-in-charge of plant decommissioning Phase I and Phase II Investigation at Hoot Lake Station including soil and groundwater sampling and evaluation. Investigation identified areas of PCBs, petroleum and buried ash that will be addressed during plant demolition and decommissioning.
- Conducted Phase I ESAs for acquisition of oil and gas leases at over 100 locations located in North Dakota and Arkansas for C12 Energy for use as CO2 injection and enhanced oil recovery assets.
- Developing groundwater monitoring networks, compiled investigation data into new geologic conceptual models for 10 permitted solid-waste facilities in Montana, North Dakota, and South Dakota. This allowed for optimization of the networks for representative statistical analysis of groundwater data at each site.
- Serving as principal-in-charge for multiple brine-spill investigation and remediation projects in North Dakota. Developed strategy with client, provided oversight of soil and groundwater sampling activities, evaluated alternatives, negotiated with regulators and directed project execution.
- Serving as principal-in-charge for oilfield special waste landfill permitting for Omni Energy landfill, treating facility, and disposal well near Williston, ND. Also provided oversight for all hydrogeological investigation, groundwater monitoring and assisted with construction management.
- Serving as principal-in-charge for due diligence activities prior to purchase of multiple oilfield leases in North Dakota and Arkansas by confidential client. Tasks included modified Phase I methodology adapted for out of scope issues related to petroleum exemption under CERCLA and RCRA.
- Serving as principal-in-charge for due diligence regarding purchase of multiple saltwater-disposal well sites in North Dakota. Conducted geophysical and subsurface drilling investigations at multiple brine spill sites to document the extent and magnitude of impacts and implemented remedial activities.
- Serving as principal-in-charge for reclamation permit, geologic resource investigation, geotechnical investigation, and initial site engineering design for Fry Hill frac sand mine located in Barron County Wisconsin.
- Serving as principal-in-charge for reclamation permit and geologic resource investigation for frac sand mine in Jackson County, Wisconsin.
- Serving as principal-in-charge for geotechnical investigation and initial site engineering design for Northern Rail and Transload dry plant and rail transload facility located in Barron County Wisconsin.
- Serving as principal-in-charge for reclamation permit and geologic resource investigation for frac sand mine in Chippewa County, Wisconsin.
- Developing and preparing research documents on the fate and transport of polyacrylamide and other flocculants in surface water and groundwater at multiple frac sand mine sites.

- Serving as principal-in-charge for reclamation permits and environmental investigations for two frac sand mines in Chippewa County, Wisconsin.
- Serving as principal-in-charge for groundwater/surface water investigation and modeling at a proposed frac sand mine site near Shakopee, Minnesota. Data from borings, pumping tests, and monitoring wells were used to construct a 3-D groundwater model. The model was then used to develop a groundwater monitoring network, contingency plans, and assess potential dewatering impacts to nearby private wells and wetlands.
- Serving as project manager for groundwater investigation and modeling at a proposed frac-sand mine site near Jordan, Minnesota. The site was the first new (greenfield) frac sand mine permitted in Minnesota in more than 30 years. Data from borings, pumping tests, and monitoring wells were used to construct a 3D groundwater model. The model was then used to develop a groundwater monitoring network, contingency plans, and assess potential dewatering impacts to nearby private wells and wetlands.
- Serving as project manager for groundwater investigation and modeling at a proposed frac-sand mine site near Kasota, Minnesota. Data from borings, pumping tests, and monitoring wells were used to construct a 3D groundwater model. The model was used to assess potential dewatering impacts to nearby private wells and wetlands.
- Conducting a Phase I/Phase II investigation and response action for a storage garage in Jeffers, Minnesota, that had utilized prohibited Class V injection wells for disposal of solvents and oil for more than 40 years.
- Assisting New Orleans Sand in demonstrating to North Dakota Department of Health that a fire at a spray-foam facility in Watford City did not cause cyanide contamination of nearby private supply wells.
- Screening, prioritizing, and identifying "sites of concern" for investigation at the WWII era Gopher Ordinance Works as part of general scoping activities and cost estimating for future remedial investigation and response action planning.
- Implementing supplemental Phase I, Phase II, and initial remedial investigations at the former Gopher Ordinance Works, a World War II–era munitions storage and non-production area near Rosemount, Minnesota. Project included a CERCLA-style remedial investigation and site investigation for areas identified by the U.S. Army Corps of Engineers as a formerly used defense site. Worked with the Minnesota Pollution Control Agency Superfund staff to develop quality assurance plans, work plans, and investigation data suitable for obtaining closure for portions of the former facility.
- Serving as project manager for an interim corrective action on a portion of the WWII era Gopher Ordinance Works site, including excavation of mercury impacted soils.
- Lead scientist for gravel mining permitting on the western portion of UMore Park, located in Rosemount, MN. Role was to address soil contamination and groundwater concerns on behalf of Dakota Aggregates in their approval of the first ever large-scale aggregate mining permit in the city.
- Preparing pre-project planning for a U.S. Department of Energy wind research grant at the University of Minnesota's UMore Park. After obtaining the grant, managed a constraint study to site the wind turbine. After the site area was selected, worked with developer to investigate a portion of the former Gopher Ordnance Works. The investigation was intended to identify any soils that would require management or engineering controls during construction.

- Completing Phase II and supplemental Phase II for a former salvage yard near Jordan, Minnesota. Site included a former burn pit and illegally disposed-of hazardous wastes. Worked with prospective developer for utilizing the sandstone bedrock at the site as a frac sand mine for use in oilfield well development.
- Conducting due diligence for a $250 million acquisition of multiple frac-sand mine and transload sites in Alberta, Saskatchewan, and Wisconsin
- Serving as project manager for a subsurface investigation related to an EPA brownfields demonstration pilot in Des Moines, Iowa.
- Serving as project manager for remedial investigation of six former manufactured-gas-plant (MGP) sites in Iowa. Services included preparation of work plans, quality assurance plans, soil sampling from surface soils and excavations, and groundwater well installation and sampling. Contaminants of concern included PAHs, VOCs, cyanides, and metals.
- Managing the groundwater and geologic investigations for seven former MGP sites in Iowa. Tasks included temporary well installation and sampling, monitoring network design, well installation, and decommissioning.
- Conducting high-resolution field mapping of a coarse fluvial aquifer with ground-penetrating radar to identify preferential pathways for contaminant migration.
- Constructing a full three-dimensional, finite-difference flow model (MODFLOW) of an outwash aquifer near Stoughton, Wisconsin. The model was linked with a particle-tracking code (PATH3D) to identify sedimentary facies associated with preferential contaminant movement.
- Analyzing recovery data for volatile organic compounds and conducting field investigations to optimize pumping-well efficiency at a Superfund site in Minnesota.
- Performing a subsurface investigation to isolate areas of widespread and non-uniform PCB contamination at a former scrap-metal-recycling facility.
- Installing monitoring wells and performed aquifer testing of a low-permeability aquifer at an Oregon site with petroleum distillates in soils and groundwater.
- Investigating and managing response actions at more than 30 petroleum tank and spill sites in Minnesota and Wisconsin. Examples of his work include:
  - Closing out the site of a free-product release in Cambridge, Minnesota.
  - Serving as site manager for remedial investigation of extensive diesel contamination at a fuel-oil transfer station in Madison, Wisconsin.
  - Completing investigations under NR 700 and coordinating claims reimbursement under the Petroleum Environmental Cleanup Fund Act (PECFA) for a retail gasoline stores in Eau Claire, River Falls, Somerset, Ladysmith, Waupaca, and Superior, Wisconsin.
  - Completing expedited site investigations and implementing remedial actions at ten gas- and diesel-contaminated sites in Minnesota as part of a regional merger of two petroleum companies.
  - Directing removal and arranging for incineration of approximately 1,200 cubic yards of diesel-contaminated soil from a former fuel-oil storage facility.

  - Assessing distribution of gasoline and diesel in soils observed in trenches and borings at a bulk-storage facility and an active refinery.
  - Designing and testing a pilot soil-vapor-extraction system for a petroleum-contaminated site in Oregon.
- Managing field investigation of lead and creosote-contaminated demolition fill in Golden Valley, Minnesota.
- Conducting a ground-penetrating-radar survey that identified a source area for chlorinated solvent contamination at a site in Mound, Minnesota.
- Participating in a quick response investigation and removal of buried solvent drums discovered during the development of a property in Golden Valley, Minnesota.
- Conducting Phase I and Phase II environmental assessments for property transfers in Minnesota and Wisconsin.
- Led spill response investigation and interim response action for a spill of firewater foam (AFFF) containing per-fluoroalkyl substances (PFAS) from a tank battery in Missouri. Developed plans, reports, and worked with client representatives to contain the firewater on site and excavate affected soil from a 1,300 ft. long stormwater ditch. Developed a field "shake" test for soils, correlated to EPA risk based soil values for worker exposure; Also guided the team in development of erosion and stormwater control measures, stockpiled soil management, surface water sampling, and soil verification sampling that demonstrated that the response actions were adequate to remediate the release.
- Principle-In-Charge for an ambient surface water assessment related to the above release. Identified background PFAS concentrations in upstream groundwater and naturally-occurring foam in areas with low background concentrations of PFOS and PFOA.
- Principle In Charge for landfill closure and cover construction at the 3M Nevada facility landfill
- Principle in Charge for pre-purchase Phase I's for two adjacent properties later acquired by the3M Nevada facility to expand buffer area around the landfill and the plant.
- Project manager for risk based evaluation of groundwater and leachate resulting in approved groundwater protection standards for VOCs and several metals resulting in reduced monitoring and reporting requirements.
- Project manager and Principle-in-Charge for complete spill release inventory and preparation of a RCRA facility investigation work plan to address areas where past releases had been documented but were not investigated to confirm the extent and magnitude of investigation. Scope included database review, site visits, and interviews with staff. The inventory of spills and evaluation of past releases that has included 3 times over last 20 years.
- Project manager for formal closure and post-closure monitoring of the former TSD liquid waste incinerator at the facility. Jim proposed accelerated closure approach utilizing lime addition that significantly reduced the required post closure monitoring by utilizing monitored natural attenuation.
- Conducted site-wide hydrogeological investigation and assessment monitoring as part of solid waste permitting for the facility landfill. Prepared permit required documents including a conceptual site model (CSM) that has been utilized (with updates) in subsequent investigations.

- Completed assessment monitoring for former TSD liquid waste incinerator, identified data gaps and installed additional groundwater monitoring wells.

**Education/Certifications**

MS, Geology University of Wisconsin–Madison, 1993 (emphasis: glacial geology and hydrogeology)

BS, Geology, University of Wisconsin–Madison, 1986

ASTM Phase I ESA Training and Annual Refresher

OSHA 40 hr. HAZWOPER Training

MSHA 24 hr. New Miner Training

North Dakota Safety Council 10 Hour OSHA Training

American Concrete Institute -Certified Concrete Technician (past)

Certified Nuclear Gage Operator (past)

**Registration**

Professional Geologist: Minnesota, Wisconsin

Registered Professional Geologist: Missouri

SME Registered Member, Qualified Professional for Geologic Resource Evaluation the Society for Mining, Mineralogy, and Exploration

**Affiliations/Associations**

Solid Waste Association of North America

National Waste and Recycling Association

North Dakota Solid Waste Recycling Association

US Composting Council

Utility Solid Waste Advisory Group

Midwest Environmental Association

Minnesota Ground Water Association

Colorado Groundwater Association

**Publications/Presentations (last 5 years)**

Aiken, J. Pauly K. 2022 "Evaluating Potential Effects of Mine Dewatering using Groundwater and Surface Water Modeling Results." Presented at Minnesota Groundwater Association Fall Conference, November, 2022; Brooklyn Park, MN

Aiken, J. and Palatiello, N, 2022. Approaching PFAS – to sample or not to sample, Presented at the Electric Utility Environmental Conference (EUEC), October 2022; Tucson Arizona.

Aiken, J and Levitan D, 2022. "Adapting Conceptual Site Models for Drought Conditions: Case Studies from Arid Western and Great Plains Solid Waste Facilities." Presented at Batelle Remediation Conference, Palm Springs, CA; May 2022.

Davidsavor, T.A,; Aiken, J, Burnham, R.E.; Ratliff, J.K; Wong, I.G; Aimone-Martin, C.T., 2022. "Magnitude 2.8 Earthquake Caused by 90 Pounds (41 kg) Per Delay? Not So Fast!" European Federation of Explosives Engineers (Publishing May 2022)

PFAS 101 Panel for Missouri Regform – Kansas City Missouri 2020

PFAS in Landfills – SWANA 2019

PFAS in Landfills – SWANA/LOG 2018

CCR Rule: In Defense of the Professional Engineer – NSPE Dallas 2018

CCR Rule: In Defense of Professional Engineer USWAG 2017

# Appendix D

## Wetland Delineation Report

March 20, 2023

U.S. Army Corps of Engineers
Bismarck Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

**Subject: Cerilon GTL ND Inc. (Cerilon) Proposed Gas to Liquids Project**
**Request for Approved Jurisdictional Determination**

To Whom It May Concern:

Cerilon GTL ND Inc. (Cerilon) hereby requests an Approved Jurisdictional Determination (AJD) from the U.S. Army Corps of Engineers (USACE) for the study area of the proposed Cerilon gas-to-liquids facility southwest of Williston, North Dakota. The 371-acre study area is located in Section 36, Township 153 North, Range 103 West.

Barr Engineering Co. (Barr) completed a wetland delineation in the study area in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (1987 Manual; USACE, 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Regional Supplement; USACE, 2010), and the Corps of Engineers Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE, 2019). The methods and results from the wetland delineation are documented in the attached Aquatic Resource Delineation Report dated February 2023. The associated GIS data is provided with the metadata file. Four wetlands and two other waters were identified within the study area.

As noted above, Cerilon requests an AJD for the wetlands within the study area. If you have any questions or require additional information to complete your review, please contact me by phone at (403) 827-5844 or by email at rochelle.harding@cerilon.com.

Sincerely,

R Harding

Rochelle Harding, M.Sc., P.Eng.
Director, Sustainability and Engagement

Enclosure: Aquatic Resource Delineation Report: Cerilon GTL ND Inc.

cc: Amanda Graveseth, Barr
Anna Nieuwsma, Barr

CERILON INC.
FIRST CANADIAN CENTRE
3507TH AVENUE SW, SUITE 2900
CALGARY, ALBERTA, CANADA T2P 3N9

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INFO@CERILON.COM
CERILON.COM

# Aquatic Resource Delineation Report: Cerilon GTL ND Inc. Project

February 2023

**Prepared for:**
Cerilon GTL ND Inc.
Calgary, Alberta

**Prepared by:**
Barr Engineering Co.
Bismarck, North Dakota

# Aquatic Resource Delineation Report
# Cerilon GTL ND Inc. Project

February 2023

**Prepared for:**
Cerilon GTL ND Inc., Ron Opperman
8 Discovery Ridge Cove, SW
Calgary, Alberta T3H 4Y1

**Prepared by:**
Barr Engineering Co.
Anna Nieuwsma, Geologist
234 W Century Ave, Bismarck, ND 58503
(701) 255-5476
anieuwsma@barr.com

# Aquatic Resource Delineation Report

## Cerilon GTL ND Inc. Project

## February 2023

# Contents

## List of Tables



## List of Figures



## List of Appendices

# 1.0 Introduction

Barr Engineering Co. (Barr) was retained by Cerilon GTL ND Inc. (Cerilon) to complete an aquatic resource delineation in support of a proposed gas-to-liquids processing facility project located southwest of Williston, North Dakota, in Williams County. The 371-acre study area is located between 143rd Ave NW and 42nd Street Northwest in Section 36, Township 153 North, Range 103 West (**Figure 1**). The study area can be accessed from 42nd Street Northwest. **Appendix A** contains more detailed directions to the study area.

On September 12 and September 13, 2022, Anna Nieuwsma (Barr) conducted the aquatic resource delineation within the study area to assist in permitting the project. This aquatic resource report has been prepared in accordance with the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (1987 Manual; USACE, 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Great Plains Region (Regional Supplement; USACE, 2010), and the Corps of Engineers Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE, 2019). Wetlands were classified using the U.S. Fish and Wildlife Service (USFWS) Cowardin System (Cowardin; Cowardin et al., 1979) and the USFWS Circular 39 system (Circular 39; Shaw and Fredine, 1956).

This report includes general environmental information (Section 2.0), descriptions of the delineated wetland area (Section 3.0), and references (Section 4.0). The **Tables** section includes precipitation data, a summary of the wetland information, and a comprehensive plant list. The **Figures** section includes maps for the Site Location, Topography, Water Resources (National Wetlands Inventory and National Hydrography Dataset), Soil Survey, and Wetland Delineation. **Appendix A** includes directions to the site, **Appendix B** includes Wetland Data Forms, and **Appendix C** includes Site Photographs.

## 1.1 Background

The vicinity around the study area has historically been used for agriculture, ranching, and oil and gas development. One farmstead is located along the southern boundary of the study area. A farmstead and an oil pad are located along the eastern edge of the study area.

# 2.0 General Environmental Setting

## 2.1 Site Description

The study area is located in Section 36, Township 153 North, Range 103 West (**Figure 1**). The study area is bound on the southern side by 42nd Street Northwest. Most of the study area consists of active agriculture land, which was planted in wheat during the growing season but had been harvested at the time of the site visit on September 12-13, 2022. The southern portion of the study area consists of relatively undisturbed pasture (**Figure 2**).

## 2.2 Site Topography

The topography within the study area is generally flat, with gentle slopes surrounding several natural drainages that flow through the study area to the south. The study area is not located within a mapped floodplain. Elevations within the study area range from 1,800 to 1,950 feet above mean sea level (**Figure 2**).

## 2.3 Precipitation

Recent precipitation data were compared to historical data to evaluate annual and monthly deviations from normal conditions. Precipitation data were obtained from the Natural Resources Conservation Service (NRCS) and Agricultural Applied Climate Information Service (http://agacis.rcc-acis.org/?fips) for wetlands in Williams County, Township 153 North, Range 103 West, Section 36. The average annual precipitation at the study area is 14.77 inches.

Antecedent (preceding) moisture conditions at the study area were within the dry or normal range based on precipitation during the three months prior to the September 2022 site visit (**Table 1**). Looking at the five years prior to 2022, the annual precipitation in this location was within the normal range in 2017, drier than normal in 2020 and 2021, and wetter than normal in 2018 and 2019 (**Table 2)**. According to the U.S. drought monitor (https://www.drought.gov/states/north-dakota), the study area was considered to be in a moderate drought at the time of the site visit.

## 2.4 National Wetland Inventory and Water Resources

The National Wetland Inventory (NWI) Map identified three wetlands within the study area (**Figure 3**). Two of these wetland communities are mapped as a palustrine, emergent, persistent, temporarily flooded wetland (PEM1A), and one is mapped as a palustrine, emergent, persistent, seasonally flooded wetland (PEM1C). Additionally, another feature was mapped as a palustrine, aquatic bed, semi-permanently flooded, excavated pond (PABFx).

The U.S. Geological Service (USGS) National Hydrography Dataset (NHD) includes Eight Mile Creek, which flows across the eastern corner of the study area from northwest to southeast. Just outside the study area, Eight Mile Creek is converted into a man-made canal. It re-enters the study area on the southeast edge and flows southwest until leaving the study area again on the south side. The study area is within the Lake Sakakawea Watershed, which is 4,344,701 acres in size.

## 2.5 Soil Resources and Geology

Soil information for the study area was obtained from the NRCS SSURGO Database. The soil map unit IDs are shown in **Figure 4**. The soil map units within the study area include:

- E0821A, Lawther silty clay, 0 to 2 percent slopes, 0 percent hydric rating
- E0837B, Savage silty clay loam, 2 to 6 percent slopes, 0 percent hydric rating
- E1865A, Tally-Parshall fine sandy loams, 0 to 2 percent slopes, 0 percent hydric rating
- E2145A, Shambo loam, 0 to 2 percent slopes, 0 percent hydric rating
- E2203B, Farland silt loam, 2 to 6 percent slopes, 0 percent hydric rating
- E4122A, Havrelon loam, slightly wet, 0 to 2 percent slopes, 3 percent hydric rating
- E4137A, Korchea loam, 0 to 2 percent slopes, occasionally flooded, 10 percent hydric rating

The surface geology within the study area consists of the Sentinel Butte Formation and Bullion Creek Formation, which are silt and sand deposits from the Paleocene, typically 200 meters in thickness.

# 3.0 Wetland Delineation

## 3.1 Wetland Delineation and Classification Methods

The wetland within the study area was delineated and classified during a site visit on September 12-13, 2022. The wetland delineation was established according to the 1987 Manual (USACE, 1987) and the Great Plains Regional Supplement (USACE, 2010). The wetland boundaries and sample points were collected using a Global Positioning System (GPS) with sub-meter accuracy. **Figure 5** provides the location of the wetlands identified in the study area. The wetlands were classified using Cowardin (Cowardin et al., 1979) and Circular 39 (Shaw and Fredine, 1956).

Soil borings were conducted in and around each wetland area. Representative soil samples from each boring were examined for the presence of hydric soil indicators using the U.S. Department of Agriculture, NRCS Field Indicators of Hydric Soils in the United States (USDA-NRCS 2018). Soil colors (e.g., 7.5YR 4/2, etc.) were determined using a Munsell® soil color chart and noted on the Wetland Data Forms in **Appendix A**.

Hydrologic conditions were evaluated at each soil boring and noted on the Wetland Data Forms. The dominant plant species were identified, and the corresponding wetland indicator status of each plant species was determined and indicated on the Wetland Data Forms (**Appendix A**). Photographs taken during the site visit are provided in **Appendix B**.

## 3.2 Wetland Descriptions

Three wetlands were delineated within the study area. All three wetlands consisted of palustrine, emergent, persistent, and temporarily flooded wetland (PEM1) communities. These wetlands are described below, with representative photographs in **Appendix B**.

### 3.2.1 Wetland 1

Wetland 1 consists of a seasonally flooded basin (PEM1B, Type 1) community and is approximately 0.05 acres within the study area (**Table 3, Figure 5**). Dominant vegetation within the wetland included common spike-rush (*Eleocharis palustris* – OBL); non-dominant vegetation within the wetland included intermediate wheatgrass (*Thinopyrum intermedium* – FACU) and Canadian thistle (*Cirsium arvense* – FACU).

Soils at the wetland data plot location consisted of 3 inches of silty clay (10YR 4/1) and 15 inches of silty clay (10YR 4/1), with 4% redox concentrations (10YR 3/4) and met the F3 hydric soil criteria for depleted matrix. The hydrology source for the wetland consists of floodwater, precipitation, and runoff. At the time of delineation, secondary hydrology indicators for surface soil cracks (B6), geomorphic position (D2), saturation visible on aerial imagery (C9), and FAC-neutral test (D5) were observed. This wetland functions to retain floodwater during periods of high water and provides wildlife habitat.

Sampling point *1-Wet* documents wetland criteria for Wetland 1. The transition from wetland to upland was characterized by gently upward-sloping topography with an absence of hydrology indicators and a dominance of crested wheatgrass (*Agropyron cristatum* – FACU). The soil texture was silt clay and non-hydric (10 inches of 10YR 2/2). Sampling point *1-Up* documents upland conditions adjacent to Wetland 1.

### 3.2.2 Wetland 2

Wetland 2 consists of a temporarily flooded basin (PEM1A, Type 1) community and is approximately 0.04 acres within the study area (**Table 3, Figure 5**). Dominant vegetation included narrow-leaf cattails (*Typha angustifolia* – OBL) and three-square (*Schoenoplectus pungens*– OBL).

Soils at the wetland data plot location consisted of 11 inches of silt clay (10YR 3/1) with 3% redox concentrations (10YR 4/4) above 12 inches of silt clay (10YR 3/1) with 12% redox concentrations (10YR 4/6 and 3% redox depletions (10YR 6/1) and met the F6 hydric soil criteria for redox dark surface. The hydrology source for the wetland consists of floodwater, precipitation, and runoff. At the time of delineation, secondary hydrology indicators for surface soil cracks (B6), geomorphic position (D2), saturation visible on aerial imagery (C9), and FAC-neutral test (D5) were observed. This wetland functions to retain floodwater during periods of high water and provides wildlife habitat.

Sampling point *2-Wet* documents wetland criteria for Wetland 2. The transition from wetland to upland was characterized by steep upward-sloping topography with an absence of hydrology indicators and a dominance of crested wheatgrass (*Agropyron cristatum*– FACU). The soil texture was silt clay and non-hydric (17 inches of 10YR 3/1). Sampling point *2-Up* documents upland conditions adjacent to Wetland 2.

### 3.2.3 Wetland 3

Wetland 3 consists of a seasonal floodplain basin (PEM1B, Type 1) community and is approximately 0.04 acres within the study area (**Table 3, Figure 5**). Dominant vegetation included freshwater cord grass (*Spartina pectinata*– FACW).

Soils at the wetland data plot location consisted of 18 inches of silty clay (10YR 3/2) with 10% redox concentrations (10YR 4/4) and met the F6 hydric soil criteria for redox dark surface. The hydrology source for the wetland consists of floodwater, precipitation, and runoff. At the time of delineation, secondary hydrology indicators for drainage patterns (B10), geomorphic position (D2), saturation visible on aerial imagery (C9), and FAC-neutral test (D5) were observed. This wetland functions to retain floodwater during periods of high water and provides wildlife habitat.

Sampling point *3-Wet* documents wetland criteria for Wetland 3. The transition from wetland to upland was characterized by gently upward-sloping topography with an absence of hydrology indicators and a dominance of crested wheatgrass (*Agropyron cristatum* – FACU) and Kentucky bluegrass (*Poa pratensis* - FACU). The soil texture was silty clay and non-hydric (16 inches of 10YR 3/3). Sampling point *3-Up* documents upland conditions adjacent to Wetland 3.

### 3.2.4 Wetland 4

Wetland 4 consists of a seasonally flooded basin (PEM1A, Type 1) community and is approximately 0.54 acres within the study area (**Table 3, Figure 5**). Dominant vegetation included foxtail barley (*Hordeum jubatum* – FACW).

Soils at the wetland data plot location consisted of two inches of silty clay (10YR 3/1) and 22 inches of silty clay (10YR 2/1) with 8% redox concentrations (10YR 3/6) and met the F6 hydric soil criteria for redox dark surface. The hydrology source for the wetland consists of floodwater, precipitation, and runoff. At the time of delineation, the secondary hydrology indicators for surface soil cracks (B6), geomorphic position (D2), and FAC-neutral test (D5) were observed. This wetland functions to retain floodwater during periods of high water and provides wildlife habitat.

Sampling point *4-Wet* documents wetland criteria for Wetland 4. The transition from wetland to upland was characterized by gently upward-sloping topography with an absence of hydrology indicators and a dominance of crested wheatgrass (*Chenopodium album*– FACU), Canadian thistle (*Cirsium arvense* – FACU), and wheat (*Triticum*). The soil texture was a silty clay loam and non-hydric (16 inches of 10YR 3/1). Sampling point *4-Up* documents upland conditions adjacent to Wetland 4.

### 3.2.5 Uplands

Most of the uplands within the northern section of the study area consisted of an active agriculture field that was planted with wheat during the growing season but had been harvested at the time of the site visit. The majority of the southern portion of the study area consisted of open pasture/grasslands. The vegetation in the upland grassland areas primarily included smooth brome, intermediate wheatgrass (*Thinopyrum intermediues*), and crested wheatgrass (*Agropyron cristatum* – UPL).

## 3.3 Other Water Descriptions

### 3.3.1 Other Water 1

Other Water 1 is an intermittent stream identified as Eight Mile Creek. This stream flows from northwest to southeast through the eastern portion of the study area. It receives drainages from runoff of the surrounding area and adjacent small, unnamed streams. Other Water 1 continues to flow south-southeast until it leaves the study area. Once outside the study area, this stream is converted into four man-made canals via a multiway culvert. Three of these canals flow northeast and eventually into Lake Trenton; the fourth is Other Water 2. The ordinary high water mark (OHWM) was identified by the following Great Plains Region OHWM indicators: bed and bank, vegetation matted down or absent, sediment sorting, and

natural line impressed on the bank. The stream substrate consisted primarily of silts and clays with vegetation on the banks. Flowing water was observed within Other Water 1 at the time of delineation.

### 3.3.2 Other Water 2

Other Water 2 is an intermittent, artificial stream created for irrigation use for the surrounding agricultural land. This stream originates outside the study area to the east and flows from the east to the southwest through the study area. This stream continues to flow south and splits into several additional man-made streams; eventually, some of these artificial streams converge with the Missouri River. Other Water 2 receives water from Eight Mile Creek and runoff from the surrounding area. The OHWM was identified by the following Great Plains Region OHWM indicators: litter disturbed or washed away, change in plant community, water staining, and vegetation matted down, bent, or absent. Flowing water was observed within Other Water 2 at the time of delineation.

### 3.3.3 D-Drainages

Multiple D-drainages were identified within the study area and total approximately 9.6 acres (**Figure 5**). Based on field observations, these features appear to carry water during heavy precipitation events. These drainages convey water through the surrounding agricultural and pasture fields to a man-made canal (OW-2) located at the southern end of the study area. These drainages do not meet any wetland or Waters of the U.S. criteria. Photographs of the D-drainages are provided in **Appendix B**.

# 4.0 References


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# Tables

**Table 1**
**Antecedent Moisture Conditions Prior to September 12, 2022**

**Precipitation Worksheet Using NRCS**
**Precipitation data for target wetland location:**
County: **Williams**
Nearest community: Williston

Township number: **153N**
Range number: **103W**
Section number: **36**

**Aerial photograph or site visit date:**
**September 12-13, 2022**
**Score using 1971-2000 normal period**

| **values are in inches** | first prior month: **Aug-22** | second prior month: **Jul-22** | third prior month: **Jun-22** |
|---|---|---|---|
| **estimated precipitation total for this location:** | **1.63** | **2.45** | **2.72** |
| **there is a 30% change that this location will have less than:** | 0.89 | 1.28 | 1.8 |
| **there is a 30% chance that this location will have more than:** | 1.99 | 2.99 | 3.26 |
| **type of month: dry normal wet** | **Dry** | **Normal** | **Normal** |
| **monthly score** | **3 * 1 = 3** | **2 * 2 = 4** | **1 * 2 = 2** |

| | |
|---|---|
| **multi-month score:** 6<br>to 9 (dry) 10 to 14 (normal) 15 to 18 (wet) | **9 (Dry)** |

**Table 2**

**Precipipation in Comparison to WETS Data**

STATS TABLE - total precipitation (inches)

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2019 | | | | | | | | | | M0.04 | M0.22 | M0.03 | 0.29 |
| 2020 | 0.55 | M0.33 | 0.54 | 0.09 | 0.92 | 1.61 | 2.46 | 0.42 | 0.18 | 0.48 | 0.17 | 0.12 | 7.87 |
| 2021 | 0.33 | 0.16 | 0.19 | 0.54 | 1.51 | 2.12 | 1.7 | 1.33 | 0.1 | 0.62 | 0.21 | 1.22 | 10.03 |
| 2022 | M0.36 | 0.13 | 0.06 | M0.95 | 5.32 | 2.44 | 1.99 | 0.64 | 0.37 | M0.73 | | | 12.99 |

| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2014 | M | M | M | 2 | 1.6 | 2.07 | 1.24 | 1.78 | 0.95 | 0.88 | 0.25 | 0.07 | M |
| 2015 | 0.27 | 0.56 | 0.42 | 0.17 | 2.04 | 2.14 | 2.36 | 1.02 | 3.06 | 1.01 | M | 0.54 | M |
| 2016 | 0.4 | 1.01 | 0.14 | 2.12 | 2.21 | M | 2.58 | 0.53 | M | M | 0.23 | 1.39 | M |
| 2017 | 1.03 | 1.27 | M | 0.57 | 0.99 | 1.04 | 0.78 | 3.87 | 2.06 | 0.11 | 0.2 | 0.57 | M |
| 2018 | 0.38 | M | 2.54 | 0.58 | 2.57 | 2.57 | 3.05 | 0.43 | 1.37 | 0.71 | 0.88 | 1.09 | M |
| 2019 | M | 1.53 | T | 0.87 | 1.28 | 2.77 | 3.64 | 2.28 | 8.96 | 0.82 | 0.34 | M | M0.29 |
| 2020 | 0.55 | M0.33 | 0.54 | 0.09 | 0.92 | 1.61 | 2.46 | 0.42 | 0.18 | 0.48 | 0.17 | 0.12 | 7.87 |
| 2021 | 0.33 | 0.16 | 0.19 | 0.54 | 1.51 | 2.12 | 1.7 | 1.33 | 0.1 | 0.62 | 0.21 | 1.22 | 10.03 |
| 2022 | M0.36 | 0.13 | 0.06 | M0.95 | 5.32 | 2.44 | 1.99 | 0.64 | 0.37 | M0.73 | M | M | 12.99 |
| **Mean** | **0.48** | **0.8** | **0.5** | **1.35** | **2.3** | **2.41** | **2.19** | **1.36** | **2.15** | **0.74** | **0.33** | **0.67** | **13.38** |

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Above Normal
Below Normal
Normal

**Table 3**
**Wetland Summary Table**

| Wetland ID | Latitude | Longitude | Field Cowardin Classification | Circular 39 Classification | Acres |
|---|---|---|---|---|---|
| 1 | 48.02748275711 | -103.87933645027 | PEM1B | Type 1 | 0.05 |
| 2 | 48.02659291756 | -103.88020671885 | PEM1A | Type 1 | 0.04 |
| 3 | 48.02620096113 | -103.87896838863 | PEM1B | Type 1 | 0.04 |
| 4 | 48.02563424868 | -103.86682729903 | PEM1A | Type 1 | 0.54 |
| | | | | **Total** | 0.13 |

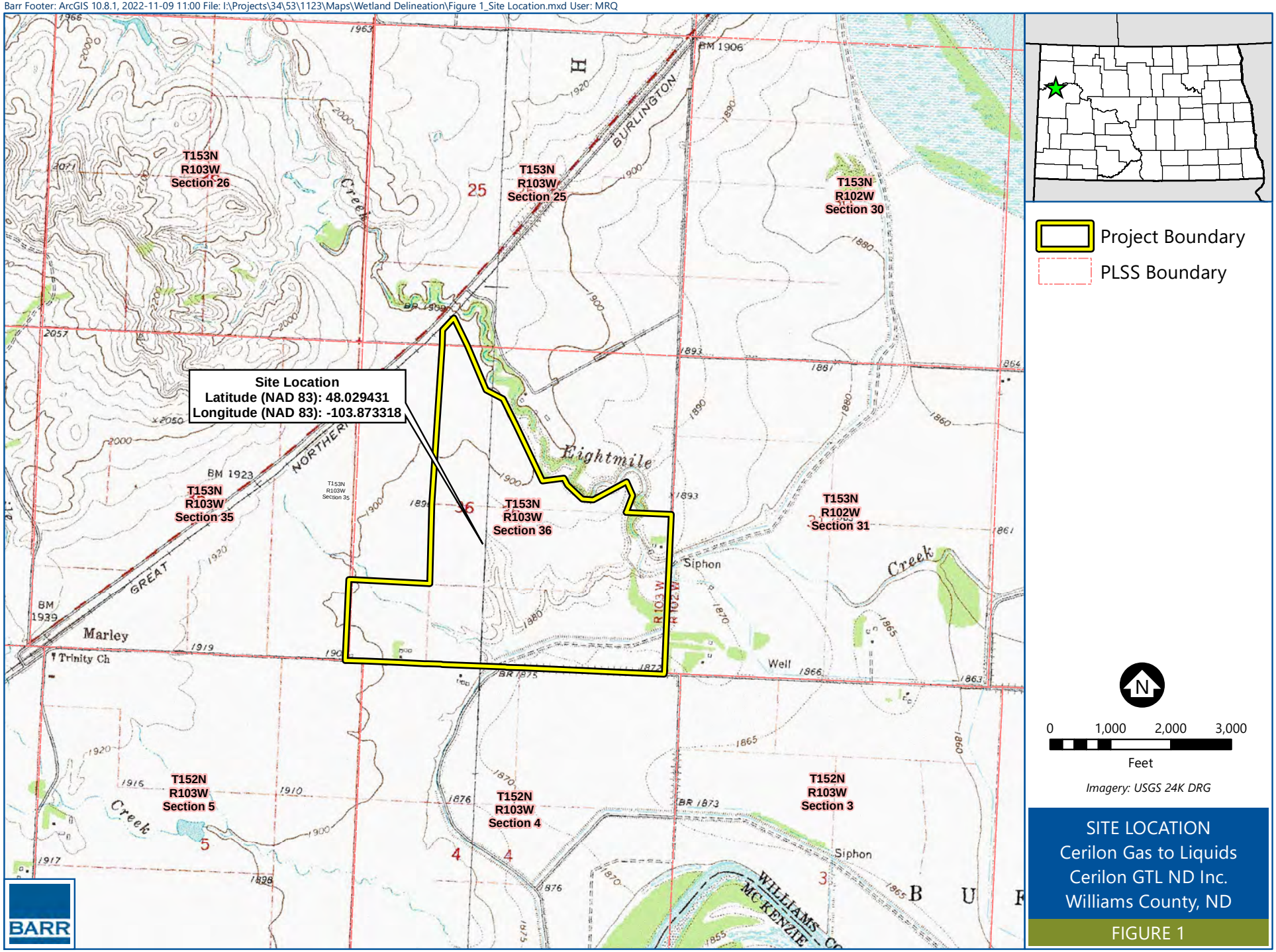
**Table 4**

**Plant List**

| Scientific Name | Common Name | Wetland Rating |
|---|---|---|
| Triticum | Wheat | -- |
| Convolvulus equitans | Texas bindweed | FACU |
| Eleocharis palustris | Common spike-rush | OBL |
| Thinopyrum intermediues | Intermediate wheatgrass | FACU |
| Cirsium arvense | Canadian thistle | FACU |
| Agryopyron cirstatum | Crested wheatgrass | FACU |
| Typha angustifolia | Narrow-leaf cattail | OBL |
| Schoenoplectus pungens | Three square | OBL |
| Rumex crispus | Curly dock | FAC |
| Poa pratensis | Kentucky blue grass | FACU |
| Symphoricarpos occidentalis | Western snowberry | UPL |
| Spartina pectinata | Freshwater cord grass | FACW |
| Hordeum jubatum | Fox-tail barley | FACW |
| Phalaris arundinacea | Reed canary grass | FACW |
| Chenopodium album | Lamb's-quarters | FACU |
| Bromus inermis | Smooth brome | UPL |
| Apocynum androsaemifolium | Spreading dogbane | UPL |

# Figures

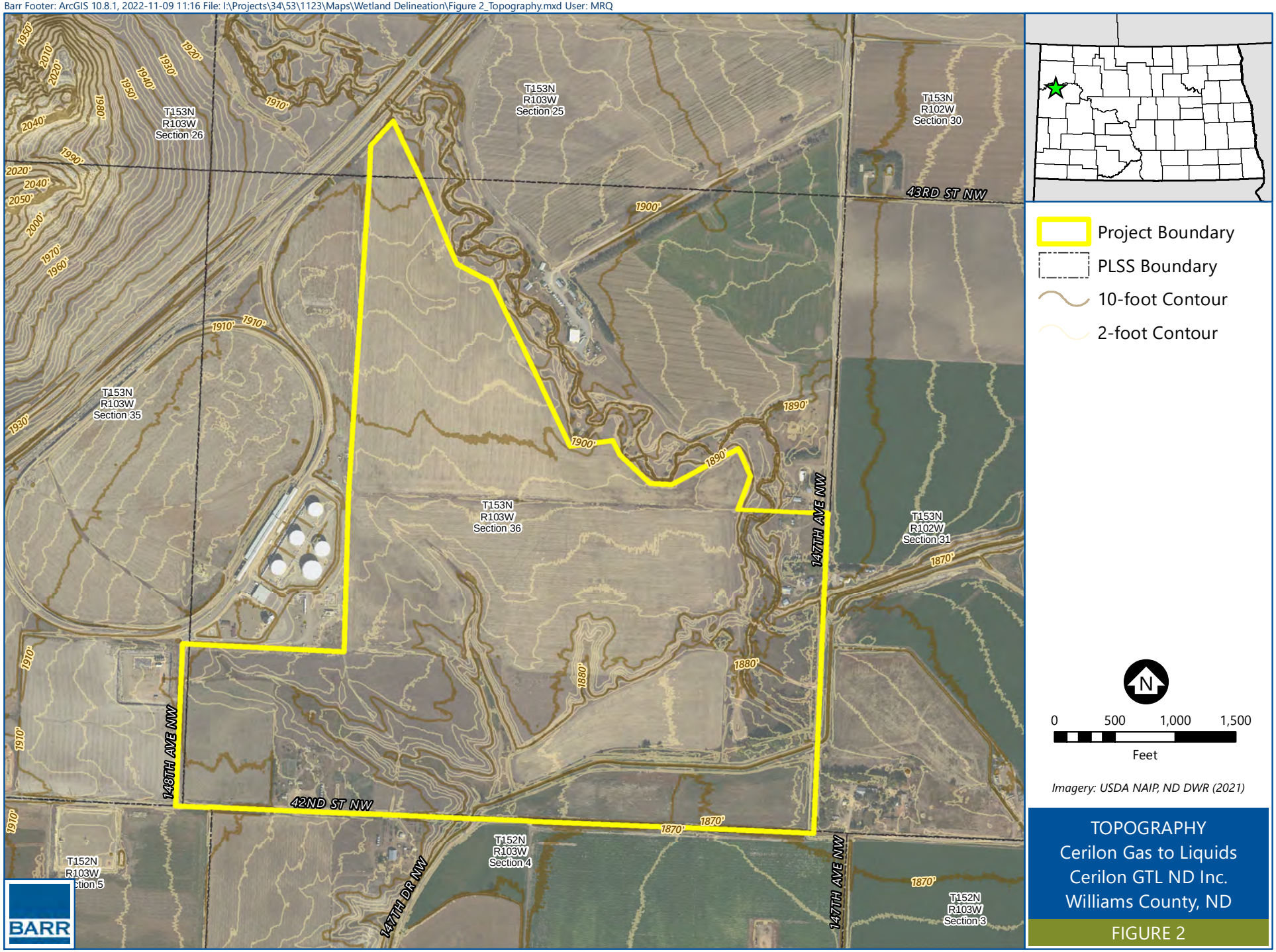
Barr Footer: ArcGIS 10.8.1, 2022-11-09 11:00 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 1_Site Location.mxd User: MRQ




SITE LOCATION
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 1

Barr Footer: ArcGIS 10.8.1, 2022-11-09 11:16 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 2_Topography.mxd User: MRQ

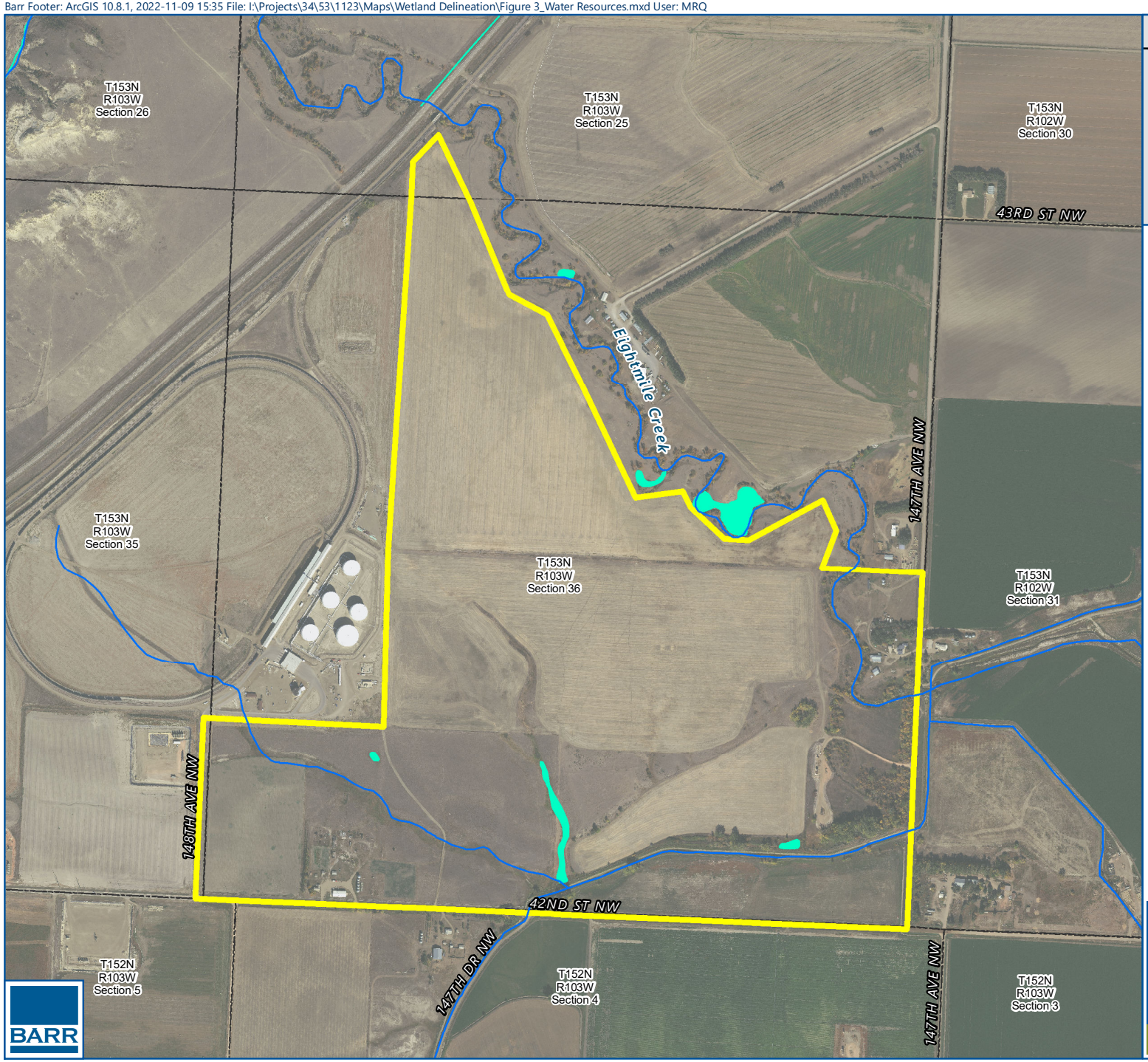


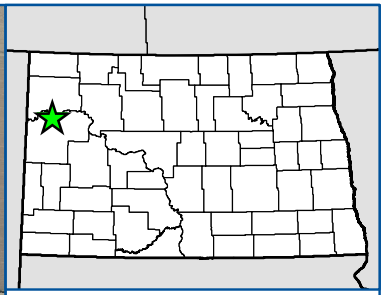

BARR

TOPOGRAPHY
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 2

Barr Footer: ArcGIS 10.8.1, 2022-11-09 15:35 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 3_Water Resources.mxd User: MRQ



Project Boundary

PLSS Boundary

Stream (USGS NHD)

Wetlands (NWI)

N

0 500 1,000 1,500

Feet

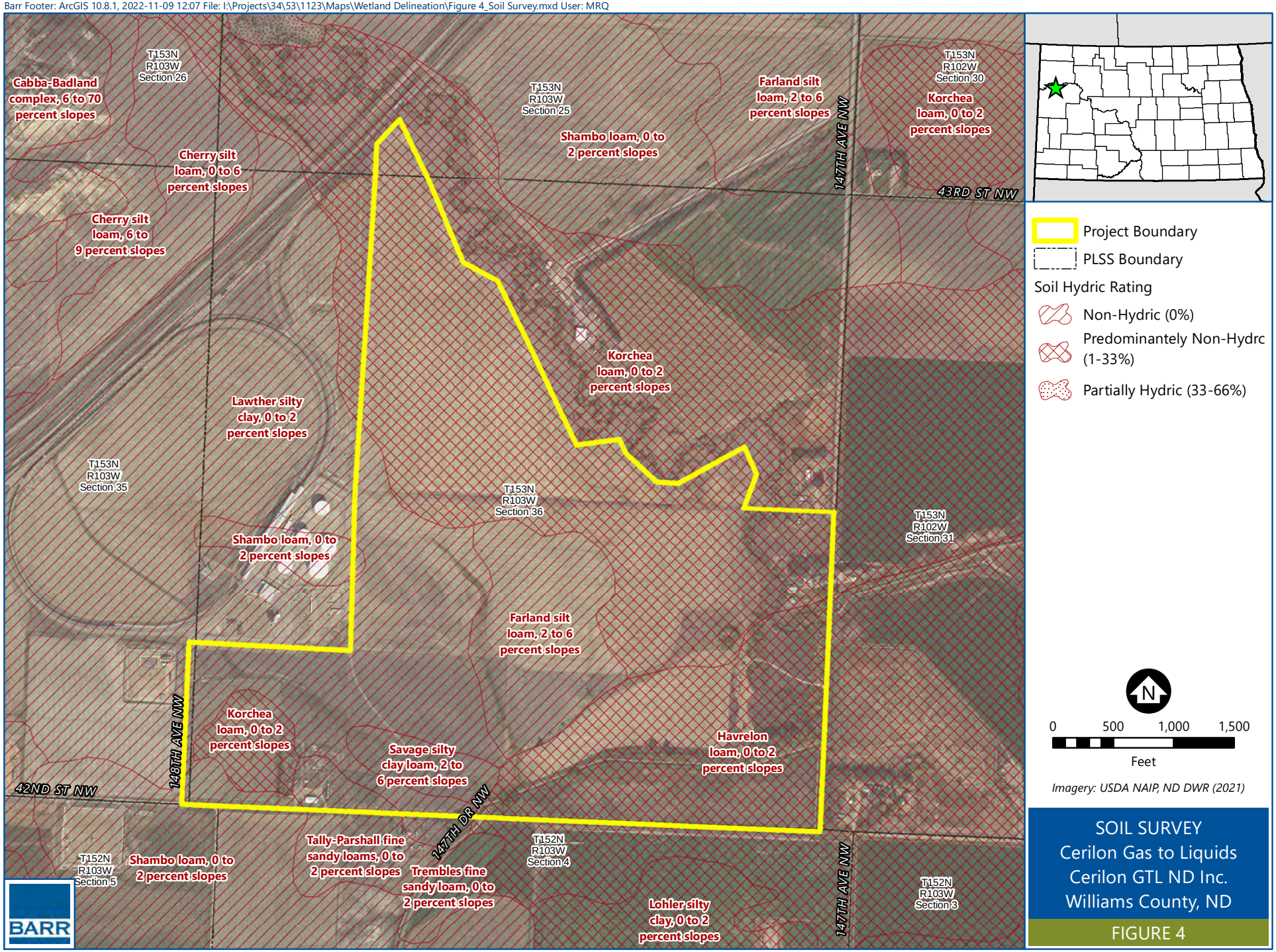
*Imagery: USDA NAIP, ND DWR (2021)*

BARR

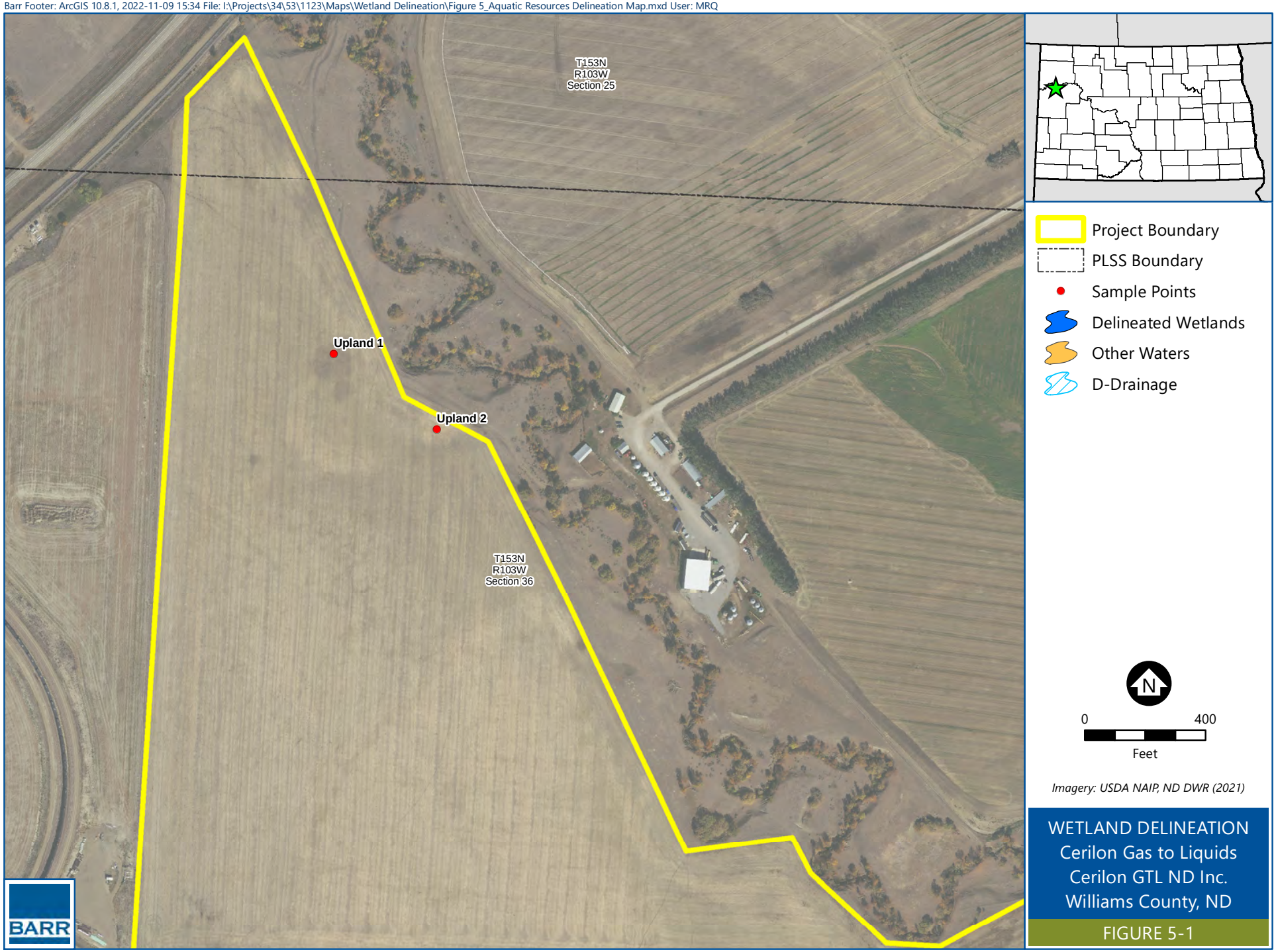
WATER RESOURCES
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 3

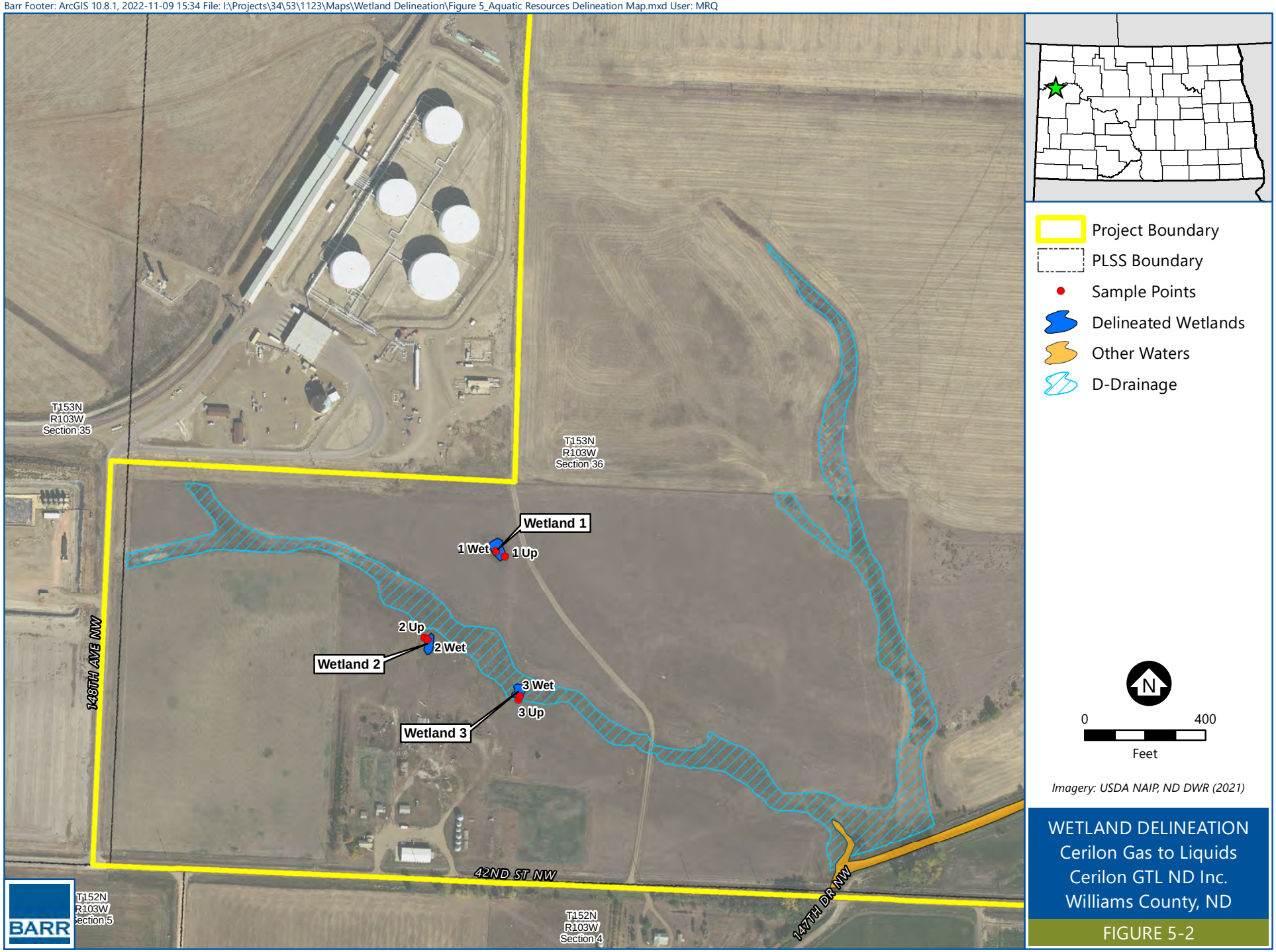
Barr Footer: ArcGIS 10.8.1, 2022-11-09 12:07 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 4_Soil Survey.mxd User: MRQ



Barr Footer: ArcGIS 10.8.1, 2022-11-09 15:34 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 5_Aquatic Resources Delineation Map.mxd User: MRQ



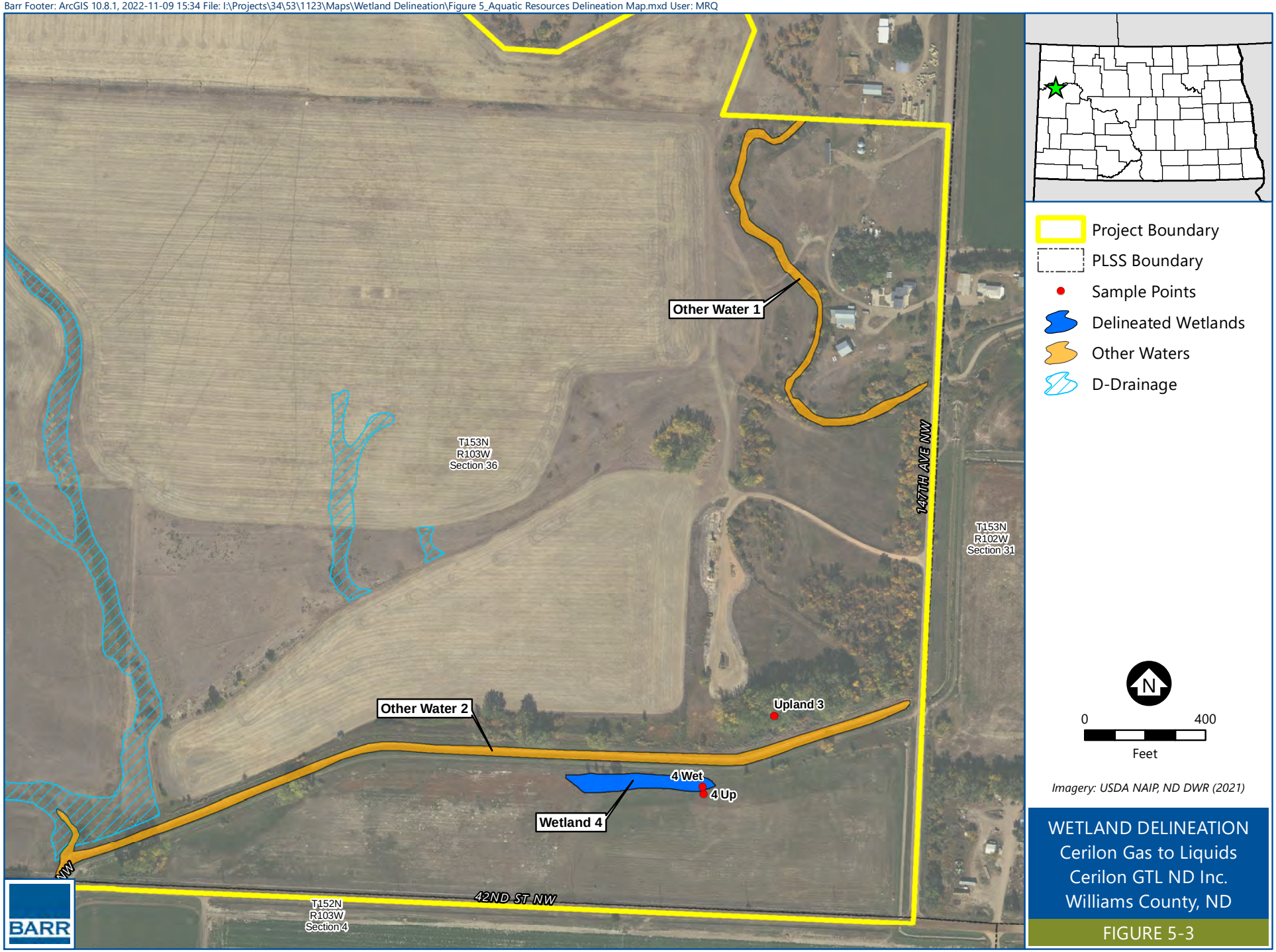
Barr Footer: ArcGIS 10.8.1, 2022-11-09 15:34 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 5_Aquatic Resources Delineation Map.mxd User: MRQ




WETLAND DELINEATION
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 5-2

Barr Footer: ArcGIS 10.8.1, 2022-11-09 15:34 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 5_Aquatic Resources Delineation Map.mxd User: MRQ

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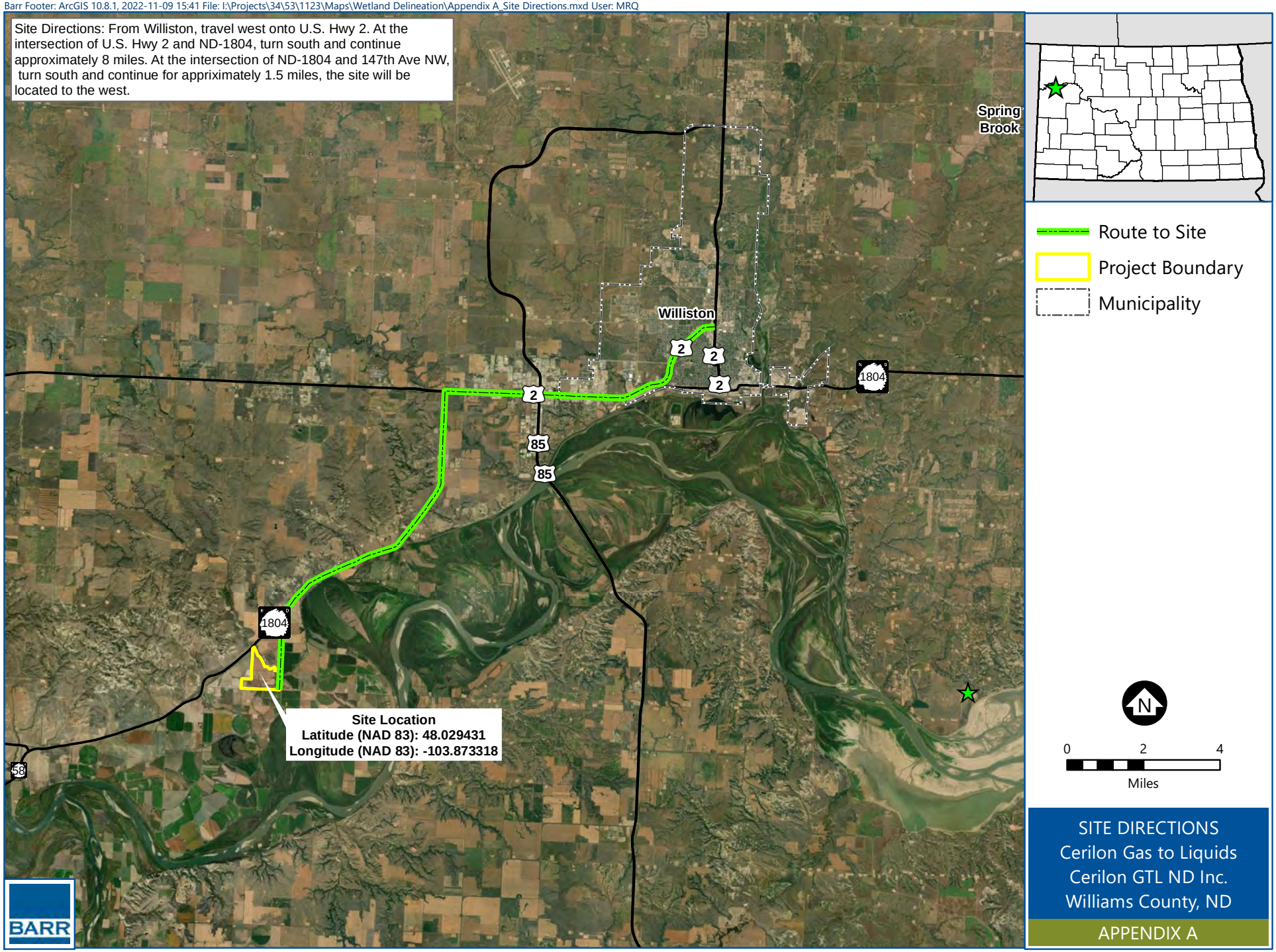
WETLAND DELINEATION
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 5-3

# Appendices

# Appendix A

## Site Directions and Access Permission


Site Directions: From Williston, travel west onto U.S. Hwy 2. At the intersection of U.S. Hwy 2 and ND-1804, turn south and continue approximately 8 miles. At the intersection of ND-1804 and 147th Ave NW, turn south and continue for appriximately 1.5 miles, the site will be located to the west.
Spring Brook
Williston
2
2
2
2
1804
1804
85
85
58
Site Location
Latitude (NAD 83): 48.029431
Longitude (NAD 83): -103.873318
Route to Site
Project Boundary
Municipality
N
0
2
4
Miles
SITE DIRECTIONS
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND
APPENDIX A
BARR

resourceful. naturally.
engineering and environmental consultants

BARR

February 23, 2023

U.S. Army Corps of Engineers
Bismarck Regulatory Office
1513 South 12th Street
Bismarck, ND 58504

Re: Cerilon GTL ND Inc. (Cerilon)
Proposed Cerilon GTL Project
Access Request Letter

To Whom It May Concern:

I, Rochelle Harding, on behalf of Dwight Aune and Paulette and Steve Oster, authorizes the U.S Army Corps of Engineers (USACE) to access the Cerilon Gas to Liquids ND Project Site during normal business hours to conduct a review of the Aquatic Resources Delineation. I, Rochelle Harding, request that the USACE informs me prior to accessing the site or notifies Cerilon Gas to Liquids ND representatives who can also notify me prior to USACE accessing the site.

Sincerely,

Rochelle Harding, M.Sc., P.Eng.
Director, Sustainability

# Appendix B

## Wetland Delineation Data Forms

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 1-Wet

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR): Great Plains Lat: 48.027459657530 Long: -103.879352540818 Datum: NAD 1983

Soil Map Unit Name: E0821A-Lawther silty clay, 0-2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X No _____ | |
| Wetland Hydrology Present? | Yes X No _____ | |

Remarks:

Point taken in low area that appeared saturated on aerial imagery.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Eleocharis palustris | 80 | Yes | OBL |
| 2. Thinopyrum intermedius | 15 | No | FACU |
| 3. Cirsium arvense | 5 | No | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 0

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 80 | x 1 = | 80 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 20 | x 4 = | 80 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 100 (A) | | 160 (B) |

Prevalence Index = B/A = 2

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No _____

Remarks:

## SOIL

Sampling Point: 1-Wet

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-3 | 10 YR 4/1 | 100 | | | | | Silty Clay | |
| 3-18 | 10 YR 4/1 | 96 | 7.5 YR 3/4 | 4 | C | M | Silty Clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** _____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 1-Up

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.027415776186 Long: -103.879232254207 Datum: NAD 1983

Soil Map Unit Name: E0821A-Lawther silty clay, 0-2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in upland area adjacent to Wetland 1.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Agryopyron cristatum | 85 | Yes | FACU |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 85 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 15

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

Bare ground due to dying vegetation.

## SOIL

Sampling Point: 1-Up

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-10 | 10 YR 2/2 | 100 | | | | | silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: Clay pan

Depth (inches): 10

Unable to dig past 10" due to clay plan restrictive layer present.

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 2-Wet

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2

Subregion (LRR): Great Plains Lat: 48.026632110853 Long: -103.880229097229 Datum: NAD 1983

Soil Map Unit Name: NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No ____ | **Is the Sampled Area within a Wetland?** Yes X No ____ |
| Hydric Soil Present? | Yes X No ____ | |
| Wetland Hydrology Present? | Yes X No ____ | |

Remarks:

Point taken in low area within a cattail wetland.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Typha angustifolia | 60 | Yes | OBL |
| 2. Schoenoplectus palla | 20 | Yes | OBL |
| 3. Rumex crispus | 10 | No | FAC |
| 4. Cirsium arvense | 3 | No | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 93 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 7

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 80 | x 1 = | 80 |
| FACW species | 0 | x 2 = | 0 |
| FAC species | 10 | x 3 = | 30 |
| FACU species | 3 | x 4 = | 12 |
| UPL species | 0 | x 5 = | |
| Column Totals: | 93 (A) | | 122 (B) |

Prevalence Index = B/A = 1.3

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No ____

Remarks:

Bare ground due to dying vegetation.

## SOIL

Sampling Point: 2-Wet

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-11 | 10 YR 3/1 | 97 | 7.5 YR 4/4 | 3 | C | M | silty clay | |
| 11-23 | 10 YR 3/1 | 85 | 7.5 YR 4/6 | 12 | C | M | silty clay | |
| 11-23 | 10 YR 6/1 | 3 | | | | | silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** _____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 2-Up

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.026645549309 Long: -103.880274435559 Datum: NAD 1983

Soil Map Unit Name: E0821A-Lawther silty clay, 0-2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in upland area adjacent to Wetland 2.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Agryopyron cristatum | 85 | Yes | FACU |
| 2. Cirsium arvense | 5 | No | FACU |
| 3. Thinopyrum intermedium | 10 | No | FACU |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

## SOIL

Sampling Point: 2-Up

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-17 | 10 YR 3/1 | 100 | | | | | silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** _____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 3-Wet

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.026154039433 Long: -103.87894893868 Datum: NAD 1983

Soil Map Unit Name: E0821A-Lawther silty clay, 0-2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X No _____ | |
| Wetland Hydrology Present? | Yes X No _____ | |

Remarks:

Point taken in low area within d-drainage that appeared to have wetland features.

### VEGETATION – Use scientific names of plants.

| | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| Tree Stratum (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| Sapling/Shrub Stratum (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| Herb Stratum (Plot size: 5 ft r) | | | |
| 1. Spartina pectinata | 70 | Yes | FACW |
| 2. Cirsium arvense | 10 | No | FACU |
| 3. Thinopyrum intermedium | 10 | No | FACU |
| 4. Symphoricarpos occidentalis | 10 | No | UPL |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 100 = Total Cover | | |
| Woody Vine Stratum (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 0 | x 1 = | 0 |
| FACW species | 70 | x 2 = | 140 |
| FAC species | 0 | x 3 = | 0 |
| FACU species | 20 | x 4 = | 80 |
| UPL species | 10 | x 5 = | 50 |
| Column Totals: | 100 (A) | | 270 (B) |

Prevalence Index = B/A = 2.7

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No _____

Remarks:

## SOIL

Sampling Point: 3-Wet

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | % | Redox Features Color (moist) | % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-18 | 10 YR 3/2 | 90 | 10 YR 4/4 | 10 | C | M | silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** _____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ✓ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 3-Up

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Slope Slope (%): 2-4%

Subregion (LRR): Great Plains Lat: 48.02612686000 Long: -103.878960803588 Datum: NAD 1983

Soil Map Unit Name: E0821A-Lawther silty clay, 0-2% slopes NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in upland area adjacent to Wetland 3.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Agropyron cristatum | 70 | Yes | FACU |
| 2. Poa pratensis | 15 | Yes | FACU |
| 3. Symphoricarpos occidentalis | 10 | No | UPL |
| 4. Cirsium arvense | 5 | No | FACU |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

## SOIL

Sampling Point: 3-Up

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16 | 10 YR 3/3 | 100 | | | | | silty clay | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-13-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 4-Wet

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.025620225121 Long: -103.86593925444 Datum: NAD 1983

Soil Map Unit Name: E4122A-Havrelon loam, slightly wet, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes X No _____ | **Is the Sampled Area within a Wetland?** Yes X No _____ |
| Hydric Soil Present? | Yes X No _____ | |
| Wetland Hydrology Present? | Yes X No _____ | |

Remarks:

Point taken in low area that appeared to have wetland features running adjacent to the edge of the field.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Hordeum jubatum | 80 | Yes | FACW |
| 2. Phalaris arundinacea | 10 | No | FACW |
| 3. Rumex crispus | 2 | No | FAC |
| 4. Chenopodium album | 3 | No | FACU |
| 5. Spartina pectinata | 5 | No | OLB |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 100 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum _____

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | | Multiply by: | |
|---|---|---|---|
| OBL species | 5 | x 1 = | 5 |
| FACW species | 90 | x 2 = | 180 |
| FAC species | 2 | x 3 = | 6 |
| FACU species | 3 | x 4 = | 12 |
| UPL species | 0 | x 5 = | 0 |
| Column Totals: | 100 (A) | | 203 (B) |

Prevalence Index = B/A = 2.03

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes X No _____

Remarks:

## SOIL

Sampling Point: 4-Wet

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-2 | 10 YR 3/1 | 100 | | | | | Si Cl Lo | |
| 2-24 | 10 YR 3/1 | 92 | 10 YR 3/6 | 8 | C | M | Si Cl Lo | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** **Yes** X **No** _____

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ✓ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ✓ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-13-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: 4-Up

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.025556005100 Long: -103.865921981654 Datum: NAD 1983

Soil Map Unit Name: E4122A-Havrelon loam, slightly wet, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in in upland area adjacent to Wetland 4.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Chenopodium album | 30 | Yes | FACU |
| 2. Triticum - Wheat | 20 | Yes | - |
| 3. Convolvulus arvensis | 20 | Yes | UPL |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 70 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 30

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

Bare ground possibly due to previous agricultural activities.

## SOIL

Sampling Point: 4-Up

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-16 | 10 YR 3/1 | 100 | | | | | Si Cl Lo | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: Upland 1

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): None Slope (%): 0-1%

Subregion (LRR): Great Plains Lat: 48.037357373550 Long: -103.876874816119 Datum: NAD 1983

Soil Map Unit Name: NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes ____ No X | **Is the Sampled Area within a Wetland?** Yes ____ No X |
| Hydric Soil Present? | Yes ____ No X | |
| Wetland Hydrology Present? | Yes ____ No X | |

Remarks:

Point taken in low area that appeared saturated on aerial imagery. Vegetation and soil disturbed by agricultural practices.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: ____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | ____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | ____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Triticum - Wheat | 30 | Yes | - |
| 2. Convolvulus equitans | 10 | Yes | FACU |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 40 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: ____) | | | |
| 1. | | | |
| 2. | | | |
| | ____ = Total Cover | | |

% Bare Ground in Herb Stratum 60

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species ____ | x 1 = ____ |
| FACW species ____ | x 2 = ____ |
| FAC species ____ | x 3 = ____ |
| FACU species ____ | x 4 = ____ |
| UPL species ____ | x 5 = ____ |
| Column Totals: ____ (A) | ____ (B) |

Prevalence Index = B/A = ____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes ____ No X

Remarks:

Bare ground due to agricultural practices.

## SOIL

Sampling Point: Upland 1

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-15 | 10 YR 4/2 | 100 | | | | | silty loam | |
| 15-24 | 10 YR 5/3 | 100 | | | | | silty loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-12-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: Upland 2

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.036713627619 Long: -103.875435174901 Datum: NAD 1983

Soil Map Unit Name: E4137A-Korchea loam, 0-2% slopes, occasionally flooded NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in low area that appeared saturated on aerial imagery. Vegetation and soil disturbed by agricultural practices.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: _____) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | _____ = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | _____ = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Triticum - Wheat | 30 | Yes | - |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 30 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | _____ = Total Cover | | |

% Bare Ground in Herb Stratum 70

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

Bare ground due to agricultural practices.

## SOIL

Sampling Point: Upland 2

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Redox Features Type[1] | Redox Features Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-19 | 10 YR 4/3 | 100 | | | | | silty loam | |
| 19-28 | 10 YR 3/3 | 100 | | | | | silty loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## WETLAND DETERMINATION DATA FORM – Great Plains Region

Project/Site: Cerilon Gas to Liquids Facility City/County: Williams County Sampling Date: 9-13-2022

Applicant/Owner: Cerilon Gas to Liquids ND, Inc State: ND Sampling Point: Upland 3

Investigator(s): ALN Section, Township, Range: T153N R103W S36

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Concave Slope (%): 0-2%

Subregion (LRR): Great Plains Lat: 48.026293568181 Long: -103.865014966935 Datum: NAD 1983

Soil Map Unit Name: E4122A-Havrelon loam, slightly wet, 0-2% slopes, occasionally flooded NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

### SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

| | | |
|---|---|---|
| Hydrophytic Vegetation Present? | Yes _____ No X | **Is the Sampled Area within a Wetland?** Yes _____ No X |
| Hydric Soil Present? | Yes _____ No X | |
| Wetland Hydrology Present? | Yes _____ No X | |

Remarks:

Point taken in low area within mapped NWI.

### VEGETATION – Use scientific names of plants.

| Tree Stratum (Plot size: 30 ft r) | Absolute % Cover | Dominant Species? | Indicator Status |
|---|---|---|---|
| 1. Populus deltoides | 8 | Yes | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| | 8 = Total Cover | | |
| **Sapling/Shrub Stratum** (Plot size: 15 ft r) | | | |
| 1. Populus deltoides | 5 | Y | FAC |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| | 5 = Total Cover | | |
| **Herb Stratum** (Plot size: 5 ft r) | | | |
| 1. Bromus inermis | 20 | Yes | UPL |
| 2. Cirsium arvense | 5 | No | FACU |
| 3. Apocynum androsaemifolium | 10 | No | UPL |
| 4. Symphoricarpos occidentalis | 15 | Yes | UPL |
| 5. Poa pratensis | 15 | Yes | FACU |
| 6. | | | |
| 7. | | | |
| 8. | | | |
| 9. | | | |
| 10. | | | |
| | 65 = Total Cover | | |
| **Woody Vine Stratum** (Plot size: _____) | | | |
| 1. | | | |
| 2. | | | |
| | 108 = Total Cover | | |

% Bare Ground in Herb Stratum 30

**Dominance Test worksheet:**

Number of Dominant Species That Are OBL, FACW, or FAC (excluding FAC−): _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

**Prevalence Index worksheet:**

| Total % Cover of: | Multiply by: |
|---|---|
| OBL species _____ | x 1 = _____ |
| FACW species _____ | x 2 = _____ |
| FAC species _____ | x 3 = _____ |
| FACU species _____ | x 4 = _____ |
| UPL species _____ | x 5 = _____ |
| Column Totals: _____ (A) | _____ (B) |

Prevalence Index = B/A = _____

**Hydrophytic Vegetation Indicators:**

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Hydrophytic Vegetation Present?** Yes _____ No X

Remarks:

Bare ground due to leaf cover preventing growth.

## SOIL

Sampling Point: Upland 3

**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

| Depth (inches) | Matrix Color (moist) | Matrix % | Redox Features Color (moist) | Redox Features % | Type[1] | Loc[2] | Texture | Remarks |
|---|---|---|---|---|---|---|---|---|
| 0-7 | 10 YR 3/1 | 100 | | | | | sandy loam | |
| 7-19 | 10 YR 4/3 | 100 | | | | | sandy loam | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR F**)
- ___ 1 cm Muck (A9) (**LRR F, G, H**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) (**LRR G, H**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR F**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ High Plains Depressions (F16) (**MLRA 72 & 73 of LRR H**)

**Indicators for Problematic Hydric Soils[3]:**

- ___ 1 cm Muck (A9) (**LRR I, J**)
- ___ Coast Prairie Redox (A16) (**LRR F, G, H**)
- ___ Dark Surface (S7) (**LRR G**)
- ___ High Plains Depressions (F16) (**LRR H outside of MLRA 72 & 73**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

**Restrictive Layer (if present):**

Type: _____

Depth (inches): _____

**Hydric Soil Present?** Yes _____ No X

Remarks:

## HYDROLOGY

**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Dry-Season Water Table (C2)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where not tilled**)
- ___ Presence of Reduced Iron (C4)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Oxidized Rhizospheres on Living Roots (C3) (**where tilled**)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ✓ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)
- ___ Frost-Heave Hummocks (D7) (**LRR F**)

**Field Observations:**

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

**Wetland Hydrology Present?** Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

# Appendix C

## Site Photographs

# Appendix C: Site Photographs

*Photo 1: Upland 1, located within harvested wheat field, facing east (9-12-2022).*

*Photo 2: Upland 2, located within harvested wheat field, field bindweed present, facing south (9-12-2022).*

## Appendix C: Site Photographs

*Photo 3: Harvested wheat field, facing south (9-12-2022).*

*Photo 4: Harvested wheat field, facing east (9-12-2022).*

*Photo 5: Harvested wheat field, no wetland indicators present, facing northeast (9-12-2022).*

*Photo 6: Other Water 1, facing south (9-12-2022).*

*Photo 7: Large unplanted area of agricultural field, primarily Russian thistle, facing east (9-12-2022).*

*Photo 8: D-Drainage, facing south (9-13-2022).*

*Photo 9: D-Drainage located on west end of Project Area, facing west (9-13-2022).*

*Photo 10: Wetland 1 located within pasture, facing northwest (9-12-2022).*

*Photo 11: Wetland 3 is a cattail wetland located adjacent to a D-Drainage, photo facing northwest (9-12-2022).*

*Photo 12: Pasture and harvested wheat field located on south boundary of project area, facing west (9-12-2022).*

*Photo 13: D-Drainage through open pasture, facing north (9-13-2022).*

*Photo 13: Harvested wheat field, facing northeast (9-12-2022).*

*Photo 14: Open field along south boundary of project area, facing east (9-12-2022).*

*Photo 15: D-Drainage running through pasture and ending at agricultural field, facing east (9-13-2022).*

*Photo 16: Other Water 2, man-made canal located along southeastern portion of project area, facing east (9-13-2022).*

*Photo 17: Upland area located adjacent to Other Water 1, facing northeast (9-13-2022).*

*Photo 18: Upland and forested area located on eastern side of project area, facing southwest (9-13-2022).*

*Photo 19: Upland 3, located on mapped NWI within tree row just north of Other Water 2, facing west (9-13-2022).*

*Photo 21: Wetland 4, runs adjacent to roadway, facing west (9-13-2022).*

# Appendix E

## Wildlife Study

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BARR

# Memorandum

**To:** Rochelle Harding, Cerilon GTL ND Inc
**From:** Amanda Gravseth and Anna Nieuwsma, Barr Engineering
**Subject:** Threatened and Endangered Species Evaluation
**Date:** July 7, 2023
**Project:** Proposed Cerilon GTL Project

This technical memorandum documents Barr Engineering Co.'s (Barr's) findings for the protected species review for Cerilon GTL ND Inc.'s (Cerilon's) proposed gas-to-liquids (GTL) processing facility (Project) located southwest of Williston, North Dakota, in Williams County. The 371-acre study area is located between 143rd Ave NW and 42nd Street Northwest in Section 36, Township 153 North, Range 103 West (Figure 1).

## 1.0 Site Conditions

A desktop review and field survey were completed for the proposed Project area by Barr staff; the field survey was completed on June 7, 2023. During the field survey, site conditions, land use, topography, and potential habitat was evaluated and documented (Figure 2, Attachment A - Photolog).

The topography within the Project area is generally flat (0-2% slopes), with some gentle sloping (3-5% slopes) surrounding several natural drainages that flow through the Project area to the south. Steeper slopes were observed along Eight Mile Creek which flows along the eastern edge of the Project area and along the irrigation channel which flows along the southeast edge of the Project area.

During the field survey, multiple habitat types were identified including cropland, pasture (grassland), drainages, wetlands, and forested/tree groupings. The cropland is about 65% (~240 acres) of the Project area and consisted of predominately soybeans with a small section of alfalfa. The next most dominant habitat, containing about 22% (~80 acres) of the Project area is the pasture (grassland). This habitat was dominated by created wheatgrass, western wheatgrass and smooth brome. The trees located within the Project area were primarily located near or adjacent to waterbodies and cover about 3% (~10 acres) of the Project area. The predominant species found within the tree habitat was cottonwoods, other species present included green ash, Russian olive, and Siberian elm. Several drainages are located across the Project area covering about 3% (~9 acres) of the site, these drainages primarily consist of crested wheatgrass, western wheatgrass, smooth brome, snowberries, and Canadian thistle. A few small wetlands are located within the Project area, consisting of less than 0.5% (~0.1 acres) of the site. The dominated vegetation present in the wetlands included foxtail barley, prairie cord grass, narrow-leaf cattails, and common spike-rush. See Figure 2 for the mapped habitat locations.

## 2.0 Threatened and Endangered Species Evaluation

As part of the desktop review, Barr submitted a United States Fish and Wildlife Service (U.S. FWS) Information for Planning and Consultation (IPaC) official species list request on May 8, 2023, and received an official species list that acts as a baseline for Barr's desktop and field analysis of potential impacts to federally-listed species (Attachment B). Results of this analysis are summarized in Table 1. North Dakota does not have state-level protected species regulations.

**Table 1 Summary of IPaC Listed Species, Suitable Habitat, and Affect Determination**

| Species Name | | Status | Suitable Habitat Description | Affect Determination |
|---|---|---|---|---|
| Common | Scientific | | | |
| Northern Long-eared Bat | *Myotis septentrionalis* | Threatened | Hibernates in caves and mines. Roosts and forages in upland forests. | May affect, not likely to adversely effect |
| Whooping Crane | *Grus americana* | Endangered | Uses primarily wetlands and cropland ponds for roosting, feeding, or both. | No effect |
| Piping Plover | *Charadrius melodus* | Threatened | Barren sand and gravel shores of rivers and lakes, with no areas of dense vegetation. | Not likely to adversely effect |
| Red Knot | *Calidris canutus rufa* | Threatened | Shores, exposed mudflats, and sparsely vegetated areas. | Not likely to adversely effect |
| Dakota Skipper | *Hesperia dacotae* | Threatened | Native prairie with high diversity of wildflowers and grasses. | No effect |

The northern long-eared bat roosts in trees (both live and dead) greater than three (3) inches in diameter that have loose or peeling bark, cavities, or crevices, and feed in the understory of forested areas. During winter, the northern long-eared bat hibernates in caves and mines. Suitable trees were identified within the Project vicinity that would provide roosting habitat for the northern long-eared bat. The project is anticipated to remove up to 0.5 acres of trees within the Project area. A Northern Long-eared Bat Determination Key was submitted to the U.S. FWS on May 8, 2023 (Attachment C – NLEB Determination Key). Due to the presence of suitable habitat but limited tree removal and the determination key, it is anticipated that the Project will have a may affect, not likely to adversely effect on the northern long-eared bat.

Preferred whooping crane habitat consists of shallow wetlands characterized by cattails, bulrushes, and sedges. This species can also be found foraging in upland areas, especially during migration periods. The Project primarily occurs in agricultural land and along residential areas, which does not provide suitable habitat for the species. During the field survey, it was confirmed that no preferred habitat for whooping cranes is located within the Project area. Whooping cranes are sensitive to human disturbance and, due to the close proximity to residences and projected construction activities, are anticipated to avoid the Project

area. Due to the absence of suitable habitat, it is anticipated that the Project will have no effect on the whooping crane.

In the Northern Great Plains region, piping plovers inhabit barren sand and gravel shores and sandbars of rivers and lakes, avoiding areas of dense vegetation. Nearly all lakes used by piping plovers in North Dakota are alkaline in nature and are sparsely vegetated. In North Dakota, this type of habitat is found on the Missouri River (including Lake Sakakawea) and the Yellowstone River. The closest suitable habitat, as identified by the North Dakota Game and Fish Department (NDGFD), is located along the Missouri River over two and three-quarter (2.75) miles from the Project area. The Project area does not contain shoreline or sandbars that are utilized by piping plovers. Based on the lack of suitable piping plover habitat in or near the Project area, the Project is anticipated to not likely adversely affect the species or its critical habitat.

The red knot is a migratory shorebird that breeds in the Canadian Arctic and passes through North Dakota during spring and fall migration. During migration, red knots typically use exposed mudflats and open, sparsely vegetated areas as temporary stopover sites to rest and forage. Additionally, red knots are thought to use inland saline lakes as stopover habitat. Wetland delineations conducted by Barr on September 12-13, 2023, concluded that the wetlands within the Project area are seasonally-flooded basins and intermittent stream communities, which would not provide suitable habitat for the red knot. Based on the lack of suitable red knot habitat in or near the Project area, the Project is anticipated to not likely adversely effect on the red knot.

The Dakota skipper is found in native prairie habitat containing a high diversity of wildflowers and grasses. Construction activities will occur in a mix of cropped and pasture agricultural land. Crop land does not provide suitable habitat for the species. The pasture land consisted of non-native grasses, primarily crested wheatgrass, western wheatgrass, and smooth brome; none of which are preferred for Dakota skipper habitat. Additionally, the topography of the Project area is primarily flat and the land surrounding the Project area is dominated by agricultural and residential lands, which would not provide the suitable native prairie habitat that the species requires. Based on the lack of suitable Dakota skipper habitat in or near the Project area, it is anticipated that the Project will have no effect on the species.

## 3.0 Bald and Golden Eagles

Aerial imagery was used as a preliminarily assessment of the Project's potential to impact bald and golden eagles. Both species prefer habitats consisting of mature stands of trees in close proximity to large waterbodies. Tree groupings within the Project area and surrounding 660-foot buffer are predominantly deciduous trees near or adjacent to the waterbodies within the Project area and deciduous trees adjacent to residential properties. Additionally, no large rivers, lakes, or wetlands are located in close proximity to the Project area. The NDGFD identified key habitats for bald and golden eagles in the badlands, Lake Sakakawea, and within the Missouri River system. The closest key habitat, the Missouri River system, is located over two and three-quarter (2.75) miles southwest of the Project area. Coordination with the NDGFD was completed, and they noted that there are no known bald or golden eagle nests within one (1)

mile of the Project area. Given the lack of suitable habitat, it is anticipated that the Project will have no effect on either species.

## 4.0 Attachments:

The May 2023 IPaC Official Species List, the Not Likely to Adversely Affect (NLAA) Consistency Letter Northern Long-eared Bat Rangewide Determination Key, and a Photolog are attached to this memo.

**Figure 1 – Site Location**

Barr Footer: ArcGIS 10.8.1, 2022-11-09 11:00 File: I:\Projects\34\53\1123\Maps\Wetland Delineation\Figure 1_Site Location.mxd User: MRQ

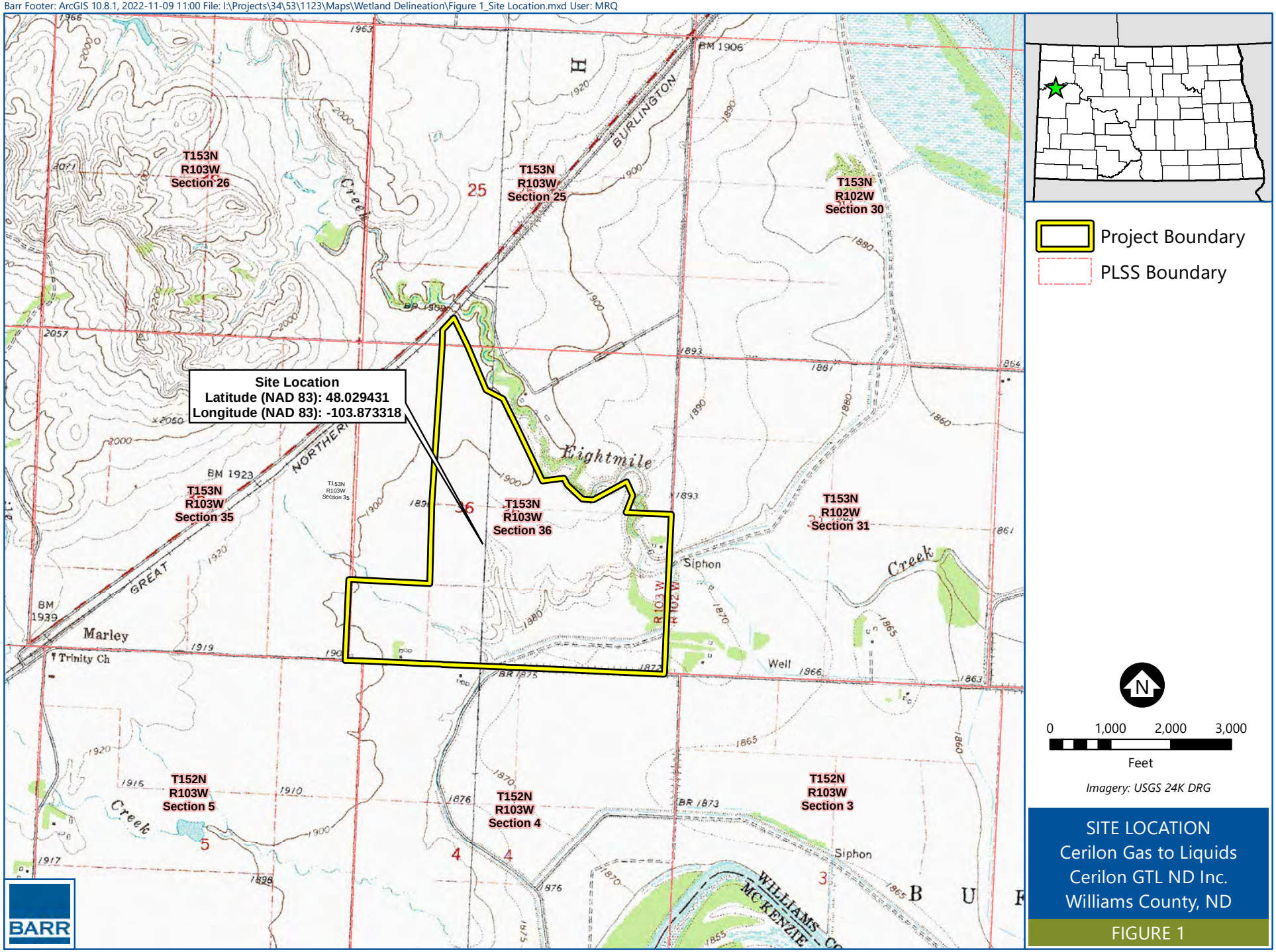
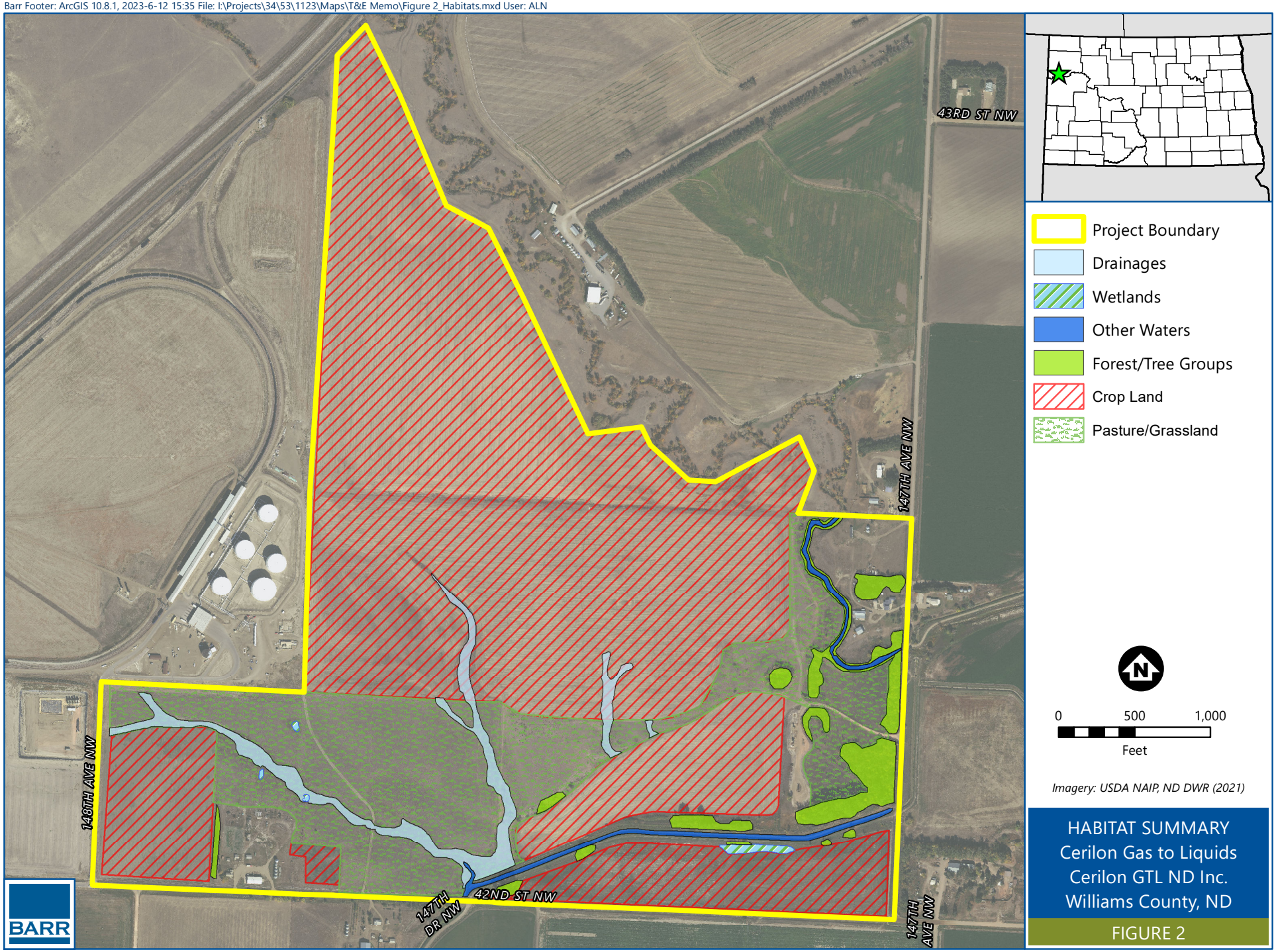


**Figure 2 – Habitat Summary**

Barr Footer: ArcGIS 10.8.1, 2023-6-12 15:35 File: I:\Projects\34\53\1123\Maps\T&E Memo\Figure 2_Habitats.mxd User: ALN




BARR

HABITAT SUMMARY
Cerilon Gas to Liquids
Cerilon GTL ND Inc.
Williams County, ND

FIGURE 2

## Attachment A – Photolog

# Photographic Log

**Cerilon GTL ND**
**Williams County, North Dakota**
**June 7, 2023**

Photo 1: Forested area adjacent to irrigation channel.
Photo 2: Forested area on southeastern side of the Project area.
Photo 3: Scattered small trees just north of irrigation channel on southern side of the Project area.
Photo 4: Close up of bark on cottonwood trees within Project area.
Photo 5: Tree grouping adjacent to irrigation channel.
Photo 6: Forested areas along intermittent creek located on the southeast side of the Project area.
Photo 7: Canopy of cottonwood trees within Project area.
Photo 8: Grouping of cottonwood trees on eastern side of Project area.
Photo 9: Cropped agricultural land, planted soybeans.
Photo 10: Cropped agricultural field, planted soybeans.
Photo 11: Drainage on southern side of the Project area, facing east.
Photo 12: Drainage on southern side of the Project area, facing north.
Photo 13: Pasture/grassland located within Project area, adjacent to the Savage Facility.
Photo 14: Close up of vegetation present in pasture/grassland on southern portion of Project area.
Photo 15: Pasture/grassland located within central section of the Project area, facing east.

Photo 1: Forested area adjacent to irrigation channel.

Photo 2: Forested area on southeastern side of the Project area.

Photo 3: Scattered small trees just north of irrigation channel on southern side of the Project area.

Photo 4: Close up of bark on cottonwood trees within Project area.

Photo 5: Tree grouping adjacent to irrigation channel.

Photo 6: Forested areas along intermittent creek located on the southeast side of the Project area.

Photo 7: Canopy of cottonwood trees within Project area.

Photo 8: Grouping of cottonwood trees on eastern side of Project area.

Photo 9: Cropped agricultural land, planted soybeans.

Photo 10: Cropped agricultural field, planted soybeans.

Photo 11: Drainage on southern side of the Project area, facing east.

Photo 12: Drainage on southern side of the Project area, facing north.

Photo 13: Pasture/grassland located within Project area, adjacent to the Savage Facility.

Photo 14: Close up of vegetation present in pasture/grassland on southern portion of Project area.

Photo 15: Pasture/grassland located within central section of the Project area, facing east.

## Attachment B – May 2023 IPaC Official Species List

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926
Phone: (701) 250-4481 Fax: (701) 355-8513

In Reply Refer To:
Project Code: 2023-0079181
Project Name: Cerilon

May 08, 2023

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

**Section 7 of the Endangered Species Act**

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The Act requires that actions authorized, funded, or carried out by Federal agencies not jeopardize federally threatened or endangered species or adversely modify designated critical habitat. To fulfill this mandate, Federal agencies (or their designated non-federal representative) must consult with the Service *if they determine their project and associated actions "may affect" listed species or critical habitat.* If Federal agencies or their non-federal representatives determine their project and associated actions will have "no effect" on listed species, their habitats, or designated critical habitat, consultation is not required. However, if a "no effect" is determined, we recommend that you maintain a written record in support of your conclusion.

**Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act**

Additionally, while not all are listed as threatened or endangered, eagles and migratory birds

have protections under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). The BGEPA prohibits take which is defined as, “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb” (50 CFR 22.3). Disturb is defined in regulations as, “to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”. The MBTA makes it unlawful without a waiver to pursue, hunt, take, capture, kill, or sell birds listed as migratory birds, including eagles. The statute does not discriminate between live or dead birds and also grants full protection to any bird parts including feathers, eggs, and nests.

**Service Property Interests**

As part of the National Wildlife Refuge System, the Service administers fee title Refuge and Waterfowl Production Areas, as well as wetland and grassland easements, throughout North Dakota. For exact locations of Service interest lands, please contact the appropriate Wetland Management Districts (WMD) for guidance regarding FWS easements.

Northwest ND WMD Complex: Kyle Flanery, (701) 768-2548
Eastern ND WMD Complex: Dave Azure, (701) 285-3341
Central ND WMD Complex (also covers south and west): Todd Luke, (701) 442-5474

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

# OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

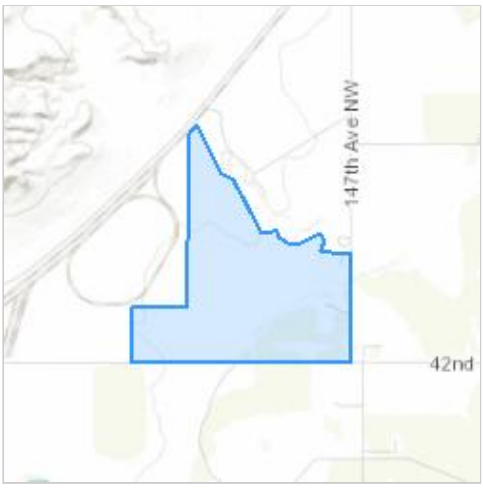
**North Dakota Ecological Services Field Office**
3425 Miriam Avenue
Bismarck, ND 58501-7926
(701) 250-4481

# PROJECT SUMMARY

Project Code: 2023-0079181
Project Name: Cerilon
Project Type: Commercial Development
Project Description: Construction of GTL facility. The project meets both the definitions of electric energy conversion facility and gas or liquid energy conversion facility from North Dakota Century Code (NDCC) 49-22-03(5) and 49-22.1-01(6)

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@48.03236995,-103.87425659871344,14z




Counties: Williams County, North Dakota

# ENDANGERED SPECIES ACT SPECIES

There is a total of 6 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

| NAME | STATUS |
|---|---|
| Northern Long-eared Bat *Myotis septentrionalis*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/9045 | Endangered |

## BIRDS

| NAME | STATUS |
|---|---|
| Piping Plover *Charadrius melodus*<br>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/6039 | Threatened |
| Red Knot *Calidris canutus rufa*<br>There is **proposed** critical habitat for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/1864 | Threatened |
| Whooping Crane *Grus americana*<br>Population: Wherever found, except where listed as an experimental population<br>There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/758 | Endangered |

## INSECTS

| NAME | STATUS |
|---|---|
| Dakota Skipper *Hesperia dacotae* | Threatened |
| There is **final** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/1028 | |
| Monarch Butterfly *Danaus plexippus* | Candidate |
| No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/9743 | |

## CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

# USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

# WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

# IPAC USER CONTACT INFORMATION

Agency: Barr Engineering
Name: David Haar
Address: 4300 MarketPointe Dr Suite 200
City: Minneapolis
State: MN
Zip: 55345
Email dhaar@barr.com
Phone: 9528423625

## Attachment C – NLAA Consistence Letter North Dakota Determination Key

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926
Phone: (701) 250-4481 Fax: (701) 355-8513

In Reply Refer To:
Project code: 2023-0079181
Project Name: Cerilon

May 08, 2023

Subject: Consistency letter for 'Cerilon' for specified federally threatened and endangered species and designated critical habitat that may occur in your proposed project area consistent with the North Dakota Determination Key (DKey) for project review and guidance for federally listed species.

David Haar:

The U.S. Fish and Wildlife Service (Service) received on **May 08, 2023** your effects determination for the 'Cerilon' (the Action) using the North Dakota DKey for project review and guidance for federally-listed species within the Information for Planning and Consultation (IPaC) system. The Service developed this system in accordance with the Endangered Species Act of 1973 (ESA) (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

Based on your answers and the assistance of the Service's North Dakota DKey, you made the following effect determination(s) for the proposed Action:

| Species | Listing Status | Determination |
|---|---|---|
| Dakota Skipper (*Hesperia dacotae*) | Threatened | No effect |
| Piping Plover (*Charadrius melodus*) | Threatened | NLAA |
| Red Knot (*Calidris canutus rufa*) | Threatened | NLAA |
| Whooping Crane (*Grus americana*) | Endangered | No effect |

**Consultation with the Service is not complete.** The above effect determination(s) becomes applicable when the lead federal action agency or designated non-federal representative submits them as a request to the Service to rely on the North Dakota DKey in order to satisfy the agency's consultation requirements for this project.

Please provide this consistency letter to the lead Federal action agency or its designated non-federal representative with a request for its review, and as the agency deems appropriate, to submit for concurrence verification through the IPaC system. The lead Federal action agency or

designated non-federal representative should log into IPaC using their agency email account and click "Search by record locator." They will need to enter the record locator **508-126144089**

In addition to the species listed above, the following species and/or critical habitats may also occur in your project area and **are not** covered by this conclusion:

- Monarch Butterfly *Danaus plexippus* Candidate
- Northern Long-eared Bat *Myotis septentrionalis* Endangered

The Service recommends that your agency contact the North Dakota Ecological Services Field Office or re-evaluate the project in IPaC if: 1) the scope, timing, duration, or location of the proposed project changes, 2) new information reveals the action may affect listed species or designated critical habitat; 3) a new species is listed or critical habitat designated. If any of the above conditions occurs, additional consultation with the North Dakota Ecological Services Field Office should take place before project changes are final or resources committed.

**Bald and Golden Eagle Protection Act(BGEPA):** The following resources are provided to project proponents and consulting agencies as additional information. Bald and golden eagles are not included in this section 7(a)(2) consultation and this information does not constitute a determination of effects by the Service.

The Service developed the National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with Bald Eagles when and under what circumstances the protective provisions of the BGEPA may apply to their activities. The guidelines should be consulted prior to conducting new or intermittent activity near an eagle nest. This document may be downloaded from the following site: https://www.fws.gov/media/national-bald-eagle-management-guidelines-0

To determine if your proposed activity is likely to take or disturb Golden or Bald Eagles, please call our office at 702-250-4481 for further review.

If the recommendations detailed in the National Bald Eagle Management Guidelines cannot be followed, you may apply for a permit to authorize removal or relocation of an eagle nest in certain instances. The application form is located at http://www.fws.gov/forms/3-200-72.pdf.

**Action Description**
You provided to IPaC the following name and description for the subject Action.

**1. Name**

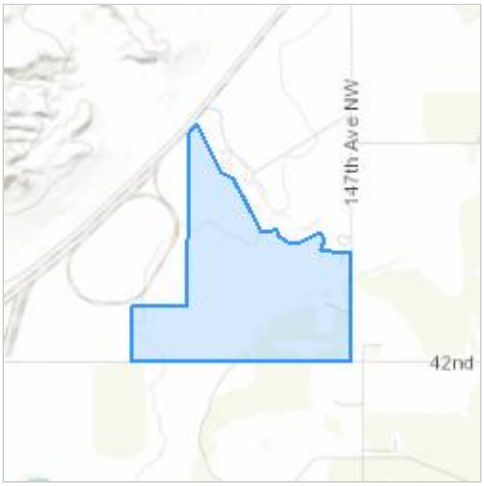
Cerilon

**2. Description**

The following description was provided for the project 'Cerilon':

> Construction of GTL facility. The project meets both the definitions of electric energy conversion facility and gas or liquid energy conversion facility from North Dakota Century Code (NDCC) 49-22-03(5) and 49-22.1-01(6)

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@48.03236995,-103.87425659871344,14z



# QUALIFICATION INTERVIEW

1. Is your project a federal project or have a federal nexus (funded, permitted or other authorization by a federal agency)?

   *Yes*

2. Does your project consist solely of interior or exterior rehabilitation and renovations of existing residential, commercial buildings and public facilities?

   **Note:** These activities may involve exterior painting, replacement of doors, windows, siding or roofing.

   *No*

3. Does your project consist solely of work done within the existing footprint of a building such as electrical, heating plumbing, basement and foundation repairs?

   *No*

4. Does your project consist solely of additions onto an existing structure?

   *No*

5. Does your project consist solely of renting or purchasing existing buildings?

   *No*

6. Does your project consist solely of demolition of structures within Incorporated City Boundaries?

   *No*

7. Does your project consist solely of repair or replacement of existing parking lots, sidewalks, roads or other paved or graveled surfaces?

   *No*

8. Does your project consist solely of repair or replacement or upgrading playground equipment?

   *No*

9. Is your project a wind farm?

   *No*

10. Is your project a new construction on an existing residential infill lot within Incorporated City Boundaries?

    *No*

11. Are you building overhead power lines?

    *No*

12. Are you constructing a communication tower or other permanent structure over 200 feet above ground line without guy wires?

    *No*

13. Are there any wetlands in your project area?

    *Yes*

14. Will the project impact a wetland?

    **Note:** Common impacts to wetlands include filling, grading, removal of vegetation, building construction and changes in water levels and drainage patterns.

    *Yes*

15. Is your project located entirely within a developed area?

    **Note:** A developed area is an area that is already paved or supports structures and the only vegetation is limited to frequently mowed grass or conventional landscaping.

    *No*

16. [Semantic] Does the action area intersect the Dakota Skipper area of influence?

    **Automatically answered**
    *Yes*

17. Is the project area on disturbed land (e.g. urban areas, previously cropped areas, non-native haylands, pasture or other grassland that is dominated by non-native species, or in areas where trees or shrubs predominate)?

    *Yes*

18. [Semantic] Does the action area intersect the Whooping Crane area of infuence?

    **Automatically answered**
    *Yes*

19. If a whooping crane is spotted within one-mile of construction, will you stop construction and immediately call the USFWS North Dakota Ecological Service Office?

    *Yes*

20. [Semantic] Does the action area intersect the Piping Plover area of infuence?

    **Automatically answered**
    *Yes*

21. Will the project result in changes to river hydrology (i.e. via construction of lock & dams, major waterbody diversion/major (over 1,000,000 gallons/day water withdrawals, etc.)?

    *No*

22. Is the project a cooling water intake for a power plant regulated under section 316 of the Clean Water Act?

    **Note:** This applies to facilities that are designed to withdraw at least two million gallons per day of cooling water from waters of the U.S.

    *No*

23. Is this an instream sand and gravel mining project?

    *No*

24. Will this project completely cross the Missouri River or Lake Sakakawea?

    **Note:** This includes project under, over and through the Missouri River or Lake Sakakawea, such as a bridge, buried cable and pipelines including HDD pipelines.

    *No*

25. Will the project directly impact suitable piping plover nesting habitat?

    **Note:** Direct impacts include any off road vehicle access including use of mat roads, soil compaction, digging, seismic survey, directional drilling, heavy equipment, grading, trenching, placement of fill, vegetation management (including removal or maintenance using equipment or chemicals), cultivation, development, etc.)

    *No*

26. Will work be conducted within ½ mile of suitable piping plover nesting habitat.

    *No*

27. [Semantic] Does the action area intersect the Rufa Red Knot area of infuence?

    **Automatically answered**

    *Yes*

28. Will the project construction or other impacts occur between April 1-May 31 or between August 15-October 31?

    *Yes*

## IPAC USER CONTACT INFORMATION

Agency: Barr Engineering
Name: David Haar
Address: 4300 MarketPointe Dr Suite 200
City: Minneapolis
State: MN
Zip: 55345
Email dhaar@barr.com
Phone: 9528423625

## LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

# Attachment D – NLAA Consistence Letter Northern Long-eared Bat Rangewide Determination Key

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
North Dakota Ecological Services Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926
Phone: (701) 250-4481 Fax: (701) 355-8513

In Reply Refer To:
Project code: 2023-0079181
Project Name: Cerilon

May 08, 2023

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

**Subject:** Technical assistance for 'Cerilon'

Dear David Haar:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on May 08, 2023, for 'Cerilon' (here forward, Project). This project has been assigned Project Code 2023-0079181 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

**Ensuring Accurate Determinations When Using IPaC**

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter.

**Determination for the Northern Long-Eared Bat**

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

**Other Species and Critical Habitat that May be Present in the Action Area**

The IPaC-assisted determination for the northern long-eared bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Dakota Skipper *Hesperia dacotae* Threatened
- Monarch Butterfly *Danaus plexippus* Candidate
- Piping Plover *Charadrius melodus* Threatened
- Red Knot *Calidris canutus rufa* Threatened
- Whooping Crane *Grus americana* Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

**Next Step**

Consultation with the Service is necessary. The project has a federal nexus (e.g., Federal funds, permit, etc.), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed.

As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service by doing the following.

1. Log into IPaC using an agency email account and click on My Projects, click "Search by record locator" to find this Project using **508-126142841**. (Alternatively, the originator of the project in IPaC can add the agency representative to the project by using the Add Member button on the project home page.)
2. Review the answers to the Northern Long-eared Bat Range-wide Determination Key to ensure that they are accurate.
3. Click on Review/Finalize to convert the ‘not likely to adversely affect’ consistency letter to a concurrence letter. Download the concurrence letter for your files if needed.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the North Dakota Ecological Services Field Office and reference Project Code 2023-0079181 associated with this Project.

**Action Description**
You provided to IPaC the following name and description for the subject Action.

**1. Name**

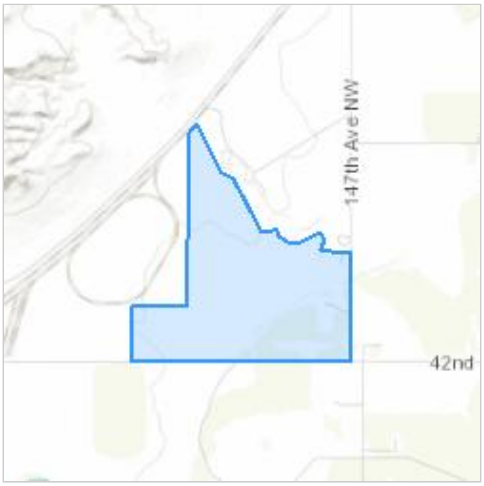
Cerilon

**2. Description**

The following description was provided for the project 'Cerilon':

> Construction of GTL facility. The project meets both the definitions of electric energy conversion facility and gas or liquid energy conversion facility from North Dakota Century Code (NDCC) 49-22-03(5) and 49-22.1-01(6)

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@48.03236995,-103.87425659871344,14z



# DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

## QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

   **Note:** Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   *No*

2. Do you have post-white nose syndrome occurrence data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed acoustic detections. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   *No*

3. Does any component of the action involve construction or operation of wind turbines?

   **Note:** For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   *No*

4. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   *Yes*

5. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   *No*

6. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   **Note:** This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   *No*

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   *No*

8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   *No*

9. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   **Note:** Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   *No*

10. Does the action area contain any caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating northern long-eared bats?

    *No*

11. Does the action area contain or occur within 0.5 miles of (1) talus or (2) anthropogenic or naturally formed rock crevices in rocky outcrops, rock faces or cliffs?

    *No*

12. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    (If unsure, answer "Yes.")

    **Note:** If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    *Yes*

13. Will the action cause effects to a bridge?

    *No*

14. Will the action result in effects to a culvert or tunnel?

    *No*

15. Does the action include the intentional exclusion of northern long-eared bats from a building or structure?

    **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local U.S. Fish and Wildlife Services Ecological Services Field Office to help assess whether northern long-eared bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures

    *No*

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    *No*

17. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    *No*

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic on one or more existing roads?

    **Note:** For federal actions, answer ‘yes’ when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    *Yes*

19. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Northern long-eared bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    **Note:** "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    *No*

20. Will the proposed action involve the creation of a new water-borne contaminant source (e.g., leachate pond pits containing chemicals that are not NSF/ANSI 60 compliant)?

    *No*

21. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    *Yes*

22. Will the proposed action result in the cutting or other means of knocking down, bringing down, or trimming of any trees suitable for northern long-eared bat roosting?

    **Note:** Suitable northern long-eared bat roost trees are live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities.

    *Yes*

# PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

*.5*

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

*0*

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

*.5*

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

*Yes*

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

*5*

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

*0*

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

*No*

Will all project activities by completed by April 1, 2024?

*No*

## IPAC USER CONTACT INFORMATION

Agency: Barr Engineering
Name: David Haar
Address: 4300 MarketPointe Dr Suite 200
City: Minneapolis
State: MN
Zip: 55345
Email dhaar@barr.com
Phone: 9528423625

## LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

# Appendix F

## Class I and Class III Cultural Inventory Report