United States Environmental Protection Agency

Region 8
1595 Wynkoop St.
Denver, CO 80202

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DRAFT

Environmental Assessment (EA)

National Pollutant Discharge Elimination System (NPDES) Permit for Maher Cattle Company, LLC

Abbreviations Used in this Document

Abbreviation	Definition
BMPs	Best Management Practices
BOD	Biochemical oxygen demand
CAA	Clean Air Act
CAFO	Concentrated animal feeding operation
CFR or C.F.R.	Code of Federal Regulations
CO	Carbon monoxide
CWA	Clean Water Act
DO	Dissolved oxygen
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA or Agency	U.S. Environmental Protection Agency
ESA	Endangered Species Act
E. Coli	Escherichia coli
FONSI	Finding of No Significant Impact
FWS	U.S. Fish and Wildlife Service
IPaC	Information for Planning and Conservation
Maher or Facility	Maher Cattle LLC
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NMFS	National Marine Fisheries Service
NO2	Oxides of nitrogen measured as nitrogen dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service
PM10	Particulate matter with an aerodynamic diameter less than or equal to 10 microns
PM2.5	Particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
ROD	Record of Decision
SO2	Sulfur dioxide
THPO	Tribal Historic Preservation Officer
TKN	Total Kjeldahl nitrogen
TP	Total phosphorus
TSS	Total suspended solids
USGS	United States Geological Survey
WQP	Water Quality Portal

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1 Introduction

Maher Cattle LLC, (Maher or Facility) is a concentrated animal feeding operation (CAFO) located within the exterior boundaries of the Standing Rock Indian Reservation, near Timber Lake, South Dakota (latitude 45.504936 and longitude -101.157025). The U.S. Environmental Protection Agency (EPA or Agency) is responsible for implementing the Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) program on Indian country lands (as defined at 18 U.S.C. § 1151) in North Dakota and South Dakota, including within the exterior boundaries of the Standing Rock Indian Reservation. Maher applied to the EPA for an NPDES permit for the discharge of pollutants into waters of the U.S. from the Facility. As discussed below, EPA's decision whether to issue a CWA NPDES permit to Maher is subject to the environmental review requirements of the National Environmental Policy Act (NEPA). 42 U.S.C. § 4321 et seq., CWA section 511(c)(1), 33 U.S.C. § 1371(c)(1). The EPA prepared this Environmental Assessment (EA) in order to evaluate the environmental impacts associated with the proposed NPDES permitting action and to determine whether a finding of no significant impact is warranted or whether preparation of an environmental impact statement is necessary. NEPA § 106(b)(2), 42 U.S.C. § 4336(b)(2); 40 C.F.R. §§ 6.205(a), (b)(2).

1.1 Statutory and Regulatory Background

The Clean Water Act prohibits the discharge of "pollutants" through a "point source" into a "water of the United States" without an NPDES permit. CWA Sections 301 and 402, 33 U.S.C. §§ 1311 and 1342. In accordance with 40 C.F.R. § 122.21(l)(2)(ii), the EPA determined that the Maher Facility is a "new source." Specifically, the Facility meets the definition of a "new source" in 40 C.F.R. § 122.2, which includes any facility from which there is or may be a discharge of pollutants and which was built after the EPA issued standards of performance under section 306 of the CWA that apply to that source. The issuance of an NPDES permit to a new source is subject to environmental review pursuant to NEPA. An EA is prepared to evaluate the environmental impacts of federal action and to determine whether a finding of no significant impact is warranted or whether preparation of an environmental impact statement is necessary. NEPA § 106(b)(2), 42 U.S.C. § 4336(b)(2); 40 C.F.R. §§ 6.205(a), (b)(2).

CAFOs are prohibited from discharging manure, litter, or processing wastewater pollutants from the production area, except in compliance with the conditions of an NPDES permit. Pursuant to applicable EPA CAFO NPDES regulations at 40 C.F.R. Part 412, CAFO NPDES permits generally include effluent limitations for process wastewater discharges from the CAFO's production area and land application areas. Specifically, if precipitation causes a discharge of manure, litter, or process wastewater from a permitted CAFO, such discharge is exempt from the no-discharge limitation provided the production area was designed, constructed, operated, and maintained to contain all manure, litter, and process wastewater including the runoff and direct precipitation from a 25-year, 24-hour rainfall event. Additionally, CAFOs subject to 40 C.F.R. Part 412 that land apply manure, litter, or process wastewater, are required to implement best management practices (BMPs) for such land application.

1.2 Required Federal Consultations, Reviews, and Other Applicable Laws

The EPA is required to coordinate with other agencies, as appropriate, when making permitting decisions. **Table 1** provides a summary of these applicable laws and coordination requirements.

Additional information about the coordination and consultation processes involved with compliance with these other applicable federal laws is provided in Chapter 6 and in the Appendices of this EA.

Table 1 Other Applicable Federal Laws

	Description of the Requirement
Endangered Species Act	Section 7(a)(2) of the Endangered Species Act (ESA) requires that federal agencies, in consultation with the National Marine Fisheries Service (NMFS) and/or the U.S. Fish and Wildlife Service (FWS), ensure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species. Federal actions subject to ESA Section 7(a)(2) requirements include the issuance of permits.
National Historic Preservation Act	Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies, including EPA, to take into account the effects of an undertaking on historic properties. The implementing regulations of the NHPA can be found at 36 CFR part 800. An "undertaking," as defined at 36 CFR 800.16(y), includes projects requiring a federal permit. Therefore, the issuance of this permit constitutes an undertaking. If the proposed activity has the potential to affect historic properties, these details must be provided as part of the application packages.

1.3 Proposed Action

The EPA's proposed action is the issuance of an NPDES permit that authorizes the discharge of pollutants from the Maher CAFO into the waters of the United States in limited circumstances. A CWA permit issued to the Maher CAFO would regulate the discharge of the Facility's wastewater to waters on the Standing Rock Indian Reservation, including High Bank Creek.

1.4 Purpose and Need for the Proposed Action

The purpose and need for the EPA's proposed action to issue an NPDES permit to the Maher CAFO is to regulate the discharge of pollutants to waters of the United States, consistent with the CWA. The applicant is seeking a CWA NPDES permit authorizing the discharge of pollutants to waters of the United States, including High Bank Creek, from its existing CAFO Facility located within the exterior boundaries of the Standing Rock Indian Reservation. In the absence of EPA's approval of Tribal or state programs, the EPA issues such permits within the exterior boundaries of the Standing Rock Indian Reservation. If an NPDES permit is not issued by the EPA, the CAFO Facility could continue to operate but would not be authorized to discharge pollutants into waters of the United States. NEPA § 107(d), 42 U.S.C. § 4336a(d); CWA § 301(a), 33 U.S.C. § 1311.

The EPA received Maher's NPDES permit application on September 28, 2023. On December 6, 2023, EPA sent a letter to Maher requesting additional information related to the application. The EPA received a revised application with some additional information in response to that request on February 27, 2024. However, the February 2024 revised application did not adequately address certain requirements. The EPA worked with Maher's consultant regarding these issues and the EPA received

another revised permit application on February 17, 2025. The EPA reviewed the revised permit application and determined the permit application completed on March 4, 2025.

1.5 Site Selection

The CAFO is an existing facility. Although the configuration of the Facility may change to meet NPDES permit requirements, the EPA does not have the authority to require the general location of the Facility to change.

1.5.1 Description and Location

The Facility is located on the Standing Rock Indian Reservation near Timber Lake, South Dakota (latitude 45.504936 and longitude -101.157025). The maximum capacity of the Facility is 10,000 head of beef cattle and 3,400 yearlings. Cattle are confined to open lots within the production area from approximately October to June. Cattle are also contained within surrounding fields for grazing. There are about 6,025 acres of land under the control of the Facility that are available for applying the manure, litter, and process wastewater.

1.5.2 Surrounding Location Uses

The Facility is located in a rural area with agricultural land uses. The closest population center is Timber Lake, South Dakota, which is located approximately five miles southeast of the Facility. The population of Timber Lake, South Dakota is approximately 500.

1.5.3 Summary of Proposed Project Activities

The proposed project activities include operation of a 10,000 head maximum capacity beef cattle and 3,400 yearling lot CAFO with NPDES permit coverage. Operations are not required to cease if the NPDES permit is not issued. However, if an NPDES permit is not issued by the EPA, the CAFO Facility would not be authorized to discharge pollutants into waters of the United States.

Cattle are confined to open lots within the production area from approximately October to June. Cattle are also contained within surrounding fields for grazing. The total capacity for manure, litter, and process wastewater storage is approximately 14,062,702 gallons. There are approximately 6,025 acres of land under the control of the Facility that are available for applying manure, litter, and processing wastewater.

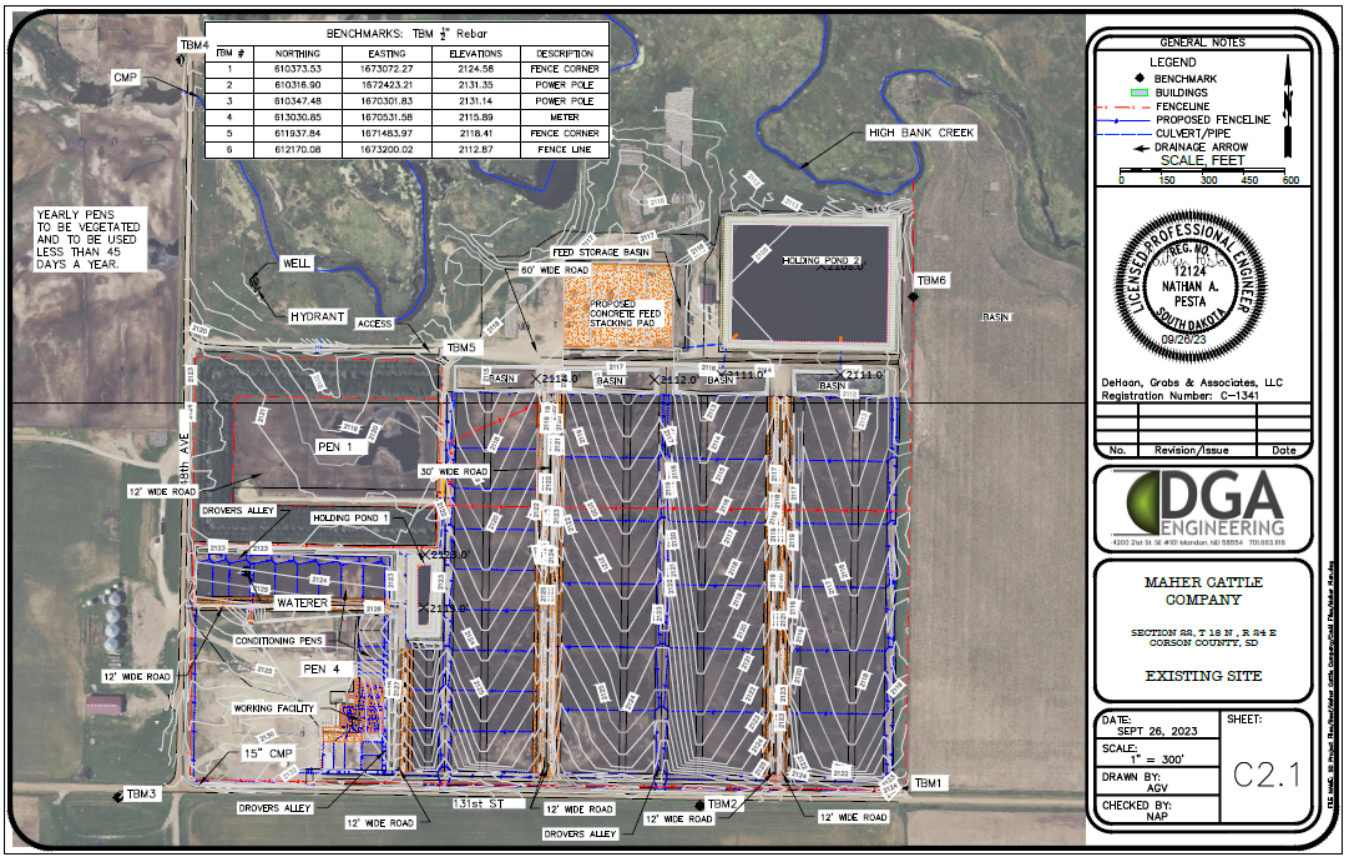


Figure 1 Facility schematic

1.6 Environmental Review Process

As discussed above, the issuance of a CWA NPDES permit to a "new source" is subject to environmental review pursuant to NEPA (42 U.S.C. § 4321 et seq.; CWA section 511(c), 33 U.S.C. § 1371). Under NEPA, ordinarily federal agencies must prepare an Environmental Impact Statement (EIS) for, *inter alia*, "major Federal actions significantly affecting the quality of the human environment…" NEPA § 102(C), 42 U.S.C. § 4332(C). An agency shall prepare an Environmental Assessment (EA) for any action that does not have a reasonably foreseeable significant effect on the quality of the human environment, or if the significance of such an effect is unknown unless the agency finds that a categorical exclusion is applicable or has decided to prepare an environmental impact statement. NEPA § 106(b)(2), 42 U.S.C. § 4336(b)(2); 40 C.F.R. § 6.205(a). The EPA determined that the Maher Facility is a "new source" under the CWA NPDES regulations (see 40 C.F.R. §§ 122.2 and 122.21(l)(2)(ii)) and is therefore subject to the requirements of NEPA consistent with CWA section 511(c), 33 U.S.C. § 1371. The EPA prepared this EA to evaluate the environmental effects of issuing the NPDES permit and to determine whether a finding of no significant impact is warranted or whether preparation of an environmental impact statement is necessary. NEPA § 106(b)(2), 42 U.S.C. § 4336(b)(2); 40 C.F.R. §§ 6.205(a), (b)(2). 40 C.F.R. §§ 122.21(l) and 124.10(c) require public notice to be provided when an NPDES new source determination has been made. In a letter dated February 26, 2024, the EPA sent a notice of the new source determination and appeal information to interested parties explaining that the issuance of an NPDES permit to the Maher Facility must comply with the EPA environmental review procedures. In preparing the EA, a scoping notice was published on May 29, 2024, that invited public input including identification of issues or impacts of concern to be considered in the Draft EA. The

public comment period for scoping ended on June 28, 2024. The EPA did not receive any comments in response to the EA scoping notice.

Consistent with NEPA and the EPA's NEPA implementing regulations at 40 C.F.R. Part 6, the Draft EA includes a discussion on the purpose and need for the proposed action, alternatives to the proposed action, the affected environment, including baseline conditions that may be impacted by the proposed action and alternatives, the environmental impacts of the proposed action and alternatives, and other applicable environmental laws and executive orders. 40 C.F.R. § 6.205(e)(1). The EA includes a listing of coordination or consultation undertaken with any federal agency, state or local government, or federally recognized Tribes regarding compliance with applicable laws and executive orders. 40 C.F.R. § 6.205(e)(2). Through the EA process, the EPA will identify and describe any mitigation measures considered, including any mitigation measures that must be adopted to ensure the action will not have significant impacts. 40 C.F.R. § 6.205(e)(3).

The EA focuses on resources that might be impacted and any environmental issues that are of public concern. 40 C.F.R. § 6.205(d). Following the public comment period on the Draft EA and the draft NPDES permit, the EPA will prepare the Final EA to address any outstanding concerns. The EPA will provide a public review period for the Final EA document that will include the proposed action based on the NEPA analysis and informed by public input. 40 C.F.R. § 6.203(b). If the EPA determines that the proposed action will not have significant effects, the EPA will concurrently prepare a finding of no significant impact (FONSI) that will be available for public review and comment for at least 30 days before the agency makes its final determination whether it is necessary to prepare an environmental impact statement (EIS) and before the proposed action can be implemented. *Id.*; 40 C.F.R. § 6.206(a). The FONSI must include the EA, or in lieu of the EA, a summary of the supporting EA that includes a brief description of the proposed action and alternatives considered in the EA, environmental factors considered, potential impacts of each alternative, and a brief description of the reasons why there are no significant impacts. 40 C.F.R. § 6.206(b). The FONSI must include any commitments to mitigation that are essential to render the impacts of the proposed action not significant. 40 C.F.R. § 6.206(c). The EPA must ensure that an applicant that has committed to mitigation possesses the authority and ability to fulfill the commitments and must ensure that the mitigation measures necessary to the FONSI determination, at a minimum, are enforceable and conduct appropriate monitoring of the mitigation measures. 40 C.F.R. §§ 6.206(d), (g). If the EA does not support a finding of no significant impact, the EPA will prepare an EIS and issue a Record of Decision (ROD) before taking the proposed action. 40 C.F.R. § 6.206(a).

40 C.F.R. § 124.10 requires the EPA to provide public notice of draft NPDES permits for at least 30 days. Pursuant to 40 C.F.R. § 124.11, any interested person may submit written comments on the draft NPDES permit. Any interested person may also request a public hearing. A request for a public hearing must state the nature of the issues proposed to be raised in the hearing. 40 C.F.R. § 124.17 requires the EPA to issue a response to comments if a final NPDES permit is issued. **Table 22** provides a summary of public and Tribal engagement.

Table 22 Public and Tribal Engagement Summary

Date	Engagement Description
April 22, 2024	The EPA sent the Standing Rock Tribe and Cheyenne River Tribe letters offering consultation and coordination for the development of a Draft Environmental Assessment and National Historic Preservation Act of 1996 (NHPA) Section 106 Review for the proposed issuance of the Maher Cattle's National Pollutant Discharge Elimination System permit. The letters listed the following as opportunities for consultation: 1. Development of the Draft EA; 2. Identification of historic properties, and as applicable, ways to avoid, minimize or mitigate potential adverse effects on these properties; 3. Finalization of the environmental review; and 4. Development of the Draft NPDES permit. The letters also sought assistance with developing a public engagement plan. The Tribal Historic Preservation Officer (THPO) for each Tribe was also provided a copy of these letters.
May 23, 2024	The EPA published a scoping notice soliciting public input regarding the development of the Draft Environmental Assessment. No public input was received.
June 13, 2024; June 17, 2024; June 18, 2024; July 2, 2024; July 8, 2024; April 14, 2025; April 16, 2025; April 24, 2025; August 7, 2025; August 11, 2025	The EPA reached out to the Standing Rock THPO on the listed dates via email and/or phone to gather information on potential historic properties such as archeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, and buildings and structures with significant Tribal association. No potential historic properties information was provided to the EPA. The EPA reached out to the Standing Rock THPO for information on culturally sensitive plant and animal species. No information has been provided on these topics. Note: The EPA reached out to the Cheyenne River THPO to seek information on potential historic properties. No information was provided.
August 14, 2024	The EPA held an in-person Tribal and NHPA 106 consultation meeting with the Tribal leadership of the Standing Rock Tribe in response to the offer sent on April 22, 2024 (above). This included an agenda item for Tribal input on Tribal treaty or similar rights, Indigenous knowledge, and/or sacred sites. While the Tribe raised concerns with people continuing to move into sacred areas on the Reservation squeezing out traditional Tribal practices, no specific concerns with sacred sites were raised in relation to the Facility. Note: The EPA reached out to representatives with the Cheyenne River Tribe after sending the offer of consultation and coordination on April 22, 2024. The Cheyenne River Tribe did not request consultation.
May 22, 2025 June 2, 2025	The EPA and the Standing Rock Tribe leadership exchanged information regarding community meetings and input from the Tribe.

June 3, 2025	
July 7, 2025	The EPA held a virtual Tribal consultation meeting with the Tribal leadership of the Standing Rock Tribe to discuss the community meetings and further discuss input from the Tribe (EPA, 2025).
July 31, 2025	The EPA met in-person with Dr. Mafany Mongoh, Institutional Review Board Chair and professor at Sitting Bull College. Dr. Mongoh shared information on culturally sensitive species, Tribal knowledge, and referred the EPA to the THPO contact for more information about historic properties.
July 30 and 31, 2025	The EPA held two community meetings on the Standing Rock Reservation, one at the Grand River Casino and one at Sitting Bull College. The purpose of the meetings was to educate the community about (1) EPA's role in regulating the Maher Cattle Feedlot, which is a large, concentrated animal feeding operation (CAFO) on the reservation, and (2) how to submit effective comments on a Draft NPDES permit and Draft EA regarding the Facility. Approximately 40 people attended the two meetings, representing Tribal government staff and the communities surrounding Maher Cattle. They included neighbors of the Facility, outside legal counsel for the Tribe, one member of Tribal Council, a professor at Sitting Bull College, a visiting member of the Oglala Sioux Tribe, and Tribal staff from the water resources, environmental, land management and communications departments.
August 26, 2025	The Draft Environmental Assessment and Draft NPDES permit were concurrently public noticed for public input.

1.7 Documents incorporated by reference

In accordance with 40 C.F.R. § 6.200(f), the EPA incorporates by reference the following for this EA:

- 40 CFR Part 6 – *Procedures for Implementing the National Environmental Policy Act and Assessing the Environmental Effects Abroad of EPA Actions.*
- 40 CFR Part 122—*EPA Administered Permit Programs: The National Pollutant Discharge Elimination System*
- 40 CFR Part 412— *Concentrated Animal Feeding Operations (CAFO) Point Source Category*

2 Alternatives

2.1 Alternatives Considered

The EPA is considering three alternatives for the NPDES permit in this EA. 40 C.F.R. 6.205(e)(1)(ii). Alternatives considered include the following: a no action alternative (Alternative 1), issuance of an NPDES permit for the Facility (Alternative 2), and issuance of an NPDES permit with voluntary best management practices (Alternative 3).

2.1.1 Alternative 1 – No Action

Under this alternative, the EPA would not issue an NPDES permit. The effects of the no action alternative are that the Facility could continue to operate and would not be authorized to discharge. Under this alternative, NPDES requirements that reduce impacts in the event of a discharge of pollutants to waters of the U.S. would not be imposed through a permit issued by the EPA. As long as the Facility designs and operates in a way that prevents all discharges, this alternative is in accordance with Section 301(a) of the Clean Water Act, which prohibits the discharge of any pollutant from the Facility without authorization through an NPDES permit.

2.1.2 Alternative 2 – Issuance of NPDES Permit

Under Alternative 2, the EPA would issue an NPDES permit to the Facility for discharges of pollutants into waters of the U.S. An NPDES permit issued in accordance with 40 C.F.R. Parts 122 and 412 would include requirements such as:

- Weekly inspections of stormwater diversion devices, channels, manure storage areas, and containment structures;
- Construction of manure holding lagoons that meet U.S. Department of Agriculture Natural Resources Conservation Service engineering requirements;
- Weekly inspections of manure holding lagoons;
- Measurement of manure depth in holding lagoons and maintenance of adequate freeboard to prevent overflows;
- Maintenance of a rain gauge on site with logs of measurable rainfall;
- Isolation of animal containment areas from stormwater run-on from outside surface drainage;
- Proper disposal of mortalities such that they do not contaminate surface waters;
- Prohibition of animals from coming into direct contact with surface water;
- Requirements for holding pens to be constructed outside the 100-year flood plain;
- Required best management practices (BMPs) for land application including:
    - Development and implementation of a nutrient management plan, which requires manure be applied at an agronomic rate with soil sampling for supporting data,
    - Inspections of land application equipment for leaks,
    - Not applying during frozen or saturated soil conditions,
    - Implementation of setbacks, buffers and other controls to prevent runoff from fields bordering receiving waters, and
    - Monitoring for any discharges during land application;
- Reporting any discharges to the EPA, and also to the Tribe; and
- Annual reporting to the EPA and to the Tribe.

2.1.3 Alternative 3 – Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

Under Alternative 3, the EPA would issue an NPDES permit to the Facility as described in Alternative 2 above. Additionally, Maher would implement additional voluntary BMPs listed in the Natural Resources Conservation Service (NRCS) National Conservation Practice Standard for Prescribed Grazing (Code 528). This NRCS standard is also included in paragraph 40 of the Administrative Compliance Order on Consent agreed to by the EPA and Maher and effective May 7, 2024 (Docket No. CWA-08-

2024-0005). This NRCS Conservation Practice Standard is included in Appendix A, and the Administrative Compliance Order on Consent is included in Appendix B.

This alternative complies with the statutory requirements of the CWA through the issuance of an NPDES permit and provides additional environmental benefits through the implementation by Maher of the NRCS voluntary BMPs. The voluntary BMPs from this NRCS Conservation Practice Standard can be used to manage vegetation with grazing and/or browsing animals to achieve specific ecological, economic and management objectives. As stated in the NRCS Conservation Practice Standard, the use of this practice can accomplish one or more of the following purposes:

- Improve or maintain desirable species composition, structure, productivity, health and/or vigor of plants and plant communities;
- Improve or maintain the quantity, quality, and/or balance of forages to meet the nutritional needs and ensure the health and performance of grazing and browsing animals;
- Reduce or eliminate the transportation of sediment, nutrients, pathogens, or chemicals to surface and/or groundwater;
- Improve or maintain upland hydrology, riparian dynamics, or watershed function to reduce surface or groundwater depletion and improve naturally available moisture;
- Improve or maintain soil health components and indicators, such as soil organic matter, soil aggregate stability, soil organism habitat, or increase infiltration and water holding capacity, reduce runoff and compaction;
- Prevent or reduce sheet, rill, classic gully, ephemeral gully, bank, and wind erosion;
- Improve or maintain terrestrial habitat for wildlife and invertebrates and/or aquatic habitat for fish and other organisms;
- Manage biomass accumulation for the desired fuel load to reduce wildfire risk or to facilitate prescribed burning; and/or
- Reduce plant pest pressure from invasive and/or undesirable plants and other pests as part of an integrated plan.

2.2 Alternatives Considered but Eliminated from Detailed Study

As a potential alternative to the proposed action, the EPA considered whether an alternative site for the Facility was appropriate. However, as discussed in Section *1.5 Site Selection*, the CAFO is an existing facility. Although the configuration of the Facility may change to meet NPDES permit requirements, the EPA does not have the authority under the NPDES program to require the general location of the Facility to change. Therefore, the EPA eliminated an alternative that included an alternative site from consideration and the alternative was not carried forward for analysis in this EA.

3 Affected Environment

3.1 Introduction

This chapter describes the existing environment potentially affected by the proposed action through issuance of an NPDES permit. 40 C.F.R. § 6.205(e)(1)(iii). The current status of each potentially affected resource is discussed below, as follows: physical resources (Section 3.2), biological resources (Section 3.3), culturally significant plant and animal species (Section 3.4), and social and economic environment

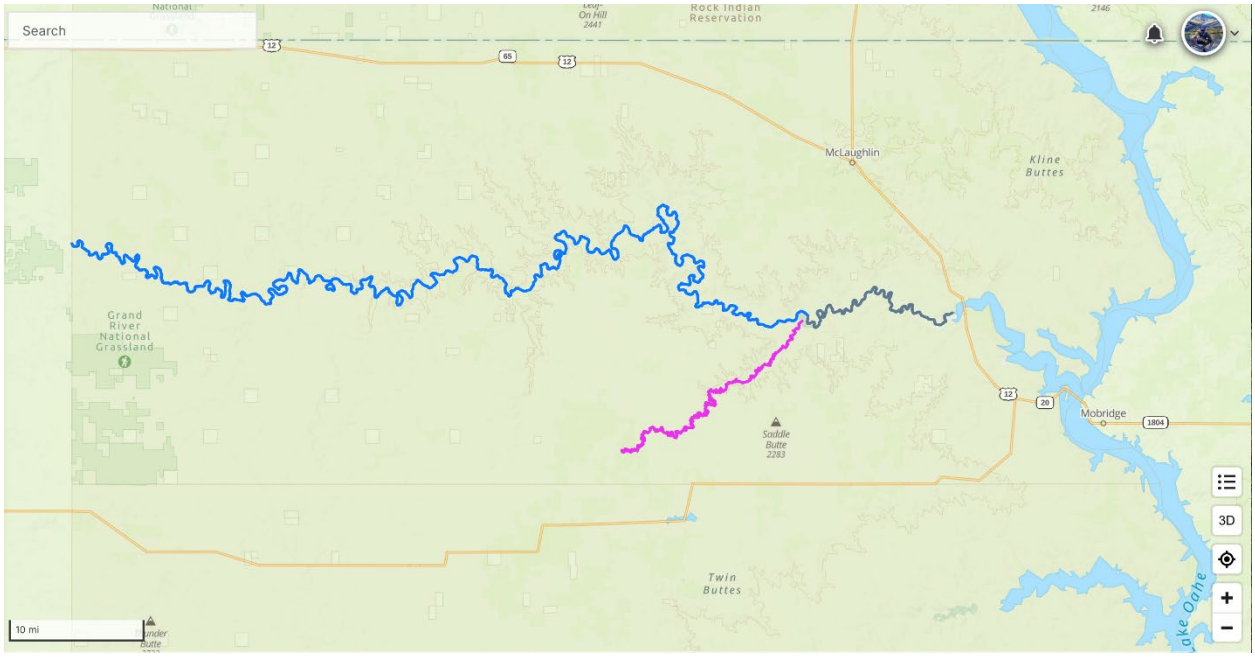
(Section 3.5). This chapter describes the potentially affected resources prior to the proposed action as a point of comparison for evaluating the consequences or impacts resulting from the proposed action. Consistent with 40 C.F.R. § 6.205(d), resources that are not expected to be impacted by the proposed action are not discussed in this chapter and therefore are not carried forward for analysis.

3.2 Physical Resources

3.2.1 Water Resources

High Bank Creek flows through the Facility then downstream approximately 35 stream miles to the Grand River. This is an estimate as High Bank Creek is highly sinuous through this reach. From the confluence with High Bank Creek, the Grand River flows approximately 35 stream miles to the Missouri River/Lake Oahe, which forms the boundary between the Standing Rock Reservation and state of South Dakota. The Grand River flows from the state of South Dakota onto the Standing Rock Reservation approximately 112 stream miles upstream of the confluence with High Bank Creek (**Figure 2)**.

Figure 2 Map depicting High Bank Creek below the Facility (purple), the Grand River from the Standing Rock Sioux boundary to its confluence with High Bank Creek (blue), and the Grand River from its confluence with High Bank Creek to the Missouri River/Lake Oahe



Animal manure from CAFOs can impact water quality by increasing nutrient concentrations (total phosphorus, total nitrogen), causing excess algal growth, reduced water clarity, reducing dissolved oxygen concentrations, increasing pathogens (*E. coli*) and contributing to potential ammonia toxicity (Burkholder et al. 2007). Water quality impacts are more likely to occur when the cattle holding pens and/or their manure piles are located in close proximity to a waterbody (i.e., stream, lake/reservoir) or if large number of cattle have access to the stream.

Excess amounts of nutrients from the manure or applied as fertilizer for crops can cause excess algal growth, which can result in swings in dissolved oxygen (DO) concentrations or low DO concentrations (Suplee, 2019).[1] Lower DO concentrations can impact the aquatic life (fish or macroinvertebrates) living in the stream, sometimes resulting in fish kills. Excess nutrients can also contribute to an overabundance of macrophytes (submerged aquatic plants) or changes to the mussel, macroinvertebrate or fish communities due to changes in food resources. For example, manure contains high levels of ammonia[2] which can be toxic to freshwater mussels,[3] snails[4] and fish.[5] Manure from cattle can also contribute to elevated *E. coli* concentrations. *E. coli* is an indicator used to indicate the presence of disease-causing bacteria which may impact human health when ingested.

Other possible impacts include bank erosion from cattle trampling the stream bank; increasing turbidity or total suspended solids (TSS) concentrations related to bank erosion; changes to the riparian vegetation due to grazing pressure and trampling.

A search for water quality data within approximately 75-80 stream-miles of the Facility was conducted using the Water Quality Portal (WQP) tool. The WQP is a cooperative service sponsored by the United States Geological Survey (USGS) and the EPA. The WQP integrates publicly available water quality data from the USGS National Water Information System and the EPA Water Quality Exchange Data Warehouse. Water quality data for pollutants expected to be impacted by CAFO operations was found in four general locations. These pollutants included dissolved oxygen, ammonia, nutrients (total Kjeldahl nitrogen, nitrate + nitrite, phosphate phosphorus, and total phosphorus), and TSS. Locations included a single location on High Bank Creek below the Facility, one location on the Grand River below High Bank Creek, and two locations on the Grand River above High Bank Creek. No stream flow data was available on High Bank Creek. A summary of this water quality data is provided in **Tables 3-6**. The data is highly variable and increases in pollutant concentrations on this scale would be difficult to attribute to any single source. The landscape is predominately agricultural.

Table 3 High Bank Creek water quality data approximately 22 miles downstream of Facility at latitude 45.5879, longitude -100.965

Parameter	# of Samples	Years	Result Range[1]
Ammonia (mg/L)	4	2016	ND - 0.2
Dissolved Oxygen (mg/L)	7	2016, 2020	6.7 - 9.6
E. Coli (*#/100 mL*)	5	2016, 2019	ND - 1733
Total Kjeldahl nitrogen (mg/L)	---	---	---
Nitrate + Nitrite (mg/L)	5	2016, 2019	ND - 0.2
Phosphate phosphorus (mg/L)	---	---	---

[1] https://onlinelibrary.wiley.com/doi/epdf/10.1111/1752-1688.12736
[2] https://www.sciencedirect.com/science/article/pii/S0022030223006367
[3] https://pmc.ncbi.nlm.nih.gov/articles/PMC8220997/
[4] https://pubmed.ncbi.nlm.nih.gov/12719828/
[5] https://www.sciencedirect.com/science/article/abs/pii/004313546790019X

Total phosphorus (mg/L)	5	2016, 2019	ND - 0.3
TSS (mg/L)	4	2016	2 - 190

1. ND = less than the analytical detection limit

Table 4 Grand River water quality data approximately 55 miles above confluence with High Bank Creek at State Highway 65 at latitude 45.6877, longitude -101.340

Parameter	# of Samples	Year Range	Result Range[1]
Ammonia (mg/L)	30	2015-2023	ND - 5.2
Dissolved Oxygen (mg/L)	42	2016 - 2023	6.9 - 15.7
E. Coli (*#/100 mL*)	30	2015 - 2023	ND - 1570
Total Kjeldahl nitrogen (mg/L)	22	2015 - 2021	ND - 1.64
Nitrate + Nitrite (mg/L)	41	2015 - 2023	ND - 3.1
Phosphate phosphorus (mg/L)	10	2015 - 2017	0.03 - 2.76
Total phosphorus (mg/L)	31	2015 - 2023	ND - 0.9
TSS (mg/L)	40	2015 - 2023	4 - 5548

1. ND = less than the analytical detection limit

Table 5 Grand River water quality data approximately 17 miles above confluence with High Bank Creek near Bullhead at latitude 45.7596, longitude -101.079

Parameter	# of Samples	Year Range	Result Range[1]
Ammonia (mg/L)	9	2015-2023	ND - 0.1
Dissolved Oxygen (mg/L)	11	2016 - 2023	7.1 - 9.5
E. Coli (*#/100 mL*)	9	2015 - 2023	ND - 649
Total Kjeldahl nitrogen (mg/L)	---	---	---
Nitrate + Nitrite (mg/L)	9	2015 - 2023	ND - 0.4
Phosphate phosphorus (mg/L)	---	---	---
Total phosphorus (mg/L)	9	2015 - 2023	ND - 0.4
TSS (mg/L)	9	2015 - 2023	34 - 2050

1. ND = less than the analytical detection limit

Table 6 Grand River water quality data approximately 6.5 miles below confluence with High Bank Creek near Little Eagle near latitude 45.6579, longitude, longitude -100.818

Parameter	# of Samples	Year Range	Result Range[1]
Ammonia (mg/L)	58	2015 - 2023	ND - 0.20
Dissolved Oxygen (mg/L)	95	2015 - 2023	6.6 - 18.4
E. coli (*#/100 mL*)	48	2015 - 2023	ND - 3450
Total Kjeldahl nitrogen (mg/L)	70	2015 - 2021	ND - 3.27
Nitrate + Nitrite (mg/L)	92	2015 - 2023	ND - 13.6
Phosphate phosphorus (mg/L)	34	2015 - 2017	0.04 - 3.12
Total phosphorus (mg/L)	59	2015 - 2023	ND - 0.97
TSS (mg/L)	92	2015 - 2023	5 - 6033

1. ND = less than the analytical detection limit

During a July 14, 2022, inspection (**Appendix C**), inspectors from the EPA observed that animal holding pens had been constructed such that High Bank Creek ran through them. The compliance sampling inspection report states, "A [Maher] facility representative indicated that around 600-700 cow/calf pairs are confined to pens approximately 2 miles southwest of the feedlot for around 15-100 days prior to going to fields for grazing" (**Appendix D**). These cow/calf pairs were housed in holding pens as a separate facility from the Maher Facility. The EPA collected water samples around the Maher Facility: upstream of the holding pens, within the holding pens (i.e., discharge point), and downstream of the holding pens in a sampling inspection June 27, 2023. The EPA also collected samples upstream and downstream of the other facility, both of which were upstream of the Maher Facility. The sampling locations are listed in **Table 7**. Samples were analyzed for nutrients (ammonia, nitrite, nitrate-nitrite, total Kjeldahl nitrogen (TKN), and total phosphorus (TP)), biochemical oxygen demand (BOD), TSS, and *E. coli*. Sample locations are listed in **Table 7** and sample results are shown in **Table 8**.

Table 7 2023 High Bank Creek sampling locations

Site ID	Name	Latitude	Longitude	Description
UP1	Upstream 1	45.49425°	-101.19785°	High Bank Creek upstream of Maher and cow calf holding pens
UP2	Upstream 2	45.50381°	-101.19163°	High Bank Creek upstream of Maher, but downstream of cow calf holding pens
UP3	Upstream 3	45.50399°	-101.17428°	High Bank Creek upstream of Maher, but downstream of cow calf holding pens
DP	Discharge Point	45.50846°	-101.16197°	Discharge point from the yearling pens into High Bank Creek

DP2	Discharge Point Duplicate	45.50846°	-101.16197°	Discharge point from the yearling pens into High Bank Creek
DS1	Downstream 1	45.50782°	-101.15308°	High Bank Creek downstream of Maher discharge point
DS2	Downstream 2	45.50937°	-101.14108°	High Bank Creek downstream of Maher discharge point
DS3	Downstream 3	45.51625°	-101.13033°	High Bank Creek downstream of Maher discharge point

Table 8 2023 High Bank Creek sample results

Pollutant	**Upstream 1**	**Upstream 2**	**Upstream 3**	**Discharge Point**	**Discharge Point Duplicate**	**Downstream 1**	**Downstream 2**	**Downstream 3**
Ammonia (mg/L)	<0.2	0.40	0.38	0.44	0.42	0.48	0.37	0.51
Nitrite (mg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Nitrate-Nitrite (mg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
TKN (mg/L)	<5.0	<5.0	5.38	5.36	5.43	5.90	6.18	6.73
TP (mg/L)	0.35	1.05	1.32	1.59	1.51	1.67	1.87	2.28
BOD_5 (mg/L)	5.22	4.90	6.32	5.38	5.78	6.65	7.61	8.24
TSS (mg/L)	12	6	11	13	11	5	9	4
***E. coli* (MPN/100 mL)**	14.6	770.1	1046.2	>2419.6	>2419.6	>2419.6	>2419.6	>2419.6

Sampling results showed:

- Slight increases in ammonia and BOD_5 downstream compared to upstream. Ammonia concentrations were as low as below detection (<0.2 mg/L) at one upstream location to as high as 0.51 mg/L at one downstream location. BOD_5 concentrations were as low as 4.90 mg/L at one upstream location and as high as 8.24 mg/L at one downstream location.
- Increases in TKN and TP concentrations downstream compared to upstream. TKN was as low as below detection (<0.5 mg/L) at two upstream locations and as high as 6.73 at one downstream location. TP was as low as 0.35 mg/L at one upstream location and as high as 2.28 mg/L at one downstream location;

- *E. Coli* increased from upstream to downstream with a range from 14.6 colony forming units cfu/100 mL at one upstream location (upstream 1, upstream of the separate cow/calf operation), to 770 and 1046 cfu/100 mL (upstream 2 and 3, both downstream of the separate cow/calf pairs operation and upstream of Maher), to exceeding the upper quantification limit of 2,419 cfu/100 mL at the discharge point and all locations downstream of Maher; and
- TSS concentrations generally decreased from upstream to downstream ranging from 12 mg/L to 4 mg/L TSS.

These data show elevated concentrations for *E. coli*, BOD and nutrients (i.e., TKN and TP) associated with impacts from holding pens at the separate facility and further elevated concentrations associated with the discharge from the Facility. *E. coli* concentrations (capped at the upper quantification limit) exceeded the EPA's recommended recreational water quality criteria for *E. coli* of 410 cfu/100 mL. Total nitrogen and total phosphorus concentrations exceeded the EPA's recommended nutrient criteria of 0.023 mg/L total nitrogen and 0.56 mg/L total phosphorus for rivers and streams in the Great Plains Grass and Shrublands ecoregion where the Facility is located.

Field measurements for dissolved oxygen, pH, temperature, turbidity, or conductivity were not collected by the EPA. Therefore, impacts associated with those parameters during an observed discharge cannot be evaluated at this time. No measures of aquatic life use (e.g., macroinvertebrate, fish) were collected by the EPA.

Photos collected during the EPA's 2023 sampling event show visual evidence of increased algal cover from upstream to downstream and the stream flowing through the calf holding pens with a lack of fencing (see Figures 3, 4, and 5).

Figure 3 Photo above separate cow/calf operation and upstream of Facility at Upstream 1 sampling location

Figure 4 Photo of High Bank Creek flowing through yearling pens

Figure 5 Photo above Downstream 2 sampling location downstream of Facility

3.2.2 Air Quality

The Clean Air Act (CAA) requires the EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants (criteria air pollutants) to protect human health and welfare (EPA, 2018a). NAAQS have been designated for these seven criteria pollutants: carbon monoxide (CO), ozone, sulfur dioxide (SO_2), oxides of nitrogen measured as nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM_{10}), particulate matter with an aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$), and lead (EPA, 2018c). The EPA is required to designate areas that meet (attainment) or do not meet (nonattainment) these seven NAAQS to ensure compliance with air quality standards. For those areas in nonattainment with NAAQS, the states are required to develop a specific plan to achieve attainment for all standards responsible for an area's nonattainment status if designated moderate nonattainment or higher, or for maintenance areas (maintenance plans) (EPA, 2018b).

South Dakota's ambient air quality monitoring network for PM_{10} has historically demonstrated attainment of EPA standards for both particulate matter pollutants: PM_{10} and $PM_{2.5}$ (see, 40 CFR § 81.342; and South Dakota Department of Agriculture and Natural Resources, 2024). The area is currently in attainment for all NAAQS. However, neither Timber Lake, South Dakota nor Dewey County, SD have fixed air quality monitoring stations. There is available air quality data collected by the cities of Pierre at approximately 134 miles away and Aberdeen at 146 miles away from the Facility. For $PM_{2.5}$ the Pierre monitoring site 2021-2023 24-hour design value concentration is 20 µg/m^3 compared to the NAAQS of 35 µg/m^3 (South Dakota Department of Agriculture and Natural Resources, 2024, pp. 26-29). The Pierre monitoring site $PM_{2.5}$ annual design value for 2021-2023 is 3.6 µg/m^3 as compared to the NAAQS of 9 µg/m^3. The Pierre monitoring site does not collect PM_{10} specific data. The city of Aberdeen opened a bus stop continuous monitoring station for $PM_{2.5}$ and PM_{10}. The Aberdeen 2021-2023 24-hour $PM_{2.5}$ design value is 27 µg/m^3 as compared to the NAAQS of 35 µg/m^3. The 2021-2023 annual $PM_{2.5}$ design value for the Aberdeen monitor is 6 µg/m^3 as compared to the NAAQS of 9 µg/m3 (South Dakota Department of Agriculture and Natural Resources, 2024, pp. 26-29). With regard to PM_{10}, the design value is a measure of the number of exceedances averaged over a three-year period and thus does not provide direct background concentration. To understand the background concentration for PM_{10} it is necessary to apply a statistical approach consistent with the prior form of the PM_{10} NAAQS as the 99th percentile concentration averaged over the latest three-year period (the 99th percentile is equivalent to the high-fourth-high monitored value). The 2021-2023 three-year average of the high-fourth-high 24-hour PM_{10} concentrations at the Aberdeen monitoring site is as follows: (89 + 98 + 75)/3 = 87.3 µg/m^3 as compared to the 24-hour PM_{10} NAAQS of 150 µg/m^3.

Some community-science efforts to monitor air quality levels, specifically for $PM_{2.5}$ are present in Timber Lake, SD and posted on the Purple Air website platform (PurpleAir, 2025). Additionally, the Standing Rock Reservation Tribal members have voiced concerns about nuisance odor issues around McLaughlin, SD related to another CAFO. The EPA is collaborating with Tribal staff with regard to initiating air quality monitoring efforts in the area.

CAFO activities such as manure management and land application (off-site transport and/or onsite treatment) can generate air releases, including ammonia, greenhouse gases, hydrogen sulfide, and certain criteria air pollutants. Emission occurrence may vary depending on the type of animals at the facility, housing confinement areas, weather conditions, and type of waste management system. The primary component of animal waste is nitrogen, which is released into the air as ammonia.

Additionally, some waste management techniques may release more air emissions. For instance, deep-pit systems emit more ammonia due to the waste remaining in the area for a longer period (EPA, 2002).

Animal waste produces greenhouse gases such as methane and nitrous oxide. The rate of emissions may vary depending on different factors such as the waste management technique, the amount and quality of waste, as well as temperature and moisture of the waste (EPA, 2002). Notably, certain livestock, including beef cattle, may produce more methane depending on their diet.

Land application practices primarily release ammonia, but this may depend on the volatilization of ammonia, as well as the quantity of manure applied.

Criteria air pollutant emissions may occur from CAFOs use of vehicles to either transport waste off-site and/or use vehicular equipment to compost onsite (EPA, 2002). However, onsite composting may result in less emissions (dependent on quantity of material being composted) when compared to off-site transport.

3.2.3 Noise Environment

The Facility is currently in operation, and the current noise is due mainly to truck traffic. Truck noise increases when cattle are transported to and from the Facility as they are bought and sold. The volume is variable depending on the number of cattle and typically occurs during the winter.

3.2.4 Weather Events

Though weather patterns vary considerably depending on geography, much of the country, including South Dakota, is susceptible to multiple threats from extreme weather events, such as alternate flooding and drought (Rahat et. al., 2024). From 1980 to 2024, South Dakota was impacted by 13 drought events and five flooding events that had losses of more than $1 billion (NOAA, 2024). Both flooding and drought have the potential to mobilize contaminants in waterbodies. Contaminants in creeks and riverbeds may be re-suspended and transported by heavy rain events, which may pose a threat to nearby sources of drinking water and impact local soil quality. Drought exacerbates poor water quality, and in cases of extreme drought, creek beds may dry out. Soil and associated contaminants that were previously in bodies of water can become airborne as dust particles, and local populations may be exposed through inhalation. Dust inhalation is associated with health effects such as asthma and Valley fever (Tong et. al., 2023).

3.3 Biological Resources

Biological resources refer to plant and animal communities and associated habitat that they comprise or, that provides important support to critical life stages. This section focuses primarily on the biological resources that are found in the Northwestern Great Plains ecoregion and may be found in Corson County, South Dakota, the location of the proposed project. The following sub-sections provide a discussion on the biological resources that may be found in the project area, including mammals, birds, fish, and invertebrates.

The project area is in the Northwestern Great Plains ecoregion, which encompasses the Missouri Plateau section of the Great Plains (Omernik et al., 2014). This area is comprised of semiarid rolling plains of shale and sandstone derived soils with occasional buttes and badlands. The landscape in the Northwestern Great Plains was largely unaffected by continental glaciation and retains its original soils and complex stream drainage patterns. Today's land uses are frequently dedicated to cattle grazing and spring wheat and alfalfa farming and have replaced native herds of bison (*Bison bison*), pronghorn (*Antilocapra americana*), and elk (*Cervus canadensis*) grazing locations on the shortgrass prairie. Agriculture in the Northwestern Great Plains is limited by erratic precipitation patterns and limited opportunities for irrigation.

Impacts to biological resources associated with the Facility's current operational practices are a function of associated pollutants discharged into the receiving waters. During the EPA's July 14, 2022, inspection and June 27, 2023, sampling inspection, EPA inspectors observed unauthorized discharges to High Bank Creek, insufficient safeguards to protect High Bank Creek from wastewater originating from the yearling pens, and the placement of yearling pens themselves located around and inside High Bank Creek. The sample results from the 2023 sampling inspection are discussed in Section 3.2.1, above. The EPA's national recommended water quality criteria for total phosphorus in rivers and streams in ecoregion IV is 0.023 mg/L. While recommended total phosphorus criteria were exceeded at the locations both upstream and downstream of the Facility, the concentrations also increased at each subsequent sample location in a downstream direction. EPA's national recommended water quality criteria for total nitrogen in rivers and streams in ecoregion IV is 0.56 mg/L. Total nitrogen exceeded the recommended criteria at each of the sample locations downstream of the Facility.

3.3.1 Mammals

The Northwestern Great Plains of South Dakota are home to a unique assemblage of large and small mammalian species. Large ungulates species such as bison, pronghorn, and mule deer (*Odocoileus hemionus*) can be found roaming the plains, while some of the more common smaller mammalian species found in this ecoregion include coyotes (*Canis latrans*), black-tailed prairie dog (*Cynomys ludovicianus*), black-footed ferret (*Mustela nigripes*). While multiple fox and bat species can also be found in the Northwestern Great Plains, they are more commonly found in and adjacent to wooded areas and are less common in the open plains (SDDGFP, 2012).

Mammalian species protected by the ESA that may be found in Corson County, as reported by FWS's Information for Planning and Conservation (IPaC) website (https://ecos.fws.gov/ipac/), include the northern long-eared bat (*Myotis septentrionalis*). The northern long-eared bat is an endangered species that is in danger of extinction throughout all or a significant portion of its range (FWS, 2022). The northern long-eared bat has medium to dark brown fur and adults weigh approximately 5 to 8 grams and are 3.0 to 3.7 inches in length. The species range includes much of the eastern and north-central, United States. Northern long-eared bat populations require a matrix of interconnected habitats that support seasonal life history requirements and typically have a migratory range of no more than 55 miles between winter and summer grounds. Winter hibernacula typically include mines and/or caves, while summer roosting sites include cavities or crevices of live trees and snags, and to a lesser extent they can be found in suitable human-made features. Foraging typically occurs in the understory (i.e., above ground, but under tree canopy) of mixed-type forested hillsides, with moths and beetles comprising the primary prey insects for northern long-eared bats.

3.3.2 Birds

An abundance of bird species can be found in the Northwestern Great Plains. More common plains bird species include the western meadowlark (*Sturnella neglecta*), dickcissel (*Spiza americana*), bobolink (*Dolichonyx oryzivorus*), grasshopper sparrow (*Ammodramus savannarum*), prairie-chicken (*Tympanuchus cupido*), ferruginous hawk (*Buteo regalis*), and burrowing owl (*Athene cunicularia*).

Bird species protected by the ESA that may be found in Corson County, as reported by FWS's IPaC website, include piping plover (*Charadrius melodus*), rufa red knot (*Calidris canutus rufa*), and whooping crane (*Grus americana*).

Piping plovers are grouped by population and are located along the Atlantic Coast, the Northern Great Plains, and the Great Lakes. The population located along the Atlantic Coast and Northern Great Plains are listed as threatened and likely to become endangered within the foreseeable future throughout all or a significant portion of its range (FWS, 2015). A separate population located in the Great Lakes watershed is listed as endangered. The population that may occur within the project area is the Northern Great Plains population. Piping plovers are small shorebirds that measure about 7 inches in length. They have pale brown backs with a lighter brown breast and during the breeding season they develop black bands across their forehead and another across their breast. During breeding season, the Northern Great Plains piping plovers breed and raise young on vegetated sandbars and shorelines of river systems and alkaline lakes. Wintering ground habitat consists of barrier and mainland beaches, sand, mud, and algal flats, washover passes, salt marshes, and coastal lagoons. The piping plover diet consists of a diverse range of invertebrates based on availability associated with foraging location and seasonal invertebrate abundance.

Rufa red knot is a threatened species that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range (FWS, 2020). The rufa red knot is a medium-sized shorebird about 9 to 11 inches. The rufa red knot has brick red or salmon red plumage on its breast, with whitish feathers on its lower belly and tail. The plumage on the wings and back are dark brown with white striations and red edges. The rufa red knot migrates annually between its breeding grounds in the central Canadian Arctic and four wintering regions that span from the Southeast United States to the southern tip of South America. Birds from different wintering populations have differing migration strategies and destinations. The rufa red knot diet ranges from invertebrates to vegetation and is dependent on seasonal availability and whether the birds are at the breeding grounds or along migratory routes.

The whooping crane is an endangered species that is in danger of extinction throughout all or a significant portion of its range (FWS, 2024c). The whooping crane stands up to 5 feet tall and the adult plumage is snowy white, with black or grayish feathers on the end of their wings, along their jaw, and a patch on their nape. The whooping crane is a bi-annual migrant, traveling between summer habitats in central Canada, and wintering grounds along the Texas coast. The whooping crane breeds, migrates, winters, and forages in a variety of wetland and other habitats, including coastal marshes and estuaries, inland marshes, lakes, ponds, wet meadows and rivers, and agricultural fields. Whooping cranes are omnivorous and are often found foraging for terrestrial and aquatic invertebrates, frogs, rodents, small birds, minnows, berries, and agricultural grains.

3.3.3 Fish

There are a wide range of native fish species in the Northern Great Plains ecoregion, with the minnow family (Cyprinidae) being the most diverse species native to the region. Other species-rich families include suckers (Catostomidae), catfish (Ictaluridae), perch (Percidae), and sunfish (Centrarchidae). The fathead minnow (*Pimephales promelas*), sand shiner (*Notropis stramineus*), and red shiner (*Cyprinella lutrensis*) are some of the most widespread species in this ecoregion (UNL 2011a).

3.3.4 Invertebrates

Most insect groups are represented on the Northern Great Plains, with the insect orders Orthoptera (grasshoppers and crickets), Hemiptera (true bugs, various insects with sucking mouthparts), Diptera (true flies), Coleoptera (beetles), Lepidoptera (butterflies and moths), and Hymenoptera (ants, bees, and wasps) being some of the more common orders (UNL, 2011b).

There are no threatened or endangered invertebrate species in Corson County, as reported by FWS's IPaC website, however, there are three species listed as either proposed threatened or proposed endangered. The invertebrate species that are listed as proposed threatened and may be found in Corson County include the monarch butterfly (*Danaus plexippus*) and the western regal fritillary (*Argynnis idalia occidentalis*). The Suckley's cuckoo bumble bee (*Bombus suckleyi*) is listed as proposed endangered and may be found in Corson County. While these species are reported in Corson County, South Dakota, they are not likely to be found in the area of the Facility due to an absence of habitat for each of the respective species.

Monarch butterfly (*Danaus plexippus*) is proposed threatened for the endangered species list and may be found in Corson County. The monarch butterfly, while found on multiple continents, is grouped into an eastern and western population in North America with the eastern population overwintering in Mexico and the western population overwintering at sites in California and the Baja California. During the breeding season, the monarch will lay eggs on the milkweed host plant. Monarch larvae emerge after two to five days and develop over a period of 9 to 18 days. The monarch larva then pupates into a chrysalis before emerging 6 to 14 days later as an adult butterfly. Adult monarchs are large and conspicuous, with orange wings surrounded by a black border and lined with black veins. The black border has a double row of white spots, present on the upper side of the wings. There are multiple generations of monarchs produced during the breeding season, with most adults living approximately two to five weeks. Overwintering adults migrate to the wintering grounds and live six to nine months. The same adults that migrate to the wintering grounds also return to the breeding grounds before beginning the return migration.

Western regal fritillary (*Argynnis idalia occidentalis*) is proposed threatened for the endangered species list and may be found in Corson County. The regal fritillary is a large, nonmigratory butterfly. Adults have dorsal orange forewings and dark hindwings that feature black bars, fine white markings, and two rows of large spots at the base of the wings. Adult wingspans range from approximately 2.5 to 4.0 inches. The western regal fritillary has one generation late summer to early fall. Females lay eggs that hatch into larvae within 2 to 3 weeks, and the larvae overwinter in nearby grassland vegetation before emerging in early spring to search for violets, their only food source. Larvae pupate in the leaf litter and

emerge as adults beginning in midsummer. Males live for approximately 5 weeks and females live for 10 weeks (FWS, 2024a).

Suckley's cuckoo bumble bee (*Bombus suckleyi*) is proposed endangered for the endangered species list and may be found in Corson County. The Suckley's cuckoo bumble bee is an obligate social parasite of bumble bees in the genus *Bombus* (FWS, 2024c). Female Suckley's cuckoo bumble bees overtake the nest of a suitable host colony after the first emergence of workers. The female Suckley's cuckoo bumble bee then removes the host queen, any existing larvae, and replaces host eggs with her own eggs. The host colony workers then tend to rear and the usurper's offspring. As an obligate social parasite, Suckley's cuckoo bumble bees are dependent on the host species and do not produce a worker caste, produce wax, or collect pollen. As a result, the hind legs of Suckley's cuckoo bumble bees are missing features for pollen-collecting that other bumble bees have. Additional identifying features for female Suckley's cuckoo bumble bees include a curved abdomen and two triangular shaped ridges on the dorsal side of the abdomen, while the males are harder to identify and typically require a microscope for proper identification. The historical range of this species spans from the Yukon of Canada south to Arizona, and Oregon east to Nebraska.

3.4 Culturally significant plant and animal species

This section assesses plant and animal species known to be present in the vicinity of the Maher Facility and that are recognized by the Standing Rock Sioux Tribe as significant to the Tribe's culture. The EPA gathered information from the Tribe on this topic through conversations with leaders of the Tribe's Environmental Program and Department of Water Resources, a conversation with a research professor at Sitting Bull College, and from a letter sent to EPA by the Tribe's Chairwoman.

Plant species known to be culturally significant to the Tribe include those that play a role in ceremonies, provide medicinal value, and/or are a source of food while practicing traditional gathering. The following plant species were identified by the Tribe as known to exist in or near the riparian zone of High Bank Creek downstream of the Maher Facility. However, the EPA's sources could not provide precise locations for these species due to the sensitive nature of this privately held information, which is important for families engaging in cultural practices with these plants:

- Cottonwood (*Populus sp*.)
- Red willow (*Salix amygdaloides*)
- Chokecherries (*Prunus virginiana*)
- Wild plums (*Prunus sp.)*
- Buffaloberries (*Sheperdia sp*.)
- Fox grape (*Vitis labrusca*)
- Summer grape (*Vitis aestivalis*)
- Riverbank grape (*Vitis riparia*)
- Wild verbena (*Glandularia sp*.)
- Wild bergamot (*Monarda fistulosa*)
- Sweet grass (*Hierochloe odorata*)

Through the same communications identified above, the following animal species were identified as culturally significant to the Tribe. They include species with habitat in the High Bank Creek watershed and those that are sacred to the Lakota people, regardless of conservation status. Due to the mobile

nature of these species populations and for the reasons stated above, exact locations within the watershed of these species were unable to be shared:

- Bald eagle (*Haliaeetus leucocephalus*)
- Big brown bat (*Eptesicus fuscus*)
- Black-tailed prairie dog (*Cynomys ludovicianus*)
- Golden eagle (*Aquila chrysaetos*)
- Little brown bat (*Myotis lucifugus*)
- Northern long-eared bat (*Myotis septentrionalis*)
- Snapping turtle (*Chelydra serpentina*)
- Western meadowlark (*Sturnella neglecta*)

3.5 Socioeconomic Environment

3.5.1 Economic Environment

The Facility for which the permit has been proposed is located within the exterior boundaries of the Standing Rock Indian Reservation, near Timber Lake, South Dakota. In 2023, Timber Lake had a total population of 677 (U.S. Census Bureau, 2023c). In 2023, Timber Lake had a per capita income of $26,510, with 18.1% of residents below the poverty level (U.S. Census Bureau, 2023a). The per capita income was lower than both the state ($38,880) and U.S. ($43,289) averages and the average poverty level was higher in Timber Lake than in both the state (12.0%) and U.S. (12.4%) (U.S. Census Bureau, 2023b).

Through the Tribal consultation process and citizen complaints, Tribal and community members voiced concerns related to odor, water quality, health, and Tribal sovereignty related to CAFOs.

3.5.2 Human Health/Public Health

The Facility is located in Dewey County within the Standing Rock Indian Reservation. The Maher Facility is located in a rural area that is sparsely populated. Timber Lake is the closest population center, which is located approximately five miles southeast of the Facility with a population of approximately 677.

Dewey County is ranked lower than the average counties in both South Dakota, and the nation for health factors and health outcomes (County Health Rankings & Roadmaps, n.d.). Wastewater discharges can have significant impacts on human/public health. Human health/public health concerns that can arise from wastewater discharges include increased risk of waterborne illness due to *Escherichia coli* (*E. coli*) contamination, as well as other adverse health effects such as respiratory and dermal irritation from exposure to pollutants such as ammonia. In 2023, South Dakota reported a total of 113 cases of *E. coli* illnesses, though there were no cases reported from Dewey County (South Dakota Department of Health, 2024). During the August 13, 2024 Tribal consultation meeting, the Standing Rock Reservation leadership expressed concerns related to odor and water quality from a different CAFO operation in McLaughlin (EPA, 2024a). These concerns are particularly relevant for people working in and around CAFO facilities and populations living near these operations. Exposure to ammonia, both through air and water, has been associated with increased respiratory symptoms such as wheezing and coughing. Additionally, dermal exposure, which occurs most often in an occupational setting, can result in skin lesions, blisters, and cutaneous burns (Agency for Toxic Substances and Disease Registry, 2004). Even low levels of exposure to ammonia in the air may harm individuals with

an existing asthma condition (Agency for Toxic Substances and Disease Registry, 2011). The issuance of an NPDES permit has the potential to decrease the potential adverse health impacts and associated economic strain of medical bills associated with exposure to contaminated water. Minor indirect positive economic impacts under this alternative may occur if local workers are hired to conduct the associated maintenance, construction, and inspections.

Living in proximity to a CAFO can reduce general health and is associated with high reports of respiratory and gastrointestinal issues (Hooiveld et al., 2015). In 2023, 22.7 percent of Timber Lake residents were uninsured and 21.5 percent of residents in the Standing Rock Reservation were uninsured (U.S. Census Bureau, 2023c). The added strain of potential health issues caused by unregulated CAFO pollution may exacerbate these problems. The issuance of an NPDES permit with voluntary BMPs may have the potential to further decrease adverse health impacts by improved water quality in High Bank Creek.

Some practices such as manure application and waste management may generate air emissions, which can include pollutants such as hydrogen sulfide, methane, and particulate matter (EPA, 2002). Exposure to particulate matter has been associated with a variety of harmful health effects such as exacerbated asthma, cough, irregular heartbeat, and non-fatal heart attacks (EPA, 2024b). Exposure to high concentrations of hydrogen sulfide may cause difficulty breathing in people with asthma, nose and eye irritation, and poor memory (Agency for Toxic Substances and Disease Registry, 2017). Exposure to high levels of methane may lead to feelings of dizziness, difficulty breathing, and loss of consciousness (Ohio Department of Health, 2012). Asthma is a high pre-existing chronic disease in Dewey County, South Dakota. In 2022, the city of Timber Lake had a prevalence of 12.2% among adults aged 18 years and older (Centers for Disease Control and Prevention, n.d.). The state level asthma prevalence is 8% according to South Dakota Department of Health (2024). Odors from proximity to CAFO facilities may cause annoyance and has been associated with a change of daily activities among residents (Hooiveld et al., 2015).

4 Environmental Consequences

4.1 Introduction

This chapter describes the potential environmental impacts associated with the proposed action and alternatives. 40 C.F.R. § 6.205(e)(1)(iv).

4.2 Physical Resources

4.2.1 Water Resources

Water quality impacts resulting from CAFO operations and associated discharges may include a decrease in dissolved oxygen and increases in biological oxygen demand, increase in nutrient concentrations (total phosphorus, total nitrogen), excess algal growth, reduced water clarity, potential for ammonia toxicity, increased *E. coli*, and increased total suspended solids. Degradation of water quality parameters is greatest if NPDES permit requirements are not met and the cattle holding pens and/or their manure piles are located in close proximity to a waterbody and uncontrolled discharges

occur during storm events. Additionally, water quality (and physical habitat) impacts can occur if large number of cattle have access to the stream to drink and then defecate. This type of cattle access to streams is not permitted by CAFO regulations regardless of whether a facility has an NPDES permit.

Alternative 1 - No Action

The No Action alternative would likely result in ongoing water quality impacts to the water resources. Under the No Action alternative, the Facility would not be authorized to discharge because no NPDES permit would be issued. Water quality could improve compared to the current condition, assuming the Facility prevents any discharge. The quantity of pollutants discharged would likely be higher than if the Facility were permitted, because many of the safeguards required by a permit would likely not be implemented. For example, weekly inspections of stormwater diversion devices, channels, manure storage areas, and containment structures would not be required, and the absence of those inspections would increase the chances of an unauthorized discharge. The Facility would not be required to develop and implement a nutrient management plan for land application sites to ensure manure application rates result in reduced pollutants in stormwater runoff from fields into High Bank Creek. This alternative would likely result in less water quality improvement to High Bank Creek than the other alternatives because the discharge of nutrients, pathogens (*E. coli*), TSS, and ammonia is not expected to be reduced as much without an NPDES permit.

Alternative 2 - Proposed Action, Issuance of an NPDES permit

The issuance of an NPDES permit for the Facility would likely improve water quality in High Bank Creek to a greater degree than Alternative 1 by reducing the discharge of wastewater from the production area to only during a 24-hour 25-year storm event; requiring setbacks and other safeguards for production areas to protect High Bank Creek; and developing and implementing a nutrient management plan for land application sites to ensure manure application rates result in reduced pollutants in stormwater runoff from fields into High Bank Creek. By regulating discharges, the Proposed Action would likely result in water quality improvements to High Bank Creek as concentrations of nutrients, pathogens (*E. coli*), TSS, and ammonia decline.

Alternative 3 - Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

Similar to Alternative 2, the issuance of an NPDES permit for the Facility with voluntary BMPS would likely improve water quality in High Bank Creek by limiting the discharge of wastewater through limiting discharges from the production area to only during a 24-hour 25-year storm event; requiring setbacks and other safeguards for production areas to protect High Bank Creek; and developing and implementing a nutrient management plan for land application sites to ensure manure application rates result in reduced pollutants in stormwater runoff from fields into High Bank Creek. By regulating the discharge, the Proposed Action would likely result in water quality improvements to High Bank Creek as concentrations of nutrients, *E. coli*, TSS, and ammonia decline. In addition, if Maher chose to implement voluntary BMPs discussed above in section 2.1.3, impacts to water resources would be further improved by reducing or eliminating the TSS, nutrients, pathogens (*E. coli*), or chemicals to High Bank Creek.

4.2.2 Air Quality

As discussed in Section 3.2.2 Air Quality, there is limited data available for present air pollutant emissions in the Timber Lake, SD area. However, routine CAFO practices may produce odor-causing

emissions that could potentially impact nearby individuals and their daily activities. There are no large sources of anthropogenic (man-made) emissions expected to be released into the atmosphere from the project area under the proposed alternative.

Alternative 1 - No Action

The No Action alternative would result in no change in air quality beyond existing potential impacts from the current operations of the Facility. The CAFO Facility will still exist and would not be authorized to discharge, but operations would likely continue as before. This may result in potential odor disturbance for nearby individuals. Refer to Section 3.5.2 Human Health/Public Health for impact discussions of potential adverse health effects associated with CAFO operations, including from exposure to ammonia concentrations.

Alternative 2 - Proposed Action, Issuance of NPDES Permit

The issuance of an NPDES permit for the Facility would result in no change in air quality.

Alternative 3 - Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

Similar to Alternative 2, the issuance of an NPDES permit with voluntary BMPs would be unlikely to change air quality.

4.2.3 Noise Environment

Current noise is generally due to truck traffic patterns from the Facility.

Alternative 1 - No Action

The No Action alternative would likely result in no changes to noise impacts. Regardless of whether the Facility has an NPDES permit, truck traffic patterns are unlikely to change.

Alternative 2 - Proposed Action, Issuance of NPDES Permit

The issuance of an NPDES permit**,** would similarly be unlikely to change truck traffic patterns.

Alternative 3 - Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

Similar to Alternative 2, the issuance of an NPDES permit with voluntary BMPS would be unlikely to change truck traffic patterns.

4.2.4 Weather Events

As discussed in Section 3.2.4 Weather Events, the project area may be impacted by increased precipitation and drought, both of which have the potential to mobilize contaminants in waterbodies or through airborne particles.

Alternative 1 - No Action

Under the No Action alternative, the Facility would not be authorized to discharge because no NPDES permit would be issued. The No Action alternative would result in no effect from weather events outside of potential ongoing impacts from the current operations of the Facility. Due to interactions between impacts discussed in Section 3.2.4 Weather Events, Section 4.4.2 Human Health/Public

Health, and Section 4.2.1 Water Resources, weather events and pollution due to current Facility operations may exacerbate human health impacts.

Alternative 2 - Proposed Action, Issuance of NPDES permit

The issuance of an NPDES permit for the Facility, would likely improve water quality in High Bank Creek due to implementation of permit requirements such as regular inspections and other requirements discussed in Section 2.1.2 Alternative 2 and water impacts discussed in Section 4.2.1 Water Resources. Potential water quality improvements due to the issuance of the NPDES permit may prevent some of the adverse human health impacts of pollution migration associated with weather events such as flooding and drought. Soil and associated contaminants may become airborne as dust particles in the case of drought; improved soil quality may reduce airborne contaminants.

Alternative 3 - Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

The issuance of an NPDES permit and the implementation of voluntary BMPs would provide additional environmental benefits to High Bank Creek and may further prevent harmful impacts of weather events and pollution migration by reducing or eliminating transportation of sediment, nutrients, pathogens, or chemicals to surface and/or groundwater, improving or maintaining soil health components, and other potential impacts discussed in Section 2.1.3 Alternative 3. Improved soil quality under this alternative may reduce airborne contaminants in the case of drought.

4.3 Biological Resources

The biological resources found in the Northern Great Plains area are described in Section 3.3, Biological Resources. In general, the issuance of an NPDES permit is expected to improve the water quality in High Bank Creek compared to the no action alterative and may therefore improve biological resources. Manure application rates may be modified because of NPDES permit requirements. Because there is no information about current or recent application rates, it is not clear how the manure application rates on crop fields will change.

4.3.1 Mammals

Mammal species that may occur in the vicinity of the Facility are discussed in Section 3.3.1 and 3.4.

Alternative 1 - No Action

The No Action alternative would result in ongoing impacts to any mammalian species found in and adjacent to the Facility. The No Action alternative would not likely result in any new impacts, as the area has been home to agricultural and/or ranching activities since before commencement of Facility CAFO operations. Additionally, as a CAFO operation, cattle are not authorized to be in or immediately adjacent to High Bank Creek, nor is the Facility allowed to discharge to High Bank Creek. Removing cattle from High Bank Creek and ceasing discharges to High Bank Creek could result in improved habitat and water quality in High Bank Creek and could improve the riparian areas adjacent to the creek.

Alternative 2 - Proposed Action, Issuance of an NPDES permit

The issuance of an NPDES permit for the Facility would result in improvements to water quality in High Bank Creek by requiring additional monitoring of water quality as part of the permit, requiring setbacks

and other safeguards to protect High Bank Creek, and requiring development of a nutrient management plan to ensure manure application rates do not result in environmental harm. The NPDES permit would require quarterly monitoring upstream and downstream of the Facility to track water quality in High Bank Creek. Since current manure application rates have not been documented, it is not clear whether the current manure application rates are resulting in environmental harm. However, under an NPDES permit, manure application rates would be calculated and monitored to reduce the likelihood of worsening environmental conditions. As with Alternative 1, cattle are not allowed to be in or immediately adjacent to High Bank Creek. However, under Alternative 2, the issuance of an NPDES permit also includes setbacks as a permit requirement. The setbacks, which are a mandatory component of the NPDES permit, are developed to prevent pollution from animal pens and would further protect the water quality of High Bank Creek.

Impacts associated with the Proposed Action on the northern long-eared bat are not anticipated. This is the only mammalian species listed as endangered by USFWS and identified by the FWS IPaC tool as known or expected to be present in the area of the Facility. There is no designated critical habitat for this species within the action area. Because the northern long-eared bat typically overwinter and breed in caves or mines and spend the remainder of the year in forested habitats and there are no known caves, mines or forested areas in the vicinity of the land application fields, land application will not impact habitat for the northern long-eared bat. The northern long-eared bat emerges at dusk to hunt the forest understory and feed on moths, flies, leafhoppers, caddisflies, beetles and arachnids that it catches midflight or gleans from vegetation or the ground. Because the northern long-eared bat feeds in and near forested habitats, and because there are no forested areas near the Maher Facility land application areas, land application activities will not impact the northern long-eared bat. As a result, land application activities will have no effect on the northern long-eared bat. The Facility has already been constructed and thus, any tree clearing that might have accompanied construction has already occurred. The Proposed Action would not authorize new construction. Due to the absence of any northern long-eared bat habitat in the vicinity of the Facility and the nature of the Proposed Action, no effects to the northern long-eared bat are anticipated.

Alternative 3 - Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

The issuance of an NPDES permit for the Facility with voluntary BMPs are expected to have similar impacts as Alternative 2 with the added benefit of improved plant communities. These improved plant communities may benefit mammals in the area.

4.3.2 Birds

Bird species that may occur in the vicinity of the project area are discussed in Section 3.3.2 and 3.4.

Alternative 1 - No Action

The No Action alternative would result in ongoing impacts to bird species found in and adjacent to the Facility. The No Action alternative would not likely result in any new impacts, as the area has been home to agricultural and/or ranching activities since before commencement of Facility CAFO operations. Additionally, as a CAFO operation, cattle are not authorized to be in or immediately adjacent to High Bank Creek, nor is the Facility allowed to discharge to High Bank Creek. Removing cattle from High Bank Creek and ceasing discharges to High Bank Creek could result in improved

habitat and water quality in High Bank Creek and could improve the riparian areas adjacent to the creek.

Alternative 2 - Proposed Action, Issuance of an NPDES permit

The issuance of an NPDES permit for the Facility would result in improvements to water quality in High Bank Creek by requiring additional monitoring of water quality as part of the permit, requiring setbacks and other safeguards to protect High Bank Creek, and requiring development of a nutrient management plan to ensure manure application rates do not result in environmental harm. The NPDES permit would require quarterly monitoring upstream and downstream of the Facility to track water quality in High Bank Creek. application rates have not been documented, it is not clear whether the current application rates are resulting in environmental harm. However, under an NPDES permit, manure application rates would be calculated and monitored to reduce the likelihood of worsening environmental conditions. As with Alternative 1, cattle are not allowed to be in or immediately adjacent to High Bank Creek. However, under Alternative 2, the issuance of an NPDES permit also includes setbacks as a permit requirement. The setbacks, which are a mandatory component of the NPDES permit, are developed to prevent pollution from animal pens and would further protect the water quality of High Bank Creek.

Impacts associated with the Proposed Action on the piping plover, rufa red knot, and whooping crane are not anticipated.

Piping plovers nest on barren sand bars, islands, beaches, peninsulas, and other areas with little vegetative cover. Piping plovers primarily feed on small insects and other invertebrates found in open, wet, sandy areas along lake shores and rivers. Very small numbers of rufa red knots migrate through South Dakota in early spring and fall to and from their breeding and nesting areas in the Arctic. While migrating, rufa red knots seek out beaches, sandbars, mudflats and shallow water, and feed on small insects and other invertebrates. Due to these migration, nesting and feeding behaviors, neither species will be present on agricultural lands subject to land application and land application will not result in discharges that could impact their habitat. As a result, land application will have no impact on either species under the Proposed Action.

The Proposed Action will have no effect on the piping plover because the action area does not include habitat suitable for use by the piping plover and even if it did, for the reasons described above, the Proposed Action would have no effect on an individual. The piping plover is not expected to occur in the action area due to the absence of developed shorelines and sandbars in and downstream of the Facility. Piping plover are more likely to be found downstream in the Missouri River. As described above, even if present, the species will not be affected by the Proposed Action. The Facility has already been constructed, and the Proposed Action does not authorize any new construction. The FWS has finalized critical habitat for this species but the IPaC report states that the action area does not overlap the designated critical habitat.

The Proposed Action will have no effect on the rufa red knot. The action area does not include habitat suitable for use by the rufa red knot and even if it did, for the reasons described above, the Proposed Action would have no effect on an individual. The rufa red knot is not expected to occur in the action area because it breeds and nests in the Arctic; overwinters along the Gulf, Atlantic and Pacific Coasts; and utilizes beaches, sandbars, mudflats and shallow water in South Dakota for foraging during migration stopovers. At most, this species would only use the action area as stopover habitat during migrations. As described above, even if present, the species will not be affected by this Proposed

Action. The Facility has already been constructed, and the Proposed Action does not authorize any new construction. The FWS has proposed critical habitat for this species but the IPaC report states that this location does not overlap the proposed critical habitat.

Whooping cranes migrate in early spring and late fall between breeding grounds in northern Canada and wintering grounds in south Texas. During migration, whooping cranes may use a variety of habitats in South Dakota for foraging and roosting. Whooping cranes primarily use shallow, seasonally and semi-permanently flooded palustrine wetlands for roosting, and various cropland and emergent wetlands for feeding. Foods utilized during migration include frogs, fish, plant tubers, crayfish, insects, and agricultural grains. Because whooping cranes use harvested grain fields as a food supply, and Maher Facility identified several grains as alternative crops in its NMP, whooping cranes could forage in harvested fields used for land application. However, because whooping cranes forage on harvested (i.e., non-vegetated) fields, they would be foraging during periods in which Maher Facility would be required to mechanically incorporate any applied wastewaters or solids. Whooping cranes avoid areas close to human activity during migration and, as a result, will avoid land application fields during active land application and mechanical incorporation, both of which involve human activity. Because there will be no interaction between whooping cranes and land application activity, such activity will not impact whooping cranes. Because mechanical incorporation of land-applied materials into soils is required during the times when whooping cranes may forage, whooping cranes will not be directly exposed to land-applied materials. Because chemical handling requirements in the NMP prevent agricultural chemicals from entering wastewater lagoons and manure piles, such chemicals will not be present on land application fields where whooping cranes may forage. As a result, land application will have no effect on whooping cranes under the Proposed Action.

The Proposed Action will have no effect on the whooping crane. The action area includes some habitat suitable for use by the whooping crane, but for the reasons described above, the Proposed Action would have no effect on an individual. The whooping drane typically utilizes shallow, seasonally and semi-permanently flooded palustrine wetlands for roosting, and various cropland and emergent wetlands for feeding. Cropland is present in the action area and this species could use this area as stopover habitat during migrations. As described above, even if present, the species will not be affected by the Proposed Action. The Facility has already been constructed, and the Proposed Action does not authorize any new construction. The FWS has finalized critical habitat for this species but the IPaC report states that this location does not overlap the designated critical habitat.

These are the only federally listed bird species around the Facility. There is no designated critical habitat for any of these species within the action area. While the Proposed Action is anticipated to have a positive impact on bird species present in the Facility area due to the anticipated improvement of riparian habitat, the absence of viable habitat for the listed species and the nature of the Proposed Action, which would impose further regulatory requirements on the existing facility, no effects to the piping plover, rufa red knot, or the whooping crane are anticipated.

Alternative 3 - Issuance of NPDES Permit with Voluntary BMPs

The issuance of an NPDES permit for the Facility with voluntary BMPs are expected to have similar impacts as Alternative 2 with the added benefit of improved plant communities. These improved plant communities may benefit birds in the area.

4.3.3 Fish

Fish species that may occur in the vicinity of the project area are discussed in Section 3.3.3.

Alternative 1 - No Action

The No Action alternative would result in ongoing impacts to any fish species found in and adjacent to the Facility. While no fish surveys have been completed as part of this analysis, the modifications to the stream channel by the Facility have altered stream flow and hydrodynamics of High Bank Creek and the discharge of unpermitted wastewater has resulted in elevated nutrients in High Bank Creek (USEPA 2023). The No Action alternative would not likely result in any new impacts, as the area has been home to agricultural and/or ranching activities since before commencement of Facility CAFO operations. Additionally, as a CAFO operation, cattle are not authorized to be in or immediately adjacent to High Bank Creek, nor is the Facility allowed to discharge to High Bank Creek. Removing cattle from High Bank Creek and ceasing discharges to High Bank Creek could result in improved habitat and water quality in High Bank Creek and could improve the riparian areas adjacent to the creek.

Alternative 2 - Proposed Action, Issuance of an NPDES permit

The issuance of an NPDES permit for the Facility would result in improvements to water quality in High Bank Creek by requiring additional monitoring of water quality as part of the permit, requiring setbacks and other safeguards to protect High Bank Creek, and requiring development of a nutrient management plan to ensure manure application rates do not result in environmental harm. The NPDES permit would require quarterly monitoring upstream and downstream of the Facility to track water quality in High Bank Creek. Since current application rates have not been documented, it is not clear whether the current application rates are resulting in environmental harm. However, under an NPDES permit, manure application rates would be calculated and monitored to reduce the likelihood of worsening environmental conditions. As with Alternative 1, cattle are not allowed to be in or immediately adjacent to High Bank Creek. However, under Alternative 2, the issuance of an NPDES permit also includes setbacks as a permit requirement. The setbacks, which are a mandatory component of the NPDES permit, are developed to prevent pollution from animal pens and would further protect the water quality of High Bank Creek.

Alternative 3 - Issuance of NPDES Permit with Voluntary BMPs

The issuance of an NPDES permit for the Facility with voluntary BMPs are expected to have similar impacts as Alternative 2 with some added benefits. In addition, if Maher chose to implement voluntary BMPs discussed above in Section 2.1.3, impacts to water resources would be further improved by reducing or eliminating the TSS, nutrients, or chemicals to High Bank Creek that can impact aquatic life.

4.3.4 Invertebrates

Invertebrate taxa that may occur in the vicinity of the project area are discussed in Section 3.3.4.

Alternative 1 - No Action

The No Action alternative would result in ongoing impacts to terrestrial or aquatic invertebrate species found in and adjacent to the Facility. The No Action alternative would not likely result in any new impacts, as the area has been home to agricultural and/or ranching activities since before commencement of Facility CAFO operations. Additionally, as a CAFO operation, cattle are not

authorized to be in or immediately adjacent to High Bank Creek, nor is the Facility allowed to discharge to High Bank Creek. Removing cattle from High Bank Creek and ceasing discharges to High Bank Creek will result in improved habitat and water quality in High Bank Creek and will improve the riparian areas adjacent to the creek.

Alternative 2 - Proposed Action, Issuance of an NPDES permit

The issuance of an NPDES permit for the Facility would result in improvements to water quality in High Bank Creek by requiring additional monitoring of water quality as part of the permit, requiring setbacks and other safeguards to protect High Bank Creek, and requiring development of a nutrient management plan to ensure manure application rates do not result in environmental harm. The NPDES permit would require quarterly monitoring upstream and downstream of the Facility to track water quality in High Bank Creek. Since current application rates have not been documented, it is not clear whether the current application rates are resulting in environmental harm. However, under an NPDES permit, manure application rates would be calculated and monitored to reduce the likelihood of worsening environmental conditions. As with Alternative 1, cattle are not allowed to be in or immediately adjacent to High Bank Creek. However, under Alternative 2, the issuance of an NPDES permit also includes setbacks as a permit requirement. The setbacks, which are a mandatory component of the NPDES permit, are developed to prevent pollution from animal pens and would further protect the water quality of High Bank Creek.

Impacts associated with the Proposed Action on the monarch butterfly, western regal fritillary, and Suckley's cuckoo bumble bee are not anticipated.

The Proposed Action is not likely to jeopardize the continued existence of the monarch butterfly or result in the destruction or adverse modification of proposed critical habitat. The action area does not include habitat suitable for use by the monarch butterfly and even if it did, for the reasons described above, the Proposed Action would have no effect on an individual. The monarch butterfly is not expected to occur in the action area because it typically utilizes milkweed plants for the caterpillars and nectar-rich flowering plants for the adult butterflies which is not present in the action area. As described above, even if present, the species will not be affected by this Proposed Action. The Facility has already been constructed, and the Proposed Action does not authorize any new construction. The FWS has proposed critical habitat for this species but the IPaC report states that this location does not overlap the proposed critical habitat.

The proposed action is not likely to jeopardize the continued existence of the Suckley's cuckoo bumble bee or result in the destruction or adverse modification of proposed critical habitat. On December 17, 2024, the Suckley's cuckoo bumble bee (*Bombus suckleyi*) was proposed for listing as an endangered species (89 FR 102074). Suckley's is an obligate social parasite of social bumble bees in the genus Bombus. This species cannot successfully reproduce without the availability of suitable host colonies. It is a semi-specialist parasite and confirmed to usurp nests of western bumble bee (*Bombus occiddentalis*) and Nevada bumble bee (*Bombus nevadensis*).

Based on the best available information, no Suckley's cuckoo bumble bee have been observed in South Dakota since 1969 despite recent all taxa bumble bee surveys across the entire state (Martens et al 2022). Based on this information, FWS considers the Suckley's cuckoo bumble bee to be extirpated from South Dakota. The action area does not include habitat suitable for use by the Suckley's cuckoo

bumble bee and even if it did, for the reasons described above, the Proposed Action would have no effect on an individual species. The FWS has not proposed critical habitat for this species.

The Proposed Action is not likely to jeopardize the continued existence of the western regal fritillary or result in the destruction or adverse modification of proposed critical habitat. The action area does not include habitat suitable for use by the western regal fritillary and even if it did, for the reasons described above, the Proposed Action would have no effect on an individual. The western regal fritillary is not expected to occur in the action area because it typically utilizes tallgrass prairies, native pastures, and other open grassland areas with a high density of violets (the sole larval food source) and abundant native nectar-producing flowers for the adults, such as milkweeds, coneflowers, and thistles As described above, even if present, the species will not be affected by this Proposed Action. The Facility has already been constructed, and the Proposed Action does not authorize any new construction. The FWS has not proposed critical habitat for this species.

These are the only proposed federally listed invertebrate species around the Facility. There is no designated critical habitat for the Suckley's cuckoo bumble bee and no designated critical habitat for monarch butterfly or western regal fritillary within the action area. While the Proposed Action is anticipated to have a positive impact on invertebrate species present in the Facility area due to the anticipated improvement of riparian habitat, the absence of viable habitat for the proposed federally-listed species and the nature of the Proposed Action, which would impose further regulatory requirements on the existing facility, no effects to the monarch butterfly, western regal fritillary, and Suckley's cuckoo bumble bee are anticipated.

Alternative 3 - Issuance of NPDES Permit with Voluntary BMPs

The issuance of an NPDES permit for the Facility with voluntary BMPs are expected to have similar impacts as Alternative 2 with some added benefits. In addition, if Maher chose to implement voluntary BMPs discussed above in Section 2.1.3, impacts to water resources would be further improved by reducing or eliminating the TSS, nutrients, or chemicals to High Bank Creek that can impact aquatic invertebrates.

4.3.5 Culturally significant plant and animal species

Alternative 1 - No Action

Under the No Action alternative, the Facility would not be authorized to discharge because no NPDES permit would be issued. Impacts discussed in Section 4.2.1 Water Resources for water quality would similarly affect culturally significant plant and animal species. These species are known to exist in the High Bank Creek watershed and rely on water for survival either directly or indirectly through the food chain, which makes them susceptible to impacts on the quality of water in High Bank Creek. Because the No Action alternative may result in more discharge of pollutants than the other alternatives, it would likely result in the most negative impacts to culturally significant plant and animal species.

Alternative 2 - Proposed Action, Issuance of NPDES Permit

The issuance of an NPDES permit for the Facility would result in improvements to water quality in High Bank Creek by requiring additional monitoring of water quality as part of the permit, requiring setbacks and other safeguards to protect High Bank Creek, and requiring development of a nutrient

management plan to ensure manure application rates do not result in environmental harm. This would likely reduce impacts on culturally significant plant and animal species that are aquatic dependent.

Alternative 3 - Issuance of NPDES Permit with Voluntary BMPs

The issuance of an NPDES permit for the Facility with voluntary BMPs are expected to have similar impacts as Alternative 2 with some added benefits for culturally significant plant and animal species that are aquatic dependent.

4.4 Socioeconomic Environment

The following section focuses on the proposed action impacts on the economic environment and human health/public health.

4.4.1 Economic Environment

As discussed in Section 3.5.1 Economic Environment, 18.1 percent of residents in Timber Lake were below the federal poverty level (U.S. Census Bureau, 2023c).

Alternative 1 - No Action

The No Action alternative would result in no change in the local economic environment beyond the existing potential impacts from the current operations of the Facility. The CAFO Facility will still exist, and operations would likely continue as before.

Alternative 2 - Proposed Action, Issuance of NPDES permit

The issuance of an NPDES permit for the Facility would have no direct effect on the local economic environment. The Proposed Action Alternative would likely improve water quality in High Bank Creek due to maintenance, animal isolation from stormwater, regular inspections, and other requirements discussed in Section 2.1.2 Alternative 2 and water impacts discussed in Section 4.2.1 Water Resources. Potential water quality improvements due to the issuance of the NPDES permit may prevent some of the adverse human health impacts of pollution migration associated with weather events such as flooding and drought.

Alternative 3 - Issuance of NPDES permit with Voluntary Best Management Practices (BMPs)

The issuance of an NPDES Permit with Voluntary BMPs would have no direct effect on the local economic environment. There is the potential for minor indirect positive economic impacts under this alternative if local workers are hired to conduct the associated maintenance, construction, and inspections.

4.4.2 Human Health/Public Health

Wastewater discharges pose potential health risks for those working in and within CAFO facilities and nearby communities. Wastewater discharges could increase the risk of waterborne illnesses such as *E. coli*. Additionally, when individuals encounter high levels of ammonia commonly found in wastewater discharges, it may put them at risk for respiratory problems and dermal irritation, as discussed in

Section 3.5.2 Human Health/Public Health. It is expected that potential adverse human health outcomes are avoided or minimized by the issuance of an NPDES permit based on the impact discussions presented in Sections 4.2.1 Water Resources, and 4.3 Biological Resources.

Alternative 1 - No Action

Under this alternative, the CAFO Facility could continue to operate and would not be authorized to discharge. However, NPDES requirements that reduce impacts in the event of a discharge of pollutants to waters of the U.S. would not be imposed through a permit issued by the EPA. If the Facility successfully prevents all discharges, this alternative is in accordance with section 301(a) of the Clean Water Act and would not impact human health. If discharges or accidental releases occur, there is the potential for ongoing associated human health impacts. Refer to Section 3.5.2 Human Health/Public Health and 3.2.1 Water Resources for impact discussions of water quality and associated potential adverse health effects, including from exposure to *E. coli* and high ammonia concentrations.

Alternative 2 - Proposed Action, Issuance of NPDES permit

The issuance of an NPDES permit for the Facility would improve water quality in High Bank Creek and further protect human/public health based on the impact discussions presented in Sections 3.5.2 Human Health/ Public Health and 3.2.1 Water Resources.

Alternative 3 - Issuance of NPDES permit with Voluntary Best Management Practices (BMPs)

Similar to Alternative 2, the issuance of an NPDES permit along with voluntary BMPs would provide additional benefits to the overall human/public health and environment in High Bank Creek. Refer to Section 2.1.3 Alternative 3- Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs) for potential outcomes that could be accomplished by adopting practices that reduce the risk of pathogens entering the water supplies and soil, including actions to reduce or eliminate the transportation of sediment, nutrients, pathogens, or chemicals to surface and/or ground water and improve or maintain soil health components and indicators.

5 Summary of Alternatives

5.1 Alternatives Summary

As discussed in Section 2 Alternatives, the EPA considered three alternatives for the NPDES permit in this EA. Alternatives considered include the following: a no action alternative (Alternative 1), issuance of an NPDES permit for the Facility (Alternative 2), and issuance of an NPDES permit with voluntary best management practices (Alternative 3).

5.1.1 Alternative 1: No Action

Under the no-action alternative, the EPA would not issue the NPDES permit. Some of the conditions described in Chapter 3, Affected Environment capture periods when the Facility was discharging without an NPDES in violation of Section 301(a) of the Clean Water Act. Those conditions would be improved under this alternative because the CAFO Facility will still exist, but it would not be authorized to discharge. NPDES requirements that reduce impacts in the event of a discharge of pollutants to waters of the U.S. would not be imposed through a permit issued by the EPA. The effects of this

alternative would be as described under each subsection discussion of Alternative 1 in Chapter 4, Environmental Consequences.

5.1.2 Alternative 2: Proposed Action – Issuance of NPDES Permit

Under Alternative 2, the EPA would issue an NPDES permit to the Facility for discharges of pollutants into waters of the U.S. NPDES requirements that reduce impacts in the event of a discharge of pollutants to waters of the U.S. would be imposed through the NPDES permit. The effects of this alternative would be as described under each subsection discussion of Alternative 2 in Chapter 4, Environmental Consequences.

5.1.3 Alternative 3: Proposed Action – Issuance of NPDES Permit with Voluntary Best Management Practices (BMPs)

Under Alternative 3, the EPA would issue an NPDES permit to the Facility as described in Alternative 2. Additionally, Maher would implement additional voluntary BMPs listed in the NRCS National Conservation Practice Standard for Prescribed Grazing (Code 528) in Appendix A. The effects of this alternative would likely be improved water quality and animal habitat as described under discussion of Alternative 3 in Chapter 4, Environmental Consequences. The EPA does not have the authority to require these voluntary BMPs in an NPDES permit.

5.2 Comparison of Alternatives

The basic difference between the alternatives are two variations of action versus no action. Alternative 1 represents the conditions of the Facility without any NPDES requirement besides a blanket prohibition on discharge. The preferred action alternative (Alternative 2) represents authorizing discharge in limited circumstances (a 25-year 24-hour flood event) and requiring additional practices to protect the water quality of High Bank Creek. The other action alternative (Alternative 3) represents a similar condition to Alternative 2 with additional water quality and animal habitat benefits that the EPA cannot require in an NPDES permit. The anticipated impacts associated with Alternative 2 represent the most improvement in resources the EPA can require compared to the no action alternative. The EPA believes the NPDES permit, Alternative 2, will have adequate provisions to avoid or minimize potentially significant environmental impacts.

5.3 Preferred Alternative

The EPA selected Alternative 2 as the preferred alternative. The effects of the no action alternative are that the CAFO Facility will still exist and will not be allowed to discharge. An NPDES permit would require beneficial management practices and pollution controls, such as:

- Weekly inspections of stormwater diversion devices, channels, manure storage areas, and containment structures,
- Construction of manure holding lagoons that meet U.S. Department of Agriculture Natural Resources Conservation Service engineering requirements,
- Weekly inspections of manure holding lagoons,
- Measurement manure depth in holding lagoons and maintain adequate freeboard to prevent overflows,

- Maintenance of a rain gauge on site with logs of measurable rainfall,
- Isolation of animal containment areas from stormwater run-on from outside surface drainage,
- Proper disposal of mortalities such that they do not contaminate surface waters,
- Prohibition of animals from coming into direct contact with surface water,
- Requirements for holding pens to be constructed outside the 100-year flood plain,
- Required best management practices (BMPs) for land application including:
    - Development and implementation of a nutrient management plan, which requires manure to be applied at an agronomic rate, soil sampling,
    - Inspections of land application equipment for leaks,
    - Not applying during frozen or saturated soil conditions,
    - Implementation of setbacks, buffers and other controls to prevent runoff from fields along, and
    - Monitoring for any discharges during land application,
- Reporting any discharges to the EPA and also to the Tribe, and
- Annual reporting to the EPA and to the Tribe.

The proposed NPDES Individual Permit, Alternative 2, will contain provisions that are sufficiently protective of the surface waters and resources of the surrounding area. If Maher complies with the proposed Individual Permit, the EPA does not expect any discharge from the Facility to materially degrade the environmental resources of the Standing Rock or Cheyenne River Reservations. In addition, the proposed EPA Individual Permit, Alternative 2, has a re-opener provision that authorizes EPA to modify the NPDES permit as necessary in response to new information demonstrating the provisions of the proposed Individual Permit are inadequately protective of these resources.

Alternative 3 contains voluntary BMPs the EPA cannot require in an NPDES permit.

5.4 Unavoidable Adverse Impacts

The NPDES individual permit discharges from the Facility during a 25-year, 24-hour storm event are expected to have unavoidable minor impacts, primarily in the vicinity of the proposed Facility. For the most part, these impacts would be short-term in nature, rare, limited to spatial extent, and expected to have a low likelihood to result in impacts.

5.5 Irreversible and Irretrievable Commitments of Resources

The National Environmental Policy Act Section 102 (2)(C)(v) requires a detailed statement on any irreversible and irretrievable commitments of federal resources that would be involved in the proposed action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of non-renewable resources and the effects that the use of those resources have on future generations. Irreversible commitments of resources are those that cannot be reversed except over an extremely long period of time. These irreversible effects primarily result from the destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action.

The proposed action would constitute an irreversible or irretrievable commitment of non-renewable or depletable resources, for the materials, time, money, and energy expended during activities implementing some of the permit requirements. Under the no-action alternative, there would be no irreversible and irretrievable commitments of federal resources. Irreversible and/or irretrievable impacts of federal resources for the proposed action are noted below.

The May 7, 2024, Administrative Compliance Order on Consent (Appendix B) required Maher to complete some construction activities. These included removing part of the yearling pen through which High Bank Creek flowed; removing all manure from the pen; regrading to ensure bank stabilization; seeding the bank to ensure vegetative cover; and constructing adequate containment and storage structures to contain all manure, litter, and process wastewater including the runoff and direct precipitation from a 25-year, 24-hour rainfall event from all yearling pens. Additional construction is not expected to be required.

Consumption of fossil fuels and energy would occur during operation and maintenance activities to comply with some permit requirements (e.g., pumping of manure from the holding lagoon to maintain adequate freeboard and land application). Fossil fuels (gasoline and diesel oil) would be used to power vehicles, manure pumps, and manure spreaders. The energy consumed for operation and maintenance activities required by the permit represents a permanent and non-renewable commitment of these resources. Operation and maintenance activities are considered a long-term non-renewable investment of these resources.

Surface disturbances are expected to be temporary and are not expected to be an irreversible and irretrievable resource commitment. There would also be commitment of time and money for the planning, permitting, and implementation of permit requirements.

5.6 Findings

This section will be updated in the final EA.

6 Other Protective Measures and Agency Coordination Efforts

The proposed NPDES permit, and authorization include several conditions, terms, and provisions that are protective measures against potential environmental consequences of the proposed action. The EPA must consult with other federal agencies and Tribal entities and complete other actions prior to issuing any permit. These additional efforts include the following:

- National Historic Preservation Act
- Consideration of CWA Section 401

Note that ESA consultation is not required to issue a permit to Maher, as discussed below.

6.1 National Historic Preservation Act (NHPA)

Under 16 U.S.C. 470 et seq. Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) require the Regional Administrator, before issuing a license (permit), to adopt measures when feasible to mitigate potential adverse effects of the licensed activity and properties listed or eligible for listing in the National Register of Historic Places. The Act's requirements are to be implemented in cooperation with state historic preservation officer(s) and tribal historic preservation officer(s) and upon notice to, and when appropriate, in consultation with the Advisory Council on Historic Preservation. In addition, the Act requires local government officials, permit applicants, and certain individuals with a demonstrated interest to be involved in consultation.

On April 22, 2024, the EPA offered consultation to the Standing Rock Sioux Tribe and Cheyenne River Sioux Tribe. These Tribal consultation offers included an offer consultation in accordance with Section 106 of the NHPA. A consultation meeting was held with the Standing Rock Sioux Tribe on August 13, 2024. The Standing Rock Sioux Tribe generally raised concerns with practices being compromised by non-Tribal citizen activities within the reservation. No specific historic properties such as archeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, or buildings and structures with significant tribal association identified. The Cheyenne River Sioux Tribe did not request consultation.

The EPA held a discussion with the Standing Rock THPO to gather information on potential historic properties such as archeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, and buildings and structures with significant Tribal association. No potential historic properties were identified. The EPA also reached out to the Standing Rock THPO for information on culturally sensitive plant and animal species. No information has been provided by the Standing Rock THPO on culturally sensitive plants and animal species.

Other information gathered on culturally sensitive plant and animal species is discussed in Sections 3.4 and 4.3.5.

The EPA reached out to the Cheyenne River THPO to seek information on potential historic properties. No information was provided.

6.2 Section 7 ESA Coordination

16 U.S.C. 1531 et seq. Section 7(a)(2) of the ESA requires that federal agencies consult with the ESA administering services to ensure that any projects authorized, funded, or carried out by them are not likely to jeopardize the continued existence of any endangered species or threatened species, or result in the destruction or adverse modification of critical habitat of such species.

The EPA had informal discussions and email exchanges with the South Dakota U.S. Fish and Wildlife Service (FWS) field office representative regarding this potential permit. Based on data from FWS's Information for Planning and Consultation (IPaC) online database and informal discussions with FWS, the EPA determined a permit would have "no effect" on endangered and threatened species. The details of this determination are included in the draft Statement of Basis for the draft permit. Information is also included in Sections 4.3.1, 4.3.2, and 4.3.4, above. Because a "no effect" determination was made, consultation with FWS is not required.

6.3 CWA Section 401

Under CWA Section 401, a federal agency cannot issue a permit or license for an activity that may result in a discharge to waters of the U.S. until the state or tribe where the discharge would originate has granted or waived CWA Section 401 certification. CWA Section 401 certification provides states and authorized Tribes with an effective tool to help protect state or Tribal aquatic resources. In the absence of an authorized state or Tribe, the EPA is the certifying authority. The certifying authority, in exercising CWA Section 401 certification authority, decides whether the licensed or permitted activity will be consistent with water quality requirements. The certifying authority may grant, condition, deny or waive certification. 40 CFR 121.7(a). Under CWA Section 401(d), the licensing or permitting agency, which is also the EPA in this case, must include in the license or permit any conditions identified in the Section 401 certification as necessary to ensure compliance with the relevant water quality requirements.

The EPA is the Clean Water Act Section 401 certifying authority on the Standing Rock Reservation, because the Standing Rock Sioux Tribe had not received authorization to implement Section 401 of the Clean Water Act. The EPA will complete the Section 401 certification process as the certifying authority prior to issuing any permit.

7 References

Alonso, A., et al. Short-term toxicity of ammonia, nitrite, and nitrate to the aquatic snail *Potamopyrgus antipodarum* (Hydrobiidae, Mollusca). Bull Environ Contam Toxicol. 2003; 70(5):1006-1012. https://doi.org/10.1007/s00128-003-0082-5.

Agency for Toxic Substances and Disease Registry. Public Health Statement: Ammonia. CDC. 2011. https://www.atsdr.cdc.gov/toxprofiles/tp126-c1-b.pdf.

Agency for Toxic Substances and Disease Registry. Toxicological Profile for Ammonia: Relevance to Public Health. 2004. https://www.ncbi.nlm.nih.gov/books/NBK598712/.

Aguirre-Villegas, H.A., et al. Modeling ammonia emissions from manure in conventional, organic, and grazing dairy systems and practices to mitigate emissions. Journal of Dairy Science. 2024; 107(1): 359-382. https://doi.org/10.3168/jds.2023-23782.

Ball I.R. The relative susceptibility of some species of fresh-water fish to poisons, Ammonia. Water Research. 1967; 767-775. https://doi.org/10.1016/0043-1354(67)90019-X.

Burkholder, J., et al. Impacts of waste from concentrated animal feeding operations on water quality. Environmental health perspectives. 2007; 115(2): 308–312. https://doi.org/10.1289/ehp.8839.

CDC. PLACES: Local Data for Better Health. Accessed March 24, 2025. https://www.cdc.gov/places/.

County Health Rankings & Roadmaps. Dewey, SD Profile. Accessed March 25. 2025. https://www.countyhealthrankings.org/health-data/south-dakota/dewey?year=2024.

EPA. CAFO Compliance Sampling Inspection, Maher Cattle, LLC, Timber Lake, South Dakota, NPDES ID# SDU000001. 2023.

EPA. Criteria Air Pollutants. 2018a. https://www.epa.gov/criteria-air-pollutants.

EPA. Development Document for the Final Versions to the National Pollutant Discharge Elimination System Regulation and the Effluent Guidelines for Concentrated Animal Feeding Operations. 2002. https://www3.epa.gov/npdes/pubs/cafo_dev_doc_p1.pdf.

EPA. Ground-level Ozone Pollution. 2018b. https://www.epa.gov/ground-level-ozone-pollution/basics-sip-requirements.

EPA. Health and environmental effects of particulate matter (PM). Updated July 16, 2024a. Accessed March 24, 2025. https://www.epa.gov/pm-pollution/health-and-environmental-effects-particulate-matter-pm.

EPA. Memorandum to File: Tribal Consultation with Standing Rock Sioux Tribe. August 13, 2024b.

EPA. Memorandum to File: Tribal Consultation with Standing Rock Sioux Tribe. July 7, 2025.

EPA. NAAQS Table. 2018c. https://www.epa.gov/criteria-air-pollutants/naaqs-table.

Hooiveld, M., et al. Odour annoyance in the neighborhood of livestock farming - perceived health and health care seeking behavior. Ann Agric Environ Med. 2015; 22(1): 55-61. https://doi.org/10.5604/12321966.1141369.

Kim, J., et al. Exposure of the US population to extreme precipitation risk has increased due to climate change. Scientific Reports. 2023; 13. https://doi.org/10.1038/s41598-023-48969-7.

Martens AP, et al. 2022. A checklist of South Dakota bumble bees (*Hymenoptera, Apidae*). Journal of Hymenoptera Research 94: 271–286. https://jhr.pensoft.net/article/94584/.

National Oceanic and Atmospheric Administration (NOAA). U.S. Billion-Dollar Weather & Climate Disasters 1980-2024. 2024. https://www.ncei.noaa.gov/access/billions/events/SD/1980-2024?disasters%5b%5d=all-disasters.

Ohio Department of Health. Methane. EPA. 2012. https://semspub.epa.gov/work/05/437170.pdf.

Omernik J.M., Griffith G.E. Ecoregions of the Conterminous United States: Evolution of a Hierarchical Spatial Framework. Environmental Management. 2014;54(6):1249-1266. https://doi.org/10.1007/s00267-014-0364-1.

Purple Air. Raw PM2.5 by PurpleAir. Accessed March 20, 2025. https://map.purpleair.com/air-quality-raw-pm25/united-states/south-dakota/dewey-county?opt=%2F1%2Flp%2Fa10%2Fp604800%2FcC0#9.02/45.1124/-100.9643.

Rahat, S.H., et al. Bracing for impact: how shifting precipitation extremes may influence physical climate risks in an uncertain future. Scientific Reports.2024; 14. https://doi.org/10.1038/s41598-024-65618-9.

South Dakota Department of Agriculture and Natural Resources. South Dakota Ambient Air Monitoring Annual Plan 2024. Pages 26-29. Published 2024. Accessed March 24, 2025. https://danr.sd.gov/Environment/AirQuality/AirMonitoring/docs/Annual%20Plan%202024.pdf.

South Dakota Department of Agriculture and Natural Resources. The 2022 South Dakota Integrated Report for Surface Water Quality Assessment. Published March 25, 2022. Accessed March 24, 2025. https://danr.sd.gov/OfficeOfWater/SurfaceWaterQuality/docs/DANR_2022_IR_approved.pdf.

South Dakota Department of Game, Fish, and Parks. South Dakota Wildlife. Accessed March, 24, 2025. https://www.nrc.gov/docs/ML1224/ML12241A402.pdf.

South Dakota Department of Health. 2023 Vital Statistics Report: A Comparison of Leading Health Indicators. 2024. https://doh.sd.gov/media/uu3ciguu/2023-vital-statistics-report.pdf.

South Dakota Department of Health. The Health Behaviors of South Dakotans 2022. 2024. https://doh.sd.gov/media/xhrlhcih/brfss_2022.pdf.

Suplee, M.W.,et al. Aquatic Plant and Dissolved Oxygen Changes in a Reference-Condition Prairie Stream Subjected to Experimental Nutrient Enrichments. Journal of the American Water Resources Association (JAWRA). 2019; 55(3): 700-719. https://doi.org/10.1111/1752-1688.12736.

Tong, D.Q., et al.Health and Safety Effects of Airborne Soil Dust in the Americas and Beyond. Reviews of Geophysics. 2023; 61(2): 1-52. https://doi.org/10.1029/2021RG000763.

U.S. Census Bureau. ACS 5-Year Estimates Data Tables: B19301 - Per Capita Income in the Past 12 Months (In 2023 Inflation-Adjusted Dollars). Accessed March 24, 2025. https://data.census.gov/table/ACSDT5Y2023.B19301?q=per%20capita%20income&g=010XX00US_040XX00US46_060XX00US4604163620&y=2023.

U.S. Census Bureau. ACS 5-Year Estimates Data Tables: S1701 - Poverty Status in the Past 12 Months. Accessed March 24, 2025. https://data.census.gov/table/ACSST5Y2023.S1701?q=Timber%20Lake%20city,%20Dewey%20County,%20South%20Dakota&g=010XX00US_040XX00US46_2500000US3970.

U.S. Census Bureau. Timber Lake city, Dewey County, South Dakota. Accessed March 24, 2025. https://data.census.gov/profile/Timber_Lake_city,_Dewey_County,_South_Dakota?g=060XX00US4604163620.

U.S. Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Endangered Status for the Eastern Regal Fritillary, and Threatened Status With Section 4(d) Rule for the Western Regal Fritillary. 2024; 89 Fed. Reg. 151. https://www.govinfo.gov/content/pkg/FR-2024-08-06/pdf/2024-16982.pdf.

U.S. Fish and Wildlife Service. Endangered and Threatened Wildlife and Plants; Endangered Species Status for Suckley's Cuckoo Bumble Bee. 2024. 89 Fed. Reg. 102074. https://www.govinfo.gov/app/details/FR-2024-12-17/2024-28729.

U.S. Fish and Wildlife Service. Species status assessment report for the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*), Version 1.0. U.S. Fish and Wildlife Service. 2024. https://www.bing.com/ck/a?!&&p=f9b473c3bc364c2bc198afacc8ac74b52eccd61e6c8d453fee11b5aa47fc228bJmltdHM9MTc0Mjg2MDgwMA&ptn=3&ver=2&hsh=4&fclid=07741ad9-e366-6c0c-126a-0974e7666238&psq=U.S.+Fish+and+Wildlife+Service.+2024.+Species+status+assessment+report+for+the+Suckley%e2%80%99s+Cuckoo+Bumble+Bee+(Bombus+suckleyi)%2c+Version+1.0.+August+2024.+Alaska+Region.&u=a1aHR0cHM6Ly9kb3dubG9hZHMucmVndWxhdGlvbnMuZ292L0ZXUy1SNy1FUy0yMDI0LTAxMTctMDAwOC9jb250ZW50LnBkZg&ntb=1.

U.S. Fish and Wildlife Service. Species Status Assessment Report for the Northern long-eared bat (*Myotis septentrionalis*), Version 1.2. 2022.

https://www.fws.gov/sites/default/files/documents/Species%20Status%20Assessment%20Report%20for%20the%20Northern%20long-eared%20bat-%20Version%201.2.pdf.

U.S. Fish and Wildlife Service. Species status assessment report for the rufa red knot (*Calidris canutus rufa*), Version 1.1. 2020. https://iris.fws.gov/APPS/ServCat/DownloadFile/187781.

U.S. Fish and Wildlife Service. Volume I: Draft breeding recovery plan for the Northern Great Plains piping plover (*Charadrius melodus*) and Volume II: Draft Revised Recovery Plan for the Wintering Range of the Northern Great Plains Piping Plover and Comprehensie Conservation Strategy for the Piping Plover in its Coastal Migration and Wintering Range in the Continental United States. 2015. https://esadocs.defenders-cci.org/ESAdocs/recovery_plan/Vol_II_NGP_Draft_Revised_Winter_Rec_Plan_6_05_15_2.pdf.

U.S. Fish and Wildlife Service. Whooping crane (*Grus americana*) species profile. Environmental Conservation Online System. Accessed on March 19, 2024. https://ecos.fws.gov/ecp/species/758.

University of Nebraska- Lincoln. Encyclopedia of the Great Plains, Fish. Accessed March 19, 2024. http://plainshumanities.unl.edu/encyclopedia/doc/egp.pe.026.

University of Nebraska- Lincoln. Encyclopedia of the Great Plains, Insects. Accessed March 19, 2024. http://plainshumanities.unl.edu/encyclopedia/doc/egp.pe.034.

Wang N., et al. Acute sensitivity of a broad range of freshwater mussels to chemicals with different modes of toxic action. Environmental Toxicology and Chemistry. 2017;36(3), 786-789. https://doi.org/10.1002/etc.3642.

8 Public Notice

The EPA will be providing the public with an opportunity to review and comment on this EA during a 45-day public comment period. The notice of availability for the EA will be published on the EPA's website at https://www.epa.gov/npdes-permits/south-dakota-npdes-permits.

Copies of the draft EA along with a copy of the draft NPDES permit can be downloaded from the above referenced website.

9 List of Preparers

This EA was prepared by the EPA Region 8 office with the assistance of contractors from the Avanti Corporation, a federal contractor.

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Appendix A – Natural Resources Conservation Service (NRCS) National Conservation Practice Standard for Prescribed Grazing (Code 528)

United States Department of Agriculture

Natural Resources Conservation Service

CONSERVATION PRACTICE STANDARD

GRAZING MANAGEMENT

CODE 528

(ac)

DEFINITION

Managing vegetation with grazing and browsing animals to achieve specific ecological, economic, and management objectives.

PURPOSE

Use practice to accomplish one or more of the following purposes:

- Improve or maintain desirable species composition, structure, productivity, health and/or vigor of plants and plant communities.
- Improve or maintain the quantity, quality, and/or balance of forages to meet the nutritional needs and ensure the health and performance of grazing and browsing animals.
- Reduce or eliminate the transportation of sediment, nutrients, pathogens, or chemicals to surface and/or groundwater.
- Improve or maintain upland hydrology, riparian dynamics, or watershed function to reduce surface or groundwater depletion and improve naturally available moisture.
- Improve or maintain soil health components and indicators, such as soil organic matter, soil aggregate stability, soil organism habitat, or increase infiltration and water holding capacity, reduce runoff and compaction.
- Prevent or reduce sheet, rill, classic gully, ephemeral gully, bank, and wind erosion.
- Improve or maintain terrestrial habitat for wildlife and invertebrates and/or aquatic habitat for fish and other organisms.
- Manage biomass accumulation for the desired fuel load to reduce wildfire risk or to facilitate prescribed burning.
- Reduce plant pest pressure from invasive and/or undesirable plants and other pests as part of an integrated plan.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all lands where grazing and browsing animals are managed.

CRITERIA

General Criteria Applicable to All Purposes

This practice is intended to address specific resource concerns through management of vegetation with herbivores.

Manage livestock numbers and grazing periods to adjust the intensity, frequency, timing, duration, and distribution of grazing and browsing to meet the planned objectives for plant communities, the animals, and the associated resources. This includes adjusting animal numbers, grazing periods, and movements

based on the rate of plant growth, available forage, livestock forage demand, or other desired objectives (e.g., degree of forage utilization, targeted plant height or standing biomass, residual forage mass, or animal performance).

Plan forage harvest in accordance with site production limitations, rate of plant growth, physiological development of plants, and nutritional needs of the animals.

Maintain appropriate residual vegetation throughout the year to meet management objectives, build ecosystem resistance and resilience to disturbances and address resource concerns.

Provide desired plants sufficient recovery time from grazing/browsing to meet planned objectives. Deferment or rest should be planned for critical periods of plant or animal needs.

Manage grazing/ browsing animals to improve ecosystem function and maintain planned vegetative cover on sensitive sites such as riparian areas, wetlands, habitats of concern, and karst areas etc.

Provide adequate quantity, quality, and distribution of drinking water for animals during periods of occupancy.

Develop and document contingencies to prepare for episodic disturbances such as drought, flood, wildfire, insect infestation, and other events that could develop or intensify with climate change.

Ensure excess nutrients brought into the system with supplemental/substitutional feeding are managed and/or applied in an environmentally appropriate manner.

Utilize holding areas when conditions are not appropriate for grazing (such as drought or excessively wet soils). Locate holding areas where they avoid creating additional resource concerns.

Develop and implement a monitoring strategy that supports adaptive management and documents decisions based upon ecologic triggers and thresholds to optimize the conservation outcome.

Additional Criteria to Improve or Maintain the Desirable Species Composition, Structure, Productivity, Health and/or Vigor of Plants and Plant Communities.

Base the intensity, frequency, timing, and duration of grazing and browsing to manage for desirable plant species with consideration to the ecological site potential.

Where invasive plant pressure is a concern, maintain or improve desired species' competitive ability with strategies such as changing the season/time of use.

If stocking rate exceeds carrying capacity of the grazing land, remove livestock from the site until adequate recovery of desired plant species is achieved. If the stocking rate is out of balance, adjust livestock numbers to match the carry capacity of the land.

On pastureland, cropland, or other appropriate land use, test soil periodically for nutrient status and soil reaction and apply fertilizer and/or soil amendments according to soil test results as needed to improve or maintain plant vigor.

Additional Criteria to Improve or Maintain the Quantity, Quality, and/or Balance of Forages to Meet the Nutritional Needs and Ensure the Health and Performance of Grazing and Browsing Animals.

Plan grazing/browsing to balance forage quantity and/or quality goals of the producer within the capability of the resource to respond to management.

Plan grazing to improve plant and animal health by managing for optimal plant diversity, diet selection, delivery of nutrients and by reducing detrimental effects or losses from toxic plant and other hazards.

Provide feed as needed to meet the desired nutritional demand of the kind and class of grazing and browsing livestock.

Use National Research Council or Land Grant University recommendations for protein and energy requirements for grazing and/or browsing livestock.

Additional Criteria to Reduce or Eliminate the Transportation of Sediment, Nutrients, Pathogens, or Chemicals to Surface and/or Groundwater.

–

Maintain or improve hydrologic function including infiltration and/or filtering capacity and soil surface stability to reduce runoff by providing adequate ground cover, plant spacing, and plant density.

Manage intensity, frequency, timing, and duration of grazing, browsing and/or feeding to reduce the number, size, and frequency of heavy use areas, maintain vegetative cover and improve nutrient distribution.

Utilize strategic placement of water facilities, feeding areas and other infrastructure to minimize deposition of animal wastes into concentrated flow areas or waterbodies.

Minimize animal impacts on stream bank or shoreline stability.

Additional Criteria to Improve or Maintain Upland Hydrology, Riparian Dynamics, or Watershed Function to Reduce Surface or Groundwater Depletion and Improve Naturally Available Moisture.

Manage livestock impacts to uplands, riparian and watersheds or other critical or sensitive areas to improve or maintain plant community structure, composition, and function.

Manage intensity, frequency, timing, and duration of grazing/ browsing to:

- Provide adequate ground cover and plant density to maintain or improve infiltration capacity and reduce runoff.
- Maintain plant structure and composition to improve filtering capacity of the vegetation.
- Avoid or minimize grazing when soils are wet or prone to compaction.
- Maintain adequate riparian community structure and function to support desired riparian, wetland, floodplain, and stream species.

Additional Criteria to Improve or Maintain Soil Health Components and Indicators, such as Soil Organic Matter, Soil Aggregate Stability, Soil Organism Habitat, or Increase Infiltration and Water Holding Capacity, Reduce Runoff and Compaction.

Plan intensity, frequency, timing, and duration of grazing/browsing to:

- Allow adequate recovery of plants.
- Maximize root growth and production of root exudates to increase soil organic matter.
- Maintain enough live leaf area for solar energy capture.
- Reduce compaction by improving soil biological activity, water infiltration, and increasing production and vigor of live plant roots.
- Maintain or increase plant diversity to improve soil microbial diversity, aggregate stability, and soil organism habitat.
- Improve or maintain plant cover and residue to limit water loss through evaporation and moderate soil temperature.
- Manage grazing/browsing to encourage deep rooted perennial plants.
- Manage livestock to avoid trailing.

- Minimize or separate locations of heavy use areas to improve nutrient distribution.
- Avoid or minimize grazing when soils are wet or prone to compaction. Mitigate or move livestock to designated areas in adverse conditions to protect the integrity of the soil.

Additional Criteria to Prevent or Reduce Sheet, Rill, Classic Gully, Ephemeral Gully, Bank, and Wind Erosion.

Plan intensity, timing, frequency, and duration of grazing/browsing to:

- Provide adequate ground cover from plant canopy, litter, and trampled plant residue to protect the soil surface from hoof and raindrop impact.
- Reduce detachment and transport of soil particles caused by water and wind action.
- Prevent or mitigate the effects of compaction and trailing by livestock.
- Minimize grazing animal impact on areas that have high soil erosion potential.
- Locate facilitating infrastructure (fence, watering facilities, etc.) in locations away from streambank, shoreline, and concentrated flow areas.

Additional Criteria to Improve or Maintain Terrestrial Habitat for Wildlife and Invertebrates and/or Aquatic Habitat for Fish and Other Organisms.

–

Identify target species or guild and follow approved habitat requirements when planning grazing management.

Plan intensity, frequency, timing, and duration of grazing/browsing to develop and maintain plant structure, density, and diversity for the habitat requirements of the target species or guilds.

Additional Criteria to Manage Biomass Accumulation for the Desired Fuel Load to Reduce Wildfire Risk or to Facilitate Prescribed Burning.

–

Plan intensity, frequency, timing, and duration of grazing/ browsing to:

- Manage fuel continuity, structure, and abundance to reduce wildfire behavior and intensity.
- Facilitate desired conditions such as fine fuel management for prescribed burns.

Additional Criteria to Reduce Plant Pest Pressure From Invasive and/or Undesirable Plants and Other Pests as Part of an Integrated Plan.

Plan intensity, frequency, timing, and duration of grazing/browsing to manage undesirable plant species.

When supplemental/substitutional feeds are provided, avoid introducing noxious, invasive, or undesirable species.

Provide adequate rest to enhance regrowth of desirable species.

Maximize grazing/browsing impact on target species when most palatable to the animal, and/or most damaging to the target species.

Utilize livestock species most suited to graze or browse undesirable plants.

Mitigate short-term negative impact to other resources (SWAPA+H+E) and document within the grazing management plan.

Utilize CPS Brush Management (Code 314) and/or CPS Herbaceous Weed Treatment (Code 315) in conjunction with grazing management to treat invasive species and to promote community resistance and protect desired plant communities.

CONSIDERATIONS

Where practical and beneficial, start the grazing sequence in a different management unit each growing season.

Match stocking rates with carrying capacity to minimize the need for supplemental/substitutional feed.

Use herding of livestock to achieve a greater flexibility and adaptation of grazing management and/or where additional guardianship is needed to prevent livestock interaction with toxic plants and/or predators.

Herders operating in hazardous conditions, including in the proximity of dangerous plants and animals, should take appropriate precautions to ensure their safety.

Use drought and other weather forecasting tools to promote the accuracy of forage production projections.

Refer to agency approved localized climate projections in the development of the grazing management plan.

Consider parasite life cycles, type(s) of livestock, residual grazing heights and rest/deferment cycles to manage parasites.

Plan biosecurity measures to prevent the transfer of disease-causing organisms, pests. or invasive species being introduced or spread.

Design and install facilities to minimize stress, spread of diseases and parasites, contact with harmful organisms and toxic plants.

Design and install livestock feeding, handling, and watering facilities in a manner to improve and/or maintain animal distribution.

Provide shelter in the form of windbreaks, sheds, shade structures, and other protective features where conditions warrant the protection of livestock from severe weather, intense heat/humidity, and predators.

Minimize grazing infrastructure when effects are negative to fish and wildlife species of concern.

When managing biomass accumulation, consider increased variability of precipitation, rising average air temperatures and/or encroachment of plant species that may fuel wildfire.

Improve energy efficiency by minimizing the need for stored forages and maximizing the number of grazing days.

Consider the needs of other enterprises utilizing the same land, such as wildlife and recreational uses.

Provide deferment or rest from grazing/ browsing as necessary to ensure the success of other conservation practices.

When feeding areas accumulate excess nutrients, consider developing a Comprehensive Nutrient Management Plan or refer to CPS Nutrient Management (Code 590), CPS Waste Storage (Code 313), CPS Heavy Use Area Protection (Code 561), CPS Waste Transfer (Code 634), or CPS Feed Management (Code 592).

Refer to CPS Brush Management (Code 314), CPS Herbaceous Weed Control (Code 315) and CPS Prescribed Burning (Code 338) for additional management options on woody species and herbaceous weeds.

Refer to CPS Fuel Break (Code 383) and CPS Firebreak (Code 394) for additional criteria and considerations for reducing fuel loads to minimize wildfire risk.

Refer to CPS Prescribed Burning (Code 338) for additional criteria and considerations for planning prescribed burns.

PLANS AND SPECIFICATIONS

From information collected through the conservation planning process, a grazing management plan (GMP) will be followed on lands that are part of a grazing system. At a minimum, the grazing plan will include the requirements found in the National Range and Pasture Manual and should be completed with active client involvement. The GMP will include:

- Goals and objectives- The long-term goals and more immediate objectives should be described in the grazing management plan. This includes the client's ambitions for their operation, their livestock, their land and resources, and actions to address identified resource concerns related to soil water, air, plants, and animals.
- Resource inventory- The inventory includes existing conservation practices and infrastructure, and the current condition of the natural resources present on the planning area. The inventory should identify the following benchmark conditions:
    - History of the operation.
    - Current stocking rates.
    - Location and condition of planned and existing practices such as fences, wells, pipelines, and watering facilities with quality, quantity, distribution, and seasonal availability information.
    - Existing resource conditions and concerns.
    - Critical/sensitive areas such as riparian, wetlands, habitats-of-concern, and karst areas etc.
    - Ecological site(s), current ecological state, or plant community descriptions(s) including potential forage production.
    - Noxious and invasive species location and extent.
    - Heavy use areas, animal trailing sites, or areas with erosion and runoff occurring or compaction concerns.
    - Areas of cultural significance.
    - Other areas with opportunities to enhance resource concerns.
- Forage inventory including:
    - Existing quality, quantity, and species in each management unit(s).
    - Carrying capacity should be established with forage animal balance that aligns livestock and wildlife demand with forage produced or provided.
- Grazing schedule/strategy for livestock that identifies:
    - Periods of grazing/ browsing.
    - Rest or deferment periods after grazing/browsing events or to accommodate other treatment activities within a management unit.
    - The flexibility needed for adaptive management decisions as supported by the contingency plan and monitoring plan to achieve desired outcomes.
    - Site specific strategies or targeted grazing to address resource concerns, including critical and sensitive areas, taking into consideration the unique attributes of each identified area and the necessary grazing management to maintain or improve the site.
- Contingency preparations that serve as a guide for adaptive management decisions to minimize or mitigate resource or economic impacts from episodic events (e.g., drought, soil saturation, flooding, fire, insects, etc.) which may intensify with climate change.
- Monitoring with appropriate protocols and records that assess whether the grazing strategy is on track to meet the identified goals and objectives. Record keeping should be maintained and short

and/or long-term monitoring conducted to support timely adaptive management decisions. Identifying key areas, key plants, or other monitoring or assessment indicators that help managers make grazing management decisions should be documented.

These plans and specifications will be available through implementation requirements and/or other information for applying the practice to achieve its intended purpose.

OPERATION AND MAINTENANCE

Operation

Grazing management will be applied on a continuing basis throughout the livestock occupation period of all planned grazing units.

Adaptive management decisions will be made as needed and documented within the plan to ensure that the goals and objectives of the grazing strategy are met.

Utilize short and long-term monitoring to achieve successful outcomes, reach goals and objectives and support timely adaptive management decisions.

Identify key areas, key plants, or other monitoring indicators to evaluate grazing management decisions.

Maintenance

Monitoring data and grazing records will be used on a regular basis to make changes as necessary to ensure that objectives are being met.

All conservation practices [e.g., CPS Fence (Code 382), Brush Management (Code 314), Herbaceous Weed Treatment (Code 315), Prescribed Burning (Code 338), Pasture and Hay Planting (Code 512), Range Planting (Code 550), Pest Management Conservation System (Code 595) and conservation practices to support livestock water systems etc.] that are needed to facilitate adequate grazing and browsing distribution as planned by this practice standard will be maintained in good working order and operated as intended.

REFERENCES

Ball, D., E. Ballard, M. Kennedy, G. Lacefield, D. Undersander. 2008. Extending grazing and reducing stored feed needs. University of Kentucky Cooperative Extension Service AGR-199.

Baron, V. S., E. Mapfumo, A. C. Dick, M. A. Naeth, E. K. Okine, and D. S. Chanasyk. 2002. Grazing intensity impacts on pasture carbon and nitrogen flow. Rangeland Ecology & Management/Journal of Range Management Archives, 55(6), 535-541.

Borman, M. M., C. R. Massingill and E. W. Elmore. 1999. Riparian area responses to changes in management. Rangelands 21; 3-7.

Briske, D. D. editor. {2011}. Conservation Benefits of Rangeland Practices: Assessment, Recommendations, and Knowledge Gaps. U.S. Department of Agriculture, Natural Resources Conservation Service.

Bruegger, R. A., L. A. Varelas, L. D. Howery, A. Torell, M. B. Stephenson and D. W. Bailey. 2016. Targeted grazing in southern Arizona: using cattle to reduce fine fuel loads. Rangeland Ecology and Management 69 (1): 43-51.

Davies, K. W., C. S. Boyd, J. D. Bates and A. Hulet. 2015. Dormant season grazing may decrease wildfire probability by increasing fuel moisture and reducing fuel amount and continuity. International Journal of Wildland Fire 24 (6): 849-856 https://doi.org/10.1071/WF14209

Derner, J. D. and G. E. Schuman. 2007. Carbon sequestration and rangelands: a synthesis of land management and precipitation effects. Journal of Soil and Water Conservation 62: 7-85.

Follet, R.F., J. M. Kimble and R. Lal. 2001. The Potential of U.S. Grazing Lands to Sequester Carbon and Mitigate the Greenhouse Effect. Lewis Publishers, Boca Raton, Florida.

Franzluebbers, A. J. 2020. Cattle grazing effects on the environment: greenhouse gas emissions and carbon footprint. Management Strategies for Sustainable Cattle Production in Southern Pastures, 11-34.

Franzluebbers, A. J., L. K. Paine, J. R. Winsten, M. Krome, M. A. Sanderson, K. Ogles and D. Thompson. 2012. Well-managed grazing systems: a forgotten hero of conservation. Journal of Soil and Water Conservation, Vol. 67, No. 4: 101A-104A.

Fuhlendorf, S. D., D. M. Engle. 2001. Restoring heterogeneity on rangelands: ecosystem management based on evolutionary grazing patterns. BioScience, Volume 51, Issue 8, 625-632.

Hewins, D. B., M. P. Lyseng, D. F. Schoderbek, M. Alexander, W. D. Willms, C. N. Carlyle, S. X. Chang and E. W. Bork. 2018. Grazing and climate effects on soil organic carbon concentration and particle size association in northern grasslands. Scientific Reports 8 (1): 1336.

Hodgson, J. and A. W. Illius. Editors. 1996. Ecology and Management of Grazing Systems. CABI, Wellingford, United Kingdom.

Holechek, J. L., R. D. Pieper and C. H. Herbel. 2000. Range management principles and practices. 5th edition. Prentice Hall, New Jersey.

Kumar, S., R. P. Udawatta and S. H. Anderson. 2010. Root length density and carbon content of agroforestry and grass buffers under grazed pasture systems in a Hapludalf. Agroforestry Systems, 80, 85-96.

Nader, G., Z. Henkin, E. Smith, R. Ingram and N. Narvaez. 2007. Planned herbivory in the management of wildfire fuels-grazing is most effective at treating smaller diameter live fuels that can greatly impact the rate of spread of a fire along with the flame height. Society for Range Management, Rangelands 5, 18-24.

Naeth, M. A., A. W. Bailey, D. J. Pluth, D. S. Chanasyk, R. T. Hardin. 1991. Grazing impacts on litter and soil organic matter in mixed prairie and fescue grassland ecosystems of Alberta. *Journal of Range Management* 44, 7e12.

National Research Council, Nutrient Requirement Series, Nutrient Requirements of Domestic Animals. National Academy Press. Washington, D.C.

Nelson, C. Jerry, editor. {2012}. Conservation Outcomes from Pastureland and Hayland Practices: Assessment, Recommendations and Knowledge Gaps. Allen Press, Lawrence, Kansas.

Oates, L. G., and R. D. Jackson. 2014. Livestock Management Strategy Affects Net Ecosystem Carbon Balance of Subhumid Pasture, Rangeland Ecology and Management 67:19–29.

Oles, K. M, D. A. Weixelman, D. F. Lile, K. W. Tate, L. K. Snell, L. M. Roche. 2017. Riparian meadow response to modern conservation grazing management. Environmental Management. 60: 383-395.

Roche, L. M, B. B. Cutts, J. D. Derner, M.N. Lubell, K. W. Tate, On-Ranch Grazing Strategies: Context for the Rotational Grazing Dilemma, *Rangeland Ecology and Management* 68 (2015) 248-256.

Rotz, C. A., K. J. Soder, R. H Skinner, C. J. Dell, P. J, Kleinman, J. P Schmidt, R. B. Bryant. 2009. Grazing can reduce the environmental impact of dairy production systems. *Forage and Grazinglands*. 1-8.

Sanderson, M. A., R. H. Skinner, D. J. Barker, G. R. Edwards, & al, e. (2004). Plant species diversity and management of temperate forage and grazing land ecosystems. *Crop Science*, 44(4), 1132-1144.

Schuman, G. E., L. J. Ingram, P. D. Stahl, and G. F. Vance. 2005. Dynamics of long-term carbon sequestration on rangelands in the western USA. In *XX International grassland congress*, vol. 26, 590. Wageningen: Academic Publishers.

Swanson, S., S. Wyman, C. Evans. 2015 Practical grazing management to maintain or restore riparian functions and values on rangelands, *Journal of Rangeland Applications:* Volume 2, 1-28.

Taylor, C.A., Jr. 2006. Targeted grazing to manage fire risk. In: K. Launchbaugh and J. Walker (EDS) pgs 108-115, Targeted Grazing: A Natural Approach to Vegetation Management and Landscape Enhancement. American Sheep Industry.

Teague, W. R., S. L. Dowhower, S. A. Baker, N. Haile, P. B. DeLaune, & D. M. Conover. (2011). Grazing management impacts on vegetation, soil biota and soil chemical, physical and hydrological properties in tall grass prairie. *Agriculture, ecosystems & environment*, 141 (3-4), 310-322.

Undersander, D., B. Albert, D. Cosgrove, D. Johnson, P. Peterson. (n.d.) 2002. Pasture for profit. A guide to rotational grazing (A3529).

U.S. Department of Agriculture, Natural Resources Conservation Service. 2020. National Range and Pasture Handbook. Washington, D.C.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2021. National Range and Pasture Manual.

Vavra, M., 2005. Livestock grazing and wildlife: developing compatibilities. *Rangeland Ecology Management* 58 (2): 128-134.

Appendix B – Administrative Compliance Order on Consent, May 7, 2024 (Docket No. CWA-08-2024-0005)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8

IN THE MATTER OF:	)	Docket No. CWA-08-2024-0005
	)	
MAHER CATTLE COMPANY, LLC,	)	
PATRICK MAHER,	)	
JAMES MAHER	)	
	)	ADMINISTRATIVE
	)	COMPLIANCE ORDER
	)	ON CONSENT
Respondents	)	

I. INTRODUCTION

1. Respondents, Maher Cattle, LLC, and Patrick Maher and James Maher, in their individual capacities, own and/or operate a concentrated animal feeding operation (CAFO) located at 13031 248th Avenue, in Timber Lake, South Dakota, on the Standing Rock Reservation (the Facility). The Facility includes the feedlot, located at approximately latitude 45.503528°N, longitude -101.161852°W and the yearling operation, located at approximately latitude 45.508319°N, longitude -101.162371°W.

2. The U.S. Environmental Protection Agency (EPA) and Respondents, having agreed settlement of this action is in the public interest, consent to the entry of this Administrative Compliance Order on Consent (Agreement) without adjudication of any issues of law or fact herein, and the Respondents agree to comply with the terms of this Agreement.

3. This Agreement is issued under the authority of section 309(a) of the Clean Water Act (Act), 33 U.S.C. § 1319(a), which authorizes the Administrator of the EPA to issue an order requiring compliance by any person found to be in violation of

section 301 of the Act. This authority has been delegated to the Regional Administrator of EPA Region 8 and redelegated to the undersigned official.

II. STATUTORY AND REGULATORY BACKGROUND

4. Section 301 of the Act, 33 U.S.C. § 1311(a), prohibits, among other things, the discharge of pollutants by any person into waters of the United States except as in compliance with section 402 of the Act, 33 U.S.C. § 1342.

5. Section 402 of the Act, 33 U.S.C. § 1342, establishes a National Pollutant Discharge Elimination System (NPDES) program, administered by EPA to permit discharges of pollutants into navigable waters, subject to specific terms and conditions.

6. Section 502(12) of the Act, 33 U.S.C. § 1362(12), defines the term "discharge of a pollutant" to include "any addition of any pollutant to navigable waters from any point source." Pursuant to 40 C.F.R. § 122.2, "discharge" when used without qualification means the "discharge of a pollutant."

7. "Pollutant" is defined by section 502(6) of the Act, 33 U.S.C. § 1362(6), to include, among other things, "solid waste, . . . biological materials, . . . and industrial, municipal, and agricultural waste discharged into water."

8. "Point source" is defined by section 502(14) of the Act, 33 U.S.C. § 1362(14), to include "any discernible, confined and discrete conveyance, including, but not limited to any pipe, ditch, channel, tunnel, well, discrete fissure, container, rolling stock, concentrated animal feeding operation . . . from which pollutants are or may be discharged."

9. To implement section 402 of the Act, EPA promulgated regulations codified at 40 C.F.R. part 122. According to 40 C.F.R. § 122.23(d), a CAFO must not discharge unless the discharge is authorized by an NPDES permit.

10. ”Animal feeding operation” or “AFO” is defined by 40 C.F.R. § 122.23(b)(1) as a lot or facility where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and where crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

11. “Concentrated animal feeding operation” or "CAFO" is defined in 40 C.F.R. § 122.23(b)(2) as an animal feeding operation that is defined as a Large CAFO or a Medium CAFO in accordance with 40 C.F.R. § 122.23(b), or that is designated as a CAFO in accordance with 40 C.F.R. § 122.23(c). Moreover, two or more AFOs under common ownership are a single AFO for the purposes of determining the number of animals at an operation, if they adjoin each other or if they use a common area or system for the disposal of wastes. 40 C.F.R. § 122.23(b)(2).

12. "Large CAFO" is defined at 40 C.F.R. § 122.23(b)(4) to include an animal feeding operation that stables or confines 1,000 cattle other than mature dairy cows or veal calves. Cattle includes but is not limited to heifers, steers, bulls, and cow/calf pairs.

13. The regulations define the “production area” of an animal feeding operation as the area including “the animal confinement area, the manure storage area, the raw materials storage areas, and the waste containment areas.” 40 C.F.R. § 122.23(b)(8).

14. "Process wastewater" is defined in 40 C.F.R. § 122.23(b)(7) as water "directly or indirectly used in the operation of the AFO for any or all of the following: spillage or overflow from animal or poultry watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; or dust control." Process wastewater also includes "any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed milk, eggs, or bedding." *Id.*

15. "Navigable waters" means the waters of the United States. 33 U.S.C. § 1362(7).

16. EPA is authorized to administer the federal NPDES program on the Standing Rock Reservation.

III. FINDINGS OF FACT AND VIOLATION

17. The Respondents own and/or operate the Facility.

18. The Facility is located within the exterior boundaries of the Standing Rock Reservation.

19. On July 14, 2022, representatives of the EPA inspected the Facility and observed the following:

    a. A feedlot is located east of 248th Avenue on the south side of High Bank Creek at approximately latitude 45.503528°N, longitude -101.161852°W.

    b. Yearlings are confined to the yearling pens located just west of 248th Avenue across from the feedlot at approximately latitude 45.508319°N, longitude -101.162371°W.

c. High Bank Creek flows west to east through the northernmost yearling pen, which is directly west of 248th Avenue at approximately latitude 45.508750°N and longitude -101.162768°W.

d. The remaining yearling pens south of the north pen are sloped to the north and drain to High Bank Creek.

e. Manure was land applied, but the rate at which manure can be land applied at an agronomic rate was not calculated in accordance with 40 C.F.R. § 122.23(e)(1).

f. Feed was stored uncovered on the concrete feed pad adjacent to the feedlot near High Bank Creek.

g. Cattle have direct access to High Bank Creek in the grazing field west of the yearling pens.

h. The Facility was discharging to High Bank Creek.

20. On June 27, 2023, representatives of the EPA returned to the Facility to conduct sampling and made the following additional observations:

a. Sampling results showed a general increasing trend for ammonia as nitrogen, phosphorous, total kjeldahl nitrogen, biochemical oxygen demand, and E. coli at each of the six sampling locations downstream of the yearling operation and feedlot operation. EPA's Water Quality Standard (WQS) Criteria was exceeded for phosphorous, total nitrogen, and E. coli.

21. High Bank Creek is a relatively permanent tributary of the Grand River, which is a relatively permanent tributary of the Missouri River.

22. The Missouri River is a traditionally navigable water.

23. High Bank Creek, the Grand River, and the Missouri River are navigable waters as defined in 33 U.S.C. § 1362(7).

24. The Facility confines and feeds or maintains cattle for a total of 45 days or more in any 12-month period.

25. Crops, vegetation, forage growth, and post-harvest residues are not sustained in the normal growing season over any portion of the Facility where animals are confined.

26. The Facility is an AFO as defined by 40 C.F.R. § 122.23(b)(1).

27. The feedlot, which is part of the Facility, was confining and feeding approximately 2,200 head of cattle at the time of the EPA inspection on July 14, 2022, and approximately 5,900 head of cattle at the time of the EPA inspection on June 27, 2023. The Facility has capacity for at least 12,000 head of cattle.

28. Because the Facility confines greater than or equal to 1,000 cattle, the Facility is a CAFO as defined in 40 C.F.R. § 122.23(b)(2) and section 502(14) of the Act, 33 U.S.C. § 1362(14), and a Large CAFO as that term is defined in 40 C.F.R. § 122.23(b)(4).

29. Respondents are "persons" within the meaning of section 502(5) of the Act, 33 U.S.C. § 1362(5).

30. Respondents have not received coverage under an NPDES section 402 permit under 40 C.F.R. § 122.23(d).

31. Respondents have discharged pollutants from the Facility to waters of the United States without an NPDES permit, in violation of section 301(a) of the Act, 33 U.S.C. § 1311(a) and 40 C.F.R. § 122.23(d)(1).

32. Respondents did not maintain land application records until at least Fall of 2022, in violation of 40 C.F.R. §§ 122.23(e)(2) and 122.42(e)(1)(ix).

IV. COMPLIANCE ORDER

Based on the foregoing Findings of Fact and Violation, and pursuant to the authority vested in the Administrator of the EPA pursuant to section 309(a) of the Act, 33 U.S.C. § 1319(a), as properly delegated to the undersigned official, it is hereby ORDERED and the Respondents AGREE as follows:

33. Respondents shall immediately cease and desist discharging pollutants into waters of the United States from the Facility unless these discharges are in accordance with a NPDES permit issued pursuant to section 402 of the Act, 33 U.S.C. § 402.

34. Respondents shall immediately conduct daily visual monitoring of all potential sources of discharges containing manure, waste silage, feed, and/or other process wastewaters to waters of the United States from the Facility. Monitoring locations shall include but are not limited by the Agreement to: areas of potential or actual discharges from fields subject to land application of wastes, confinement areas, feed storage, and waste storage lagoons.

35. Respondents shall immediately develop and maintain a written monitoring log containing the following information for each area monitored as required by the preceding paragraph: the date and time of the visual observation, an indication of whether a discharge was observed, and the initials of the person making the observation. Respondents shall maintain the monitoring records at the Facility for at least three years after this Agreement is terminated and make them available for inspection or copying upon request by any authorized representatives of EPA.

36. Respondents shall immediately conduct daily monitoring of precipitation at the Facility, using a rain gauge. Respondents shall record and maintain daily records of precipitation amounts with the monitoring records required by this Agreement.

37. For each observed discharge of any agricultural waste or other pollutant(s) from the Facility into a water of the United States, Respondents shall:

    a. Within thirty (30) minutes of the initial discharge, collect a minimum of one grab sample in accordance with the methods specified in 40 C.F.R. part 136, and submit the sample to a laboratory to be analyzed in accordance with the sample holding times and methods of analysis specified in 40 C.F.R. part 136 for total nitrogen, nitrate nitrogen, ammonia nitrogen, total phosphorous, E. coli bacteria, five-day biochemical oxygen demand, total suspended solids, pH, and temperature.

    b. Submit to EPA within 15 calendar days of the discharge a written report containing:

        i. Date and time of the discharge,

        ii. Location of the discharge,

        iii. Origin of the discharge,

        iv. Estimated volume of the discharge,

        v. Daily rainfall measurements for the 30 days prior to the discharge event,

        vi. Sample analysis results of the discharge, and

        vii. Steps taken to prevent recurrence of the discharge.

Timely reporting of an unpermitted discharge does not authorize any discharge or preclude further enforcement.

38. Within 90 calendar days of the Effective Date of this Agreement, Respondents shall remove the northernmost yearling pen through which High Bank Creeks flows, located at latitude 45.508750°N and longitude -101.162768°W. Respondents shall remove all manure from the pen, regrade to ensure bank stabilization, and seed with native vegetation to achieve 80% vegetative cover. Respondent shall follow all applicable conservation practice standards recommended by the Natural Resources Conservation Service (NRCS) in performing this work, including but not limited to the Critical Area Planting Conservation Practice Standard (Code 342).

39. Within 240 calendar days of receipt of this Agreement, Respondents shall construct adequate containment and storage structures that are designed, constructed, operated, and maintained to contain all manure, litter, and process wastewater including the runoff and direct precipitation from a 25-year, 24-hour rainfall event from all yearling pens.

40. Within 180 calendar days of receipt of this Agreement, Respondents should consider implementing all applicable conservation practice standards recommended by the NRCS for prescribed grazing in order to improve and maintain surface water quality, including but not limited to the Prescribed Grazing Conservation Practice Standard (Code 528).

41. Respondents shall store feed and bedding in a manner that ensures all runoff that comes into contact with stored feed and bedding flows into holding ponds.

42. Within 10 calendar days of receipt of this Agreement, Respondents shall submit to EPA written notice of their intent to comply with the requirements of this Order.

43. Respondents shall submit to EPA quarterly reports of its efforts to achieve compliance with this Agreement, emailed by the 10th day of every third month, until EPA notifies the Respondents, via email, that it no longer requires such reports. Each report shall include an update of the progress of the action items required by paragraphs 387 to 411 of this Agreement, local rainfall amounts for the previous month, as well as copies of all monitoring logs and records required by this Agreement.

44. Respondents shall provide each notification or report required by this Agreement via e-mail to the following:

Stephanie Meyers
U.S. Environmental Protection Agency, Region 8
Meyers.Stephanie@epa.gov
Phone: (303) 312-6938

45. All submittals required by this Agreement shall include the following certification statement, signed and dated by either the Respondents or a duly authorized representative of the Respondents:

> I hereby certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

46. Respondents shall allow access to the Facility by any authorized representatives of EPA, including but not limited to any of the Agency's contractors, upon proper

presentation of credentials, to the Facility and to records relevant to this Agreement for the following purposes:

a. To inspect and monitor progress of the activities required by this Agreement;

b. To inspect and monitor compliance with this Agreement; and

c. To verify and evaluate data and other information submitted to EPA.

47. This Agreement shall in no way limit or otherwise affect EPA's authority, or the authority of any other governmental agency, to enter the Facility, conduct inspections, have access to records, issues notices and orders for enforcement, compliance, or abatement purposes, or monitor compliance pursuant to any statute, regulation, permit, or court order.

48. Compliance with the terms and conditions of this Agreement shall not be construed to relieve Respondents of its obligation to comply with any applicable Federal, state, or local law or regulation.

49. This Agreement is not a permit or an authorization to place or discharge dredged or fill material in waters of the United States. Respondents shall consult with the U.S. Army Corps of Engineers (Corps) if any work to be performed pursuant to this Agreement requires a permit from the Corps under section 404 of the CWA.

50. At the EPA's sole discretion, the EPA may extend deadlines required by this Agreement with written notice to Respondents.

V. OTHER TERMS AND CONDITIONS

51. The FINDINGS in Section III of this Agreement are made solely by the EPA. In signing this Agreement, Respondents neither admit nor deny any of the FINDINGS. Without any admission of liability, Respondents consent to issuance of this Consent

Agreement and agree to abide by its terms. Respondents waive all claims for relief and otherwise available rights or remedies to judicial or administrative review Respondents may have with respect to any issue of fact or law set forth in this Agreement including, but not limited to, any right of judicial review under the Administrative Procedure Act, 5 U.S.C. §§ 701-706, providing for judicial review of final agency action. Respondents further agree not to challenge the jurisdiction of the EPA or the FINDINGS below in any proceeding to enforce this Agreement or in any action taken pursuant to this Agreement.

52. This Agreement shall apply to and be binding upon the EPA and upon Respondents and Respondents' agents, successors, and assigns. The undersigned representative of Respondents certifies that they are fully authorized to enter into the terms and conditions of this Agreement and to bind Respondents to the terms and conditions of this Agreement. No change in the ownership or operation of the Facility or of Respondents shall alter the Respondents' responsibilities under this Agreement unless the EPA, Respondents, and the transferee agree in writing to allow the transferee to assume such responsibilities. Additionally, no later than 30 calendar days prior to such transfer, Respondents shall notify the EPA of the transfer at the address specified in paragraph 44 of this Agreement.

53. Any failure by the Respondents to implement all requirements of this Agreement in full and in the manner and time period required shall be deemed a violation of this Agreement.

54. Nothing in this Agreement constitutes a waiver, suspension, or modification of the requirements of the Act or the rules and regulations promulgated thereunder, which remain in full force and effect.

55. Issuance of this Agreement shall not be deemed an election by the United States to forgo any civil or criminal action to seek penalties, fines, or other appropriate relief under the Act for violations giving rise to this Agreement.

56. Section 309(d) of the Act, 33 U.S.C. § 1319(d), as adjusted for inflation by 40 C.F.R. Part 19, authorizes civil penalties of up to $66,712 per day for each violation of section 301 of the Act, 33 U.S.C. § 1311, or of any order issued by EPA under section 309(a) of the Act, 33 U.S.C. § 1319(a), including this Agreement, which occurred after November 2, 2015, and for which penalties are assessed on or after December 27, 2023. Additionally, section 309(g) of the Act, 33 U.S.C. § 1319(g), authorizes EPA to impose administrative penalties for violation of the Act.

57. The EPA and Respondents consent to service of the Agreement by e-mail at the following valid email addresses: dean.abigail@epa.gov (Complainant), and Patrick_maher20@hotmail.com (for Respondents).

VI. EFFECTIVE DATE

58. This Agreement shall be effective on the date it is filed with the Office of the Regional Hearing Clerk for EPA Region 8.

VII. TERMINATION

59. Upon completion of all requirements of this Agreement, Respondents may submit a request for termination to the EPA, together with all necessary supporting documentation. Upon request from Respondents, EPA will confer with Respondents

within 60 days of receiving Respondents request to terminate. If the EPA finds it is appropriate to terminate this Agreement, the EPA may do so unilaterally.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION 8

Date 5/7/2024

By: Colleen Rathbone
Colleen Rathbone, Manager
Water Enforcement Branch
Enforcement and Compliance Assurance Division

FOR RESPONDENTS

Date: May 3 - 2024

By: Patrick Maher

Appendix C – Maher Inspection Report, July 14, 2022

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

Ref: 8ENF-W-NW

SENT VIA EMAIL
DIGITAL READ RECEIPT REQUESTED

Patrick Maher
Owner
Maher Cattle LLC
[redacted]

Re: Inspection Report for Maher Cattle LLC, Unpermitted Site

Dear Mr. Maher:

On July 14, 2022, representatives of the U.S. Environmental Protection Agency inspected the Maher Cattle LLC Concentrated Animal Feeding Operation (CAFO) in Timber Lake, South Dakota. At the time of the inspection, the CAFO was not covered by a National Pollutant Discharge Elimination System (NPDES) permit for animal feeding operations. The inspection was conducted under the authority of Section 308 of the Clean Water Act (Act). Enclosed is a report of the inspection.

Inspection findings are summarized within the enclosed inspection report in a table titled "Findings, Corrective Actions and Recommendations." Within **thirty (30) days** of receipt of this report, please provide the EPA and Standing Rock Sioux Tribe Environmental Program with a summary of corrective actions taken to address each of the findings identified in the report and any information that may change the findings or content of the report. This summary should be sent to:

Stephanie Meyers
meyers.stephanie@epa.gov

Jake Luger
jluger@standingrock.org

Please contact me at 303-312-6938 or meyers.stephanie@epa.gov if you have any questions regarding this letter or the enclosed report.

Sincerely,

Stephanie Meyers
NPDES and Wetlands Enforcement Section
Enforcement and Compliance Assurance Division

Enclosures:
1) NPDES CAFO Inspection Report – Maher Cattle LLC
2) NPDES Inspection Photo Log – Maher Cattle LLC

3) Maher Cattle Facility Schematic

cc: Nathan Pesta, Engineer, DGA Engineering (via email)
Jake Luger, Acting Environmental Director, Standing Rock Sioux Tribe (via email)
Ronni Chase Alone, Water Quality Specialist, Standing Rock Sioux Tribe (via email)
Qian Zhang, Permit Writer, EPA Region 8 (via email)

NPDES Inspection Report – Concentrated Animal Feeding Operations

National Database Information	
Inspection Date: **July 14, 2022**	Inspection Type: **Concentrated Animal Feeding Operation**
Entry/Exit Time: **7:54 am / 9:50 am**	NPDES ID Number: **Unpermitted Site**
NAICS Code: **112112**	Inspection ID: **202207_Maher Cattle**
Lead inspector and affiliation: **Stephanie Meyers, EPA Region 8**	
Inspector and affiliation: **Emilio Llamozas, EPA Region 8**	

Facility Location Information (*Name/Location/ Mailing Address*)	
Site/Facility Name & Location: **Maher Cattle LLC** **13031 248th Avenue** **Timber Lake, South Dakota 57656**	Email Report to: **Patrick Maher** [redacted] **Nathan Pesta** **nate@dgaengineering.com**

Contact Information	
	Name(s)/Title
Facility Contacts: *(indicate primary lead and present during inspection)*	**Patrick Maher / Owner / Maher Cattle LLC / primary lead during the inspection**
	Nathan Pesta / Engineer / DGA Engineering / present during the inspection
	Tyler Timmons / Tribal Utility Consultant / Indian Health Service (IHS) / present during the inspection
Person/Company meeting definition of "Operator"	**Maher Cattle LLC**
Authorized Official(s)	**Patrick Maher / Owner / Maher Cattle LLC**

Permit Information		
Is the permit on site and available? **N/A, the site is not permitted**	Effective Date: **N/A**	
	Expiration Date: **N/A**	
Receiving Water(s): **High Bank Creek, thence to the Grand River, thence to the Missouri River**	Latitude (from inspection): **45.503559°N**	Longitude (from inspection): **-101.162005°W**
Regulatory Inspector's source of information: **Site inspection and facility representatives.**		
Weather conditions during inspection (e.g., temperature, sky, precipitation): **Cloudy and warm, no precipitation**		

Areas Evaluated During Inspection		
Permit	Self-Monitoring Program	Pretreatment
Records	Compliance Schedule	Pollution Prevention
Facility Site Review	Laboratory	Stormwater
Effluent/Receiving Waters	**Operations and Maintenance**	Combined Sewer Overflow
Flow Measurement	Sludge Handling/Disposal	Sanitary Sewer Overflow

Site Information					
Permitted Capacity of Facility		**N/A**	Type of Confinement (open lot, roofed confinement, etc.)		**Open lot**
Max. Capacity of Facility		**12,000 cattle**	Annual Report Submission		**N/A**
Animal Type	**# confined**	**Large/Medium Definition**	**Animal Type**	**# confined**	**Large/Medium Definition**
Cattle	**2,233**	≥1,000/≥300	Sheep	**0**	≥10,000/≥3,000
Dairy mature	**0**	≥700/≥200	Dairy (heifers)	**0**	≥1,000/≥300
Swine (≥55#)	**0**	≥2,500/≥750	Swine (<55#)	**0**	≥10,000/≥3,000
Chickens (solid manure)	**0**	≥125,000/≥37,500	Chickens (liquid manure)	**0**	≥30,000/≥9,000
Turkeys	**0**	≥55,000/≥16,500	Other (specify) Bison – kept in pastures.	**120**	

Report Review and Signature		
Drafter Name	Address/Phone Number	Date
	U.S. EPA Region 8 1595 Wynkoop Street 8ENF-W-NW Denver, Colorado 80202	**08/29/2022**
Stephanie Meyers	**303-312-6938**	
Reviewer Name	Address/Phone Number	Date
	U.S. EPA Region 8 1595 Wynkoop Street 8ENF-W-NW Denver, Colorado 80202	**08/31/2022**
Emilio Llamozas	**303-312-6407**	
Supervisor Signature/Name	Address/Phone Number	Date
	U.S. EPA Region 8 1595 Wynkoop Street 8ENF-W-NW Denver, Colorado 80202	**09/26/2022**
Michael Boeglin	**303-312-6250**	

Inspection Narrative and Site Description

The inspection was conducted at the Maher Cattle LLC Concentrated Animal Feeding Operation (CAFO or facility) located in Timber Lake, South Dakota to evaluate the facility's discharge status and permit application status. Currently, the facility is unpermitted and facility representatives are working to develop a permit application for coverage under an NPDES permit. The facility is located within the boundaries of the Standing Rock Sioux Reservation. The EPA is responsible for implementing the NPDES program in Indian Country within the State of South Dakota. The inspection was announced approximately one week prior to the inspection to coordinate logistics and ensure a facility representative would be on site. On July 14, 2022, U.S. Environmental Protection Agency (EPA) inspectors Stephanie Meyers and Emilio Llamozas met with owner Patrick Maher and consultant Nathan Pesta with DGA Engineering. The EPA inspectors presented their credentials and had an opening conference to explain the purpose of the inspection. The inspectors proceeded to inspect the facility and asked questions to the facility representatives to help the inspectors evaluate the facility's discharge status and to obtain facility information for NPDES permit coverage. Throughout the inspection, the inspectors noted their observations in a checklist. Photographs taken during the inspection are included in the attached photo log.

Construction of the feedlot began in August 2019 and the facility has been in operation since January 2020. At the time of the inspection, the facility had 2,233 head of cattle on site. There were also 120 bison on site in pastures at the time of the inspection. Facility representatives indicated that the maximum capacity of the facility is 12,000 head of cattle. Cattle are confined to open lots within the production area from approximately October to June currently, and facility representatives indicated they are working towards housing cattle year-round. Cattle are also contained within surrounding fields for grazing.

The production area is approximately 72.8 acres, and 10,000 acres of cropland is available for land application of manure solids and 320 acres is available for application of liquid waste. The holding ponds have a capacity of 49 acre-feet to the top and approximately 33.9 acre-feet of capacity to the freeboard. Facility representatives indicated manure from the settling basins is currently being land applied, and that wastewater from the holding ponds is not being land applied. Manure is land applied using box spreaders and liquid waste can be land applied via piping.

After the opening conference, inspectors proceeded to inspect the facility. Mr. Maher escorted the EPA inspectors, IHS Tribal Utility Consultant, and the facility's engineering consultant. Inspectors first observed the settling basins and holding pens. There are four rows of pens, each row containing between six and nine pens which drain via gravity flow to the north to settling basins (photos 126 and 127) that are along the northern end of each row of pens. Wastewater in settling basin 3 drains to the east to settling basin 4, settling basin 4 drains to settling basin 5, and settling basin 5 drains to holding pond 2. Settling basin 6 drains directly to holding pond 2 (photos 128 and 131) via gravity flow. Inspectors then observed a portion of High Bank Creek near a dam and culvert (photo 129) to the north of the holding pens and concrete feed pad, where significant erosion was observed. The facility representatives indicated that a beaver had plugged the culvert and in June 2021 there was a large rain event that caused the water to divert to the side creating a new channel for the creek. The inspectors also observed High Bank Creek on the northside of holding pond 2 (photo 130). The facility representatives indicated that holding pond 2 does not discharge to High Bank Creek. Inspectors then drove around to the southern end of the holding pens (photo 132) that drain to holding pond 2. After

that, inspectors observed settling basin 1 (photo 133), which drains to holding pond 1 (photo 134). Settling basin 2 also drains to holding pond 1 and settling basins 1 and 2 receive manure and wastewater via gravity flow from a separate set of pens to the west of the main holding pens, which drain to the east. Facility representatives indicated manure is removed from the settling basins and land applied to the oat field.

Inspectors then drove by the concrete feed pad where various types of feed are stored. At the time of the inspection, feed was not covered, and facility representatives indicated the oatlage pile was being cut (photo 135). Inspectors had asked about the facility's mortality management procedures, and facility representatives had indicated they compost dead cattle using manure and land apply the manure once the composting process is completed. They indicated that the carcasses dissolve in the manure in approximately nine days. There were no mortalities at the time of the inspection.

Inspectors then headed north on 248th Avenue and observed the yearling pens along the western side of 248th Avenue. It was observed that High Bank Creek runs through the middle of the northernmost yearling pen (photos 136-138) and continues to flow east through a large culvert pipe underneath the road (photo 139). Except for the southernmost yearling pen, the remaining pens are sloped to the north and would drain to the pen that High Bank Creek runs through (photos 136-137). A facility representative indicated yearlings are housed for a short amount of time in the yearling pens, are then moved to grazing fields to the west of the yearling pens, and then are eventually moved to the holding pens to the east of 248th Avenue.

At the end of the inspection, the inspectors held a closing conference with Mr. Maher and Mr. Pesta where they discussed preliminary findings. On July 21, 2022, the EPA sent an email to Mr. Maher and Mr. Pesta with the preliminary findings from the inspection. On July 25, 2022, Mr. Maher and Mr. Pesta provided a response to the preliminary findings.

Findings, Corrective Actions and Recommendations

Finding #1: The site did not have a concentrated animal feeding operation NPDES permit.
Maher Cattle LLC has been operating without an NPDES permit since January 2020 and has not yet submitted a permit application for NPDES permit coverage. In prior conversations and during the inspection, facility representatives indicated a permit application will be submitted by October 1, 2022. The facility, by definition, is a large CAFO and was discharging wastewater to High Bank Creek from the yearling pens.

Regulatory requirement:
In accordance with 40 C.F.R 122.21(a)(1), "Any person who discharges or proposes to discharge pollutants or who owns or operates a "sludge-only facility" whose sewage sludge use or disposal practice is regulated by part 503 of this chapter, and who does not have an effective permit, except persons covered by general permits under § 122.28, excluded under § 122.3, or a user of a privately owned treatment works unless the Director requires otherwise under § 122.44(m), must submit a complete application to the Director in accordance with this section and part 124 of this chapter. The requirements for concentrated animal feeding operations are described in § 122.23(d)."

In accordance with 40 C.F.R. 122.23(f), "A CAFO must be covered by a permit at the time that it discharges."

40 C.F.R. 122.23(d)(1) states "A CAFO must not discharge unless the discharge is authorized by an NPDES permit. In order to obtain authorization under an NPDES permit, the CAFO owner or operator must either apply for an individual NPDES permit or submit a notice of intent for coverage under an NPDES general permit."

Corrective Action:
Prepare and submit a permit application for NPDES permit coverage. Provide a copy of the permit application to the EPA and the Standing Rock Sioux Tribe Environmental Program (Tribe). Comply with the requirements of the permit.

Finding #2: There were unauthorized discharges of wastewater to High Bank Creek.
There were unauthorized discharges of wastewater from the yearling pens to High Bank Creek due to the location of the yearling pens in close proximity to High Bank Creek, the slope of the yearling pens towards High Bank Creek and the rainfall in the area. The yearling pens are located around and inside of High Bank Creek and contain manure (photos 136-138).

Regulatory requirement:
Under the provisions of the Clean Water Act, as amended (33 U.S.C. 1251 et. seq.), federal law prohibits discharges to waters of the U.S. unless that discharge is covered under a National Pollutant Discharge Elimination System (NPDES) permit.

40 C.F.R 122.23(d)(1) states, "A CAFO must not discharge unless the discharge is authorized by an NPDES permit. In order to obtain authorization under an NPDES permit, the CAFO owner or operator must either apply for an individual NPDES permit or submit a notice of intent for coverage under an NPDES general permit."

Corrective Action:
Ensure that wastewater from the yearling pens is not discharged to High Bank Creek. Provide the EPA and the Tribe with a description of the corrective actions taken to address this finding.

Finding #3: Manure was land applied and the rate at which manure can be land applied at an agronomic rate was not calculated.
A facility representative indicated that solid manure from the settling basins (photos 126 and 127) was land applied to crops in 2020 and 2021. At the time of the inspection, there were no agronomic rate calculations records for the application of the manure. It appears the appropriate agronomic rate at which manure is being land applied is not being calculated.

Regulatory requirement:
40 C.F.R. 122.23(e) states, "The discharge of manure, litter or process wastewater to waters of the United States from a CAFO as a result of the application of that manure, litter or process wastewater by the CAFO to land areas under its control is a discharge from that CAFO subject to NPDES permit requirements, except where it is an agricultural storm water discharge as provided in 33 U.S.C. 1362(14). For purposes of this paragraph, where the manure, litter or process wastewater has been applied in accordance with site specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter or process wastewater, as specified in § 122.42(e)(1)(vi)-(ix), a precipitation-related discharge of manure, litter or process wastewater from land areas under the control of a CAFO is an agricultural stormwater discharge.

(1) For unpermitted Large CAFOs, a precipitation-related discharge of manure, litter, or process wastewater from land areas under the control of a CAFO shall be considered an agricultural stormwater discharge only where the manure, litter, or process wastewater has been land applied in accordance with site-specific nutrient management practices that ensure appropriate agricultural utilization of the nutrients in the manure, litter, or process wastewater, as specified in § 122.42(e)(1)(vi) through (ix).

(2) Unpermitted Large CAFOs must maintain documentation specified in § 122.42(e)(1)(ix) either on site or at a nearby office, or otherwise make such documentation readily available to the Director or Regional Administrator upon request."

Corrective Action:
Ensure manure is land applied in accordance with site-specific nutrient management practices and documentation of land application of manure is maintained. Provide the EPA and the Tribe with a description of the corrective actions taken to address this finding.

Finding #4: Feed was stored uncovered on the concrete feed pad.
Feed, including oatlage, is stored on a concrete pad uncovered and susceptible to being transported by wind and coming into contact with storm runoff (photo 135). High Bank Creek is in close proximity to the north of the feed concrete pad. On July 25, 2022, facility representatives had sent EPA inspectors a photo showing the pile of oatlage has since been covered.

Regulatory requirement:
According to 40 CFR 122.23(b)(7) process wastewater also includes any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed, milk, eggs or bedding.

Recommendation:
Ensure runoff from the concrete feed pad is contained within the production area and not discharged to High Bank Creek. Provide the EPA and the Tribe with a description of the corrective actions taken to address this finding.

Finding #5: Cattle have direct access to High Bank Creek.
A facility representative indicated that grazing cattle have direct access to High Bank Creek in the field to the west of the yearling pens.

Recommendation:
Ensure cattle do not have direct access to High Bank Creek within the production area. Provide the EPA and the Tribe with a description of the corrective actions taken to address this finding.

Photographs for Maher Cattle Concentrated Animal Feeding Operation

Inspection Type: CAFO

Photo number 126 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is South.

Description:

Overview of cattle pens in the background and Settling Basin 3 in the foreground. The water flows to the north towards the settling basin. Solids settle out in the settling basin and the water flows to Settling Basin 4, which then flows into Settling Basin 5, which flows to Holding Pond 2.

Photo number 127 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Southeast.

Description:

Overview of cattle pens in the background and Settling Basin 3 in the foreground. The water flows to the north towards the settling basin. Solids settle out in the settling basin and the water flows to Settling Basin 4, which then flows into Settling Basin 5, which flows to Holding Pond 2.

Photo number 128 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Southeast.

Description:

Overview of Holding Pond 2 showing the inlet pipes coming from Settling Basin 5 and Settling Basin 6.

Photo number 129 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Southwest.

Description:

Overview of High Bank Creek near a dam on the north side of the feed pad area. The water flows to the north towards the foreground of the photo. Note erosion of the banks.

Photo number 130 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is East.

Description:

Overview of High Bank Creek north of Holding Pond 2. The water flows to the east towards the background of the photo.

Photo number 131 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is South.

Description:

Overview of Holding Pond 2 with cattle pens and settling basins in the background.

Photo number 132 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is North.

Description:

Overview of drainage from cattle pens to the north towards Holding Pond 2.

Photo number 133 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is South.

Description:

Overview of settling basin for the receiving pens. Solids accumulate in the settling basin and the water goes to Holding Pond 1.

Photo number 134 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Southeast.

Description:

Overview of Holding Pond 1 that receives water from Settling Basin 1 and 2 for the receiving pens.

Photo number 135 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Northeast.

Description:

Overview of feed pad. Note the feed was not covered at the time of the inspection.

Photo number 136 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is West.

Description:

Overview of High Bank Creek with yearling pens on both sides of the creek. The GPS coordinates were 45.50857 N, -101.16221 W. Note this was on the west side of 248th Avenue. High Bank Creek flows to the east.

Photo number 137 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Southwest.

Description:

Overview of High Bank Creek with yearling pens on the south side of the creek. Note this was on the west side of 248th Avenue. High Bank Creek flows to the east.

Photographs for Maher Cattle Concentrated Animal Feeding Operation

Inspection Type: CAFO

Photo number 138 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is Northwest.

Description:

Overview of High Bank Creek with yearling pens on the north side of the creek. Note this was on the west side of 248th Avenue. High Bank Creek flows to the east.

Photo number 139 taken by Stephanie Meyers on 7/14/2022.

The direction of the photo is East.

Description:

Overview of High Bank Creek. Note this was on the east side of 248th Avenue. High Bank Creek flows to the east.

Appendix D – Maher Sampling Inspection Report, June 27, 2023

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

Ref: 8ENF-W-NW

SENT VIA EMAIL
DIGITAL READ RECEIPT REQUESTED

Patrick Maher
Owner
Maher Cattle, LLC
patrick_maher20@hotmail.com

Re: CAFO Compliance Sampling Inspection, Maher Cattle, LLC, Timber Lake, South Dakota, NPDES ID# SDU000001

Dear Mr. Maher:

The U.S. Environmental Protection Agency (EPA) conducted a Compliance Sampling Inspection (CSI) at Maher Cattle, LLC, located at 13031 248th Avenue, Timber Lake, South Dakota on June 27, 2023. The objective of the CSI was to gather data upstream, at the discharge point of the facility, and downstream to determine what, if any, impacts the facility has on High Bank Creek. The purpose of the CSI was also to evaluate compliance with the requirements of the CAFO regulations under 40 CFR Part 122.23.

The enclosed CSI report contains the sampling procedure, analytical results, observations, and findings from the sampling conducted on June 27, 2023. If you have any questions, please contact Stephanie Meyers at (303) 312-6938 or meyers.stephanie@epa.gov.

Sincerely,
Meyers, Stephanie
Digitally signed by Meyers, Stephanie
Date: 2023.08.29 10:39:58 -06'00'
Stephanie Meyers
NPDES and Wetlands Enforcement Section
Enforcement and Compliance Assurance Division

Enclosures:
1. Maher Cattle CSI Report
2. Maher Cattle CSI Photo Log
3. MVTL Analytical Report

cc: Adam Rookey, Environmental Director, Standing Rock Sioux Tribe

NPDES CAFO Compliance Sampling Inspection (CSI) Report

CAFO Identification Number: SDU000001

Facility Name and Address: Maher Cattle, LLC
13031 248th Avenue
Timber Lake, SD 57656

Applicable CAFO Regulations: 40 CFR Part 122.23 (Concentrated animal feeding operations)

CSI date: June 27, 2023

Report Review		
Drafter Name	**Address/Phone Number**	**Date**
Stephanie Meyers	**U.S. EPA Region 8** **1595 Wynkoop Street** **8ENF-W-NW** **Denver, Colorado 80202** **303-312-6938**	**8/23/2023**
Reviewer Name	**Address/Phone Number**	**Date**
Emilio Llamozas	**U.S. EPA Region 8** **1595 Wynkoop Street** **8ENF-W-NW** **Denver, Colorado 80202** **303-312-6407**	**8/28/2023**
Supervisor Signature/Name	**Address/Phone Number**	**Date**
Emilio Llamozas	**U.S. EPA Region 8** **1595 Wynkoop Street** **8ENF-W-NW** **Denver, Colorado 80202** **303-312-6407**	**8/28/2023**

Section 1.0 – Inspection Narrative

On June 27, 2023, a Concentrated Animal Feeding Operation (CAFO) Compliance Sampling Inspection (CSI) was conducted at Maher Cattle, LLC (facility) in Timber Lake, South Dakota. The objective of the CSI was to gather data upstream, at the discharge point of the facility, and downstream to determine what, if any, impacts the facility has on High Bank Creek. The purpose of the CSI was also to evaluate compliance with the requirements of the CAFO regulations under 40 CFR Part 122.23.

At approximately 6:10 am, inspectors arrived on site and presented credentials to Mr. Maher. The inspectors held an opening conference with Mr. Maher where they explained the purpose of the sampling inspection. Inspectors then proceeded to conduct sampling at seven locations on site (3 upstream, 1 at the discharge point, and 3 downstream). Details on the facility and sampling procedures are described below.

At approximately 9:40 am, inspectors held a closing conference with Mr. Maher to discuss the due date for the Section 308 information request and offered to answer any questions.

Section 2.0 – Participants

EPA:

- Stephanie Meyers, NPDES Inspector
- Emilio Llamozas, NPDES Inspector

Maher Cattle, LLC:

- Patrick Maher, Owner

Section 3.0 – Facility Description

The Maher Cattle, LLC feedlot was constructed in August 2019 and the facility has been in operation since January 2020. Cattle are confined to open lots within the feedlot holding pens and also graze in surrounding fields, where they have direct access to High Bank Creek from all of the fields used for grazing. Cattle at the feedlot come from the yearling operation, the cow/calf operation, and are also purchased from a sales barn. A facility representative indicated that around 600-700 cow/calf pairs are confined to pens approximately 2 miles southwest of the feedlot for around 15-100 days prior to going to fields for grazing. Yearlings are also confined to the yearling pens located just west of 248th Avenue across from the feedlot holding pens, and these cattle are either purchased at a sales barn or come from the cow/calf pair operation. High Bank Creek flows through the northernmost yearling pen, and runoff flows downhill from the southern pens (photo 67). At the time of the inspection, the facility had 5,934 head of cattle on site. Facility representatives indicated that the maximum capacity of the facility is 12,000 head of cattle.

The production area is approximately 91.4 acres, and over 6,000 acres of cropland is available for land application of manure solids and 76 acres is available for application of liquid waste.

The holding ponds have a capacity of 49 acre-feet to the top and approximately 33.9 acre-feet of capacity to the freeboard.

Just east of 248th Avenue, there are four rows of feedlot pens, each row containing between six and nine pens which drain via gravity flow to the north to settling basins that are along the northern end of each row of pens. Wastewater in settling basin 3 drains to the east to settling basin 4, settling basin 4 drains to settling basin 5, and settling basin 5 drains to holding pond 2. Settling basin 6 drains directly to holding pond 2 via gravity flow. Settling basins 1 and 2 receive manure and wastewater via gravity flow from a separate set of pens to the west of the main holding pens, which drain to the east. Settling basins 1 and 2 drain the holding pond 1. Facility representatives stated the holding ponds do not discharge to High Bank Creek, and that manure is removed from the settling basins for land application via box spreaders.

Also on site is a concrete feed pad, where various types of feed are stored. At the time of the sampling inspection, large hay bales were stored in close proximity to High Bank Creek uncovered (photo 75). Mortality management also occurs on site, where deceased cattle are composted using manure and the manure is land applied once the composting process is completed. There were no mortalities at the time of the sampling inspection.

3.1 Applicable CAFO Regulations

The CAFO regulations found at 40 C.F.R. Part 122.23 impose requirements on facilities that fall under the definition of an animal feeding operation (AFO) and meet the criteria for a CAFO.

40 C.F.R. Part 122.23 states, "AFO means a lot or facility (other than aquatic animal production facility) where the following conditions are met:

i. Animals (other than aquatic animals) have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
ii. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility."

40 C.F.R. Part 122.23 also states, "CAFO means an AFO that is defined as a Large CAFO or as a Medium CAFO by the terms of this paragraph, or that is designated as a CAFO in accordance with paragraph (c) of this section. Two or more AFOs under common ownership are considered to be a single AFO for the purposes of determining the number of animals at an operation, if they adjoin each other or if they use a common area or system for the disposal of wastes."

The large CAFO threshold for cattle is 1,000 cattle; therefore, Maher Cattle, LLC is a large CAFO by definition.

Applicable permitting and NPDES requirements are listed in 40 C.F.R. Part 122.23 as well.

40 C.F.R. Part 412.31 states, "(a) Except as provided in paragraphs (a)(1) through (a)(2) of this section, there must be no discharge of manure, litter, or process wastewater pollutants into waters of the U.S. from the production area.

> (1) Whenever precipitation causes an overflow of manure, litter, or process wastewater, pollutants in the overflow may be discharged into U.S. waters provided:

(i) The production area is designed, constructed, operated and maintained to contain all manure, litter, and process wastewater including the runoff and the direct precipitation from a 25-year, 24-hour rainfall event;

(ii) The production area is operated in accordance with the additional measures and records required by § 412.37(a) and (b)."

Section 4.0 – EPA Sampling Objectives

The objective of the sampling was to evaluate the impact of process wastewater discharged by Maher Cattle, LLC into High Bank Creek.

4.1 Sampling Locations

Table 1 – High Bank Creek Sampling Locations

Site ID	Name	Latitude	Longitude	Description
UP1	Upstream 1	45.49425	-101.19785	High Bank Creek upstream of Maher Cattle and cow calf holding pens
UP2	Upstream 2	45.50381	-101.19163	High Bank Creek upstream of Maher Cattle, but downstream of cow calf holding pens
UP3	Upstream 3	45.50399	-101.17428	High Bank Creek upstream of Maher Cattle, but downstream of cow calf holding pens
DP	Discharge Point	45.50846	-101.16197	Discharge point from the yearling pens into High Bank Creek
DP2	Discharge Point Duplicate	45.50846	-101.16197	Discharge point from the yearling pens into High Bank Creek
DS1	Downstream 1	45.50782	-101.15308	High Bank Creek downstream of Maher Cattle discharge point
DS2	Downstream 2	45.50937	-101.14108	High Bank Creek downstream of Maher Cattle discharge point
DS3	Downstream 3	45.51625	-101.13033	High Bank Creek downstream of Maher Cattle discharge point

4.2 Sampling Procedures

EPA collected grab samples in High Bank Creek using 1-gallon cubitainers as subsamplers and filled four separate sample bottles provided by the laboratory for the parameters listed in Table 2. Observations, grab sample times, and photo descriptions were collected in a field notebook maintained for the CSI and are include below Table 2.

Table 2 – Sampling Parameters

Parameter	Method	Container
Kjeldahl Nitrogen, total	PAI-DK01	1L polyethylene
Nitrate – Nitrite Nitrogen	EPA 353.2	
Ammonia Nitrogen	EPA 350.1	
Phosphorous, total	EPA 365.1	
Nitrite – Nitrogen	EPA 353.2	125mL polyethylene
Biochemical Oxygen Demand	SM5210B-2016	1L polyethylene
Total Suspended Solids	USGS I-3765-85	
E. Coli	SM9223B-16 (23rd Ed)	120mL polypropylene

The following grab samples were gathered on June 27, 2023:

- Upstream 1 – sampled at 6:40 AM by Stephanie Meyers
- Upstream 2 – sampled at 7:03 AM by Stephanie Meyers
- Upstream 3 – sampled at 7:32 AM by Emilio Llamozas
- Discharge Point – sampled at 8:20 AM by Emilio Llamozas
- Discharge Point Duplicate – sampled at 8:22 AM by Emilio Llamozas
- Downstream 1 – sampled at 7:59 AM by Emilio Llamozas
- Downstream 2 – sampled at 8:55 AM by Emilio Llamozas
- Downstream 3 – sampled at 9:14 AM by Emilio Llamozas

Section 5.0 – QA/QC and Data Assessment/Validation

In addition to the sampling event, one QA/QC sample was taken as a duplicate at the discharge point to ensure sampling quality and consistency.

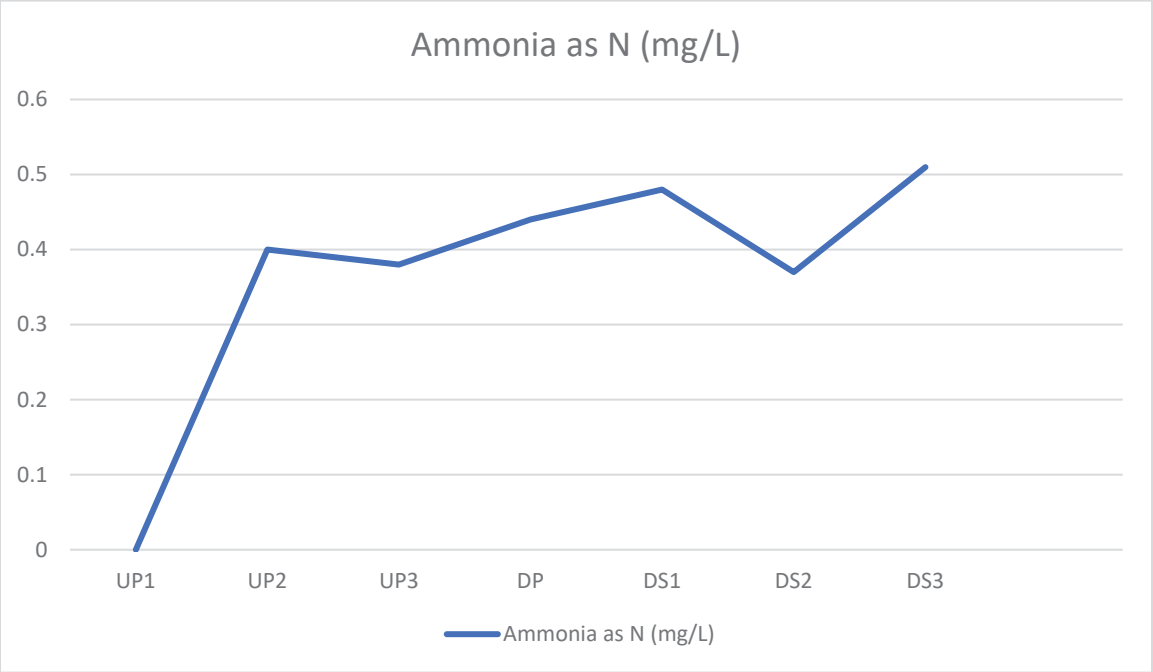
Upon receipt of the analytical data reports, a data validation process was completed to ensure the analytical results met the project objectives and the requirements identified in the Maher Cattle, LLC Sampling and Analysis Plan (SAP). The data validation process included review of all analytical data, any applicable laboratory qualifications, notes from the laboratory chemists, notes from the field sampling staff, and a comparison of the duplicate samples.

Section 6.0 – Analytical Results

The analytical results for each of the parameters listed above in Table 2 from the sampling event conducted by EPA on June 27, 2023 are discussed below. Results are comprehensive of the sampling event and general trends are identified when possible. EPA Water Quality Standards (WQS) Criteria are provided as context for reported concentrations that EPA has developed criteria for.

Ammonia as N

Ammonia Nitrogen was reported below the detection limit of 0.2 mg/L at the Upstream 1 sample point. Concentrations from the Upstream 2 sampling point to the Downstream 3 sampling were all elevated. WQS Criteria for Ammonia Nitrogen are pH and temperature dependent, and pH and temperature were not measured in the field; therefore, the results below are not compared against the WQS Criteria.



Nitrite as N

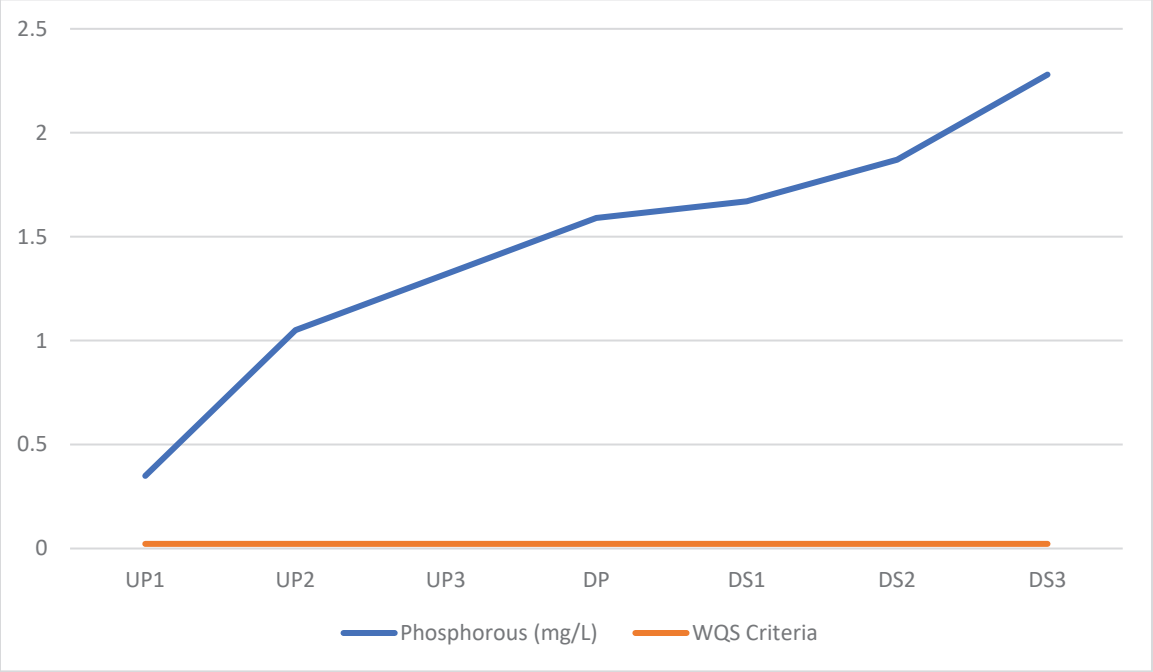
Nitrite as N was below the detection limit of <0.2 mg/L for each of the sampling locations.

Nitrate + Nitrite as N

Nitrate + Nitrite as N was below the detection limit of <0.2 mg/L for each of the sampling locations.

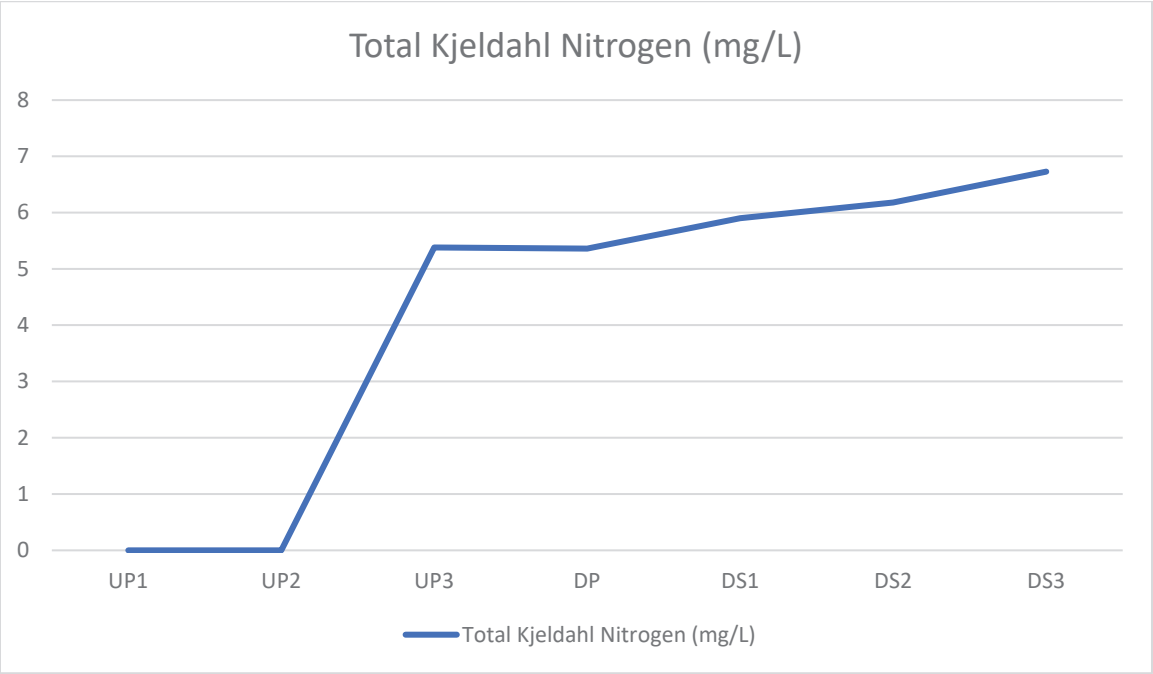
Phosphorous

Phosphorous concentrations show an increasing trend from the Upstream 1 sampling point to the Downstream 3 sampling point. The EPA developed nutrient criteria for rivers and streams in ecoregions across the country. Maher Cattle, LLC falls within ecoregion IV: great plains grass and shrublands. Based on the 25th percentile for ecoregion IV, EPA's recommended WQS Criteria for phosphorous is .023 mg/L. Each sample location exceeded EPA's WQS Criteria recommendation for phosphorous.



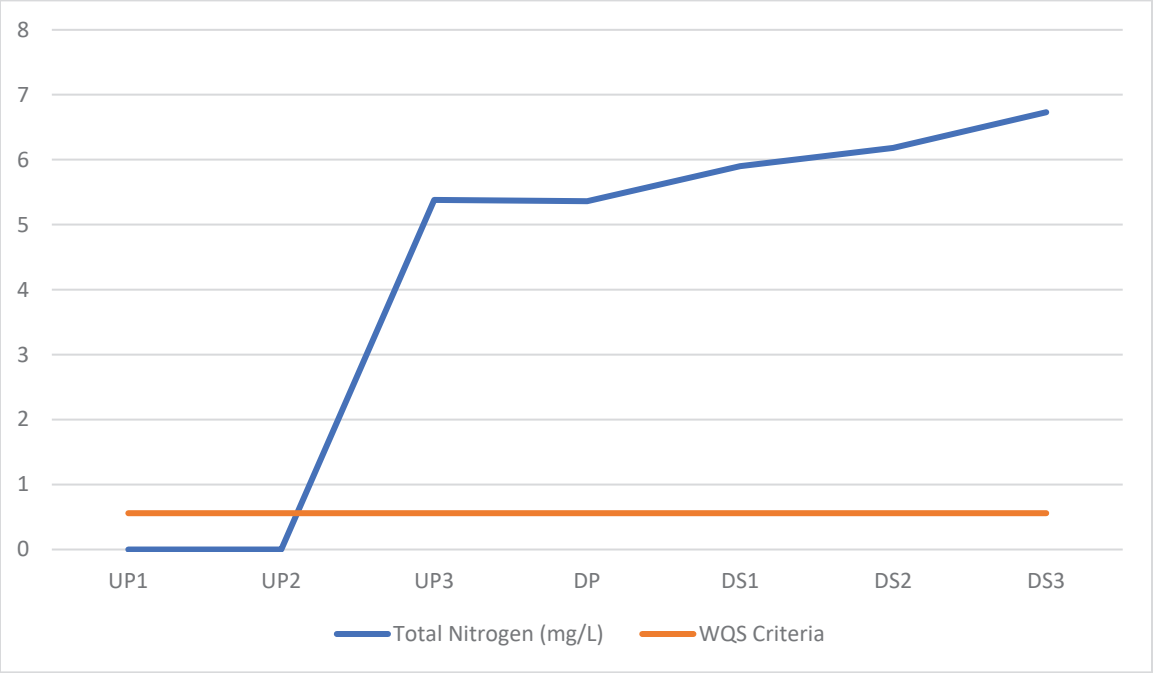
Total Kjeldahl Nitrogen

Total Kjeldahl Nitrogen was reported below the detection limit of 5 mg/L at the Upstream 1 and Upstream 2 sample points. Concentrations from the Upstream 3 sampling point to the Downstream 3 sampling were all elevated and show an increasing trend.



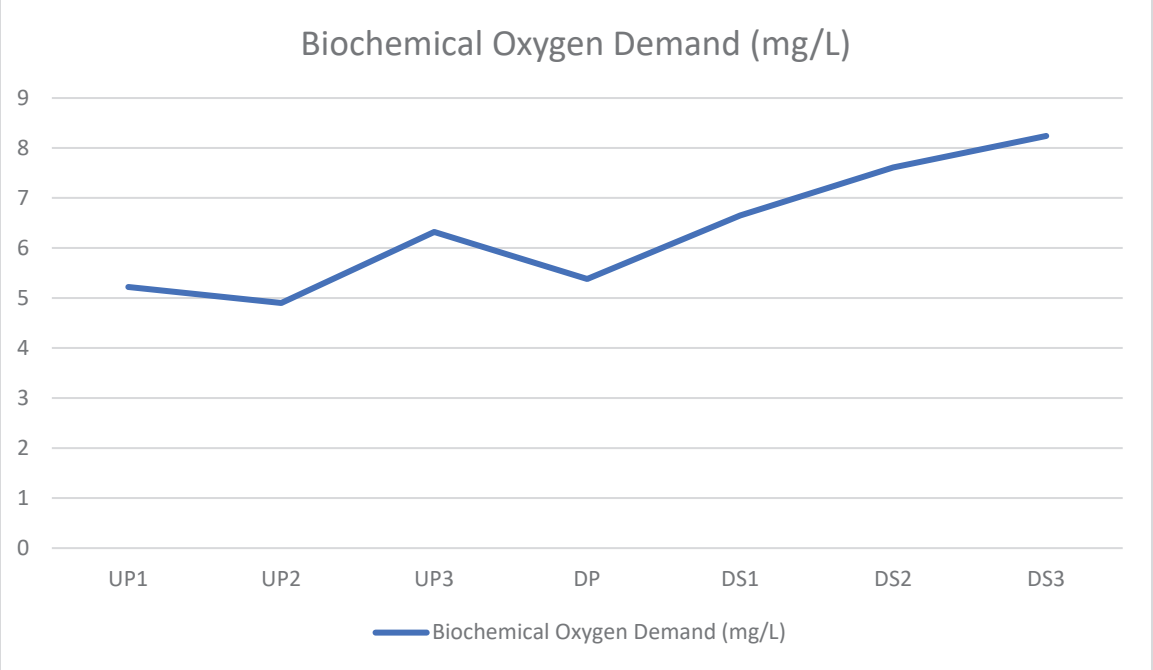
Total Nitrogen

Total Nitrogen is the sum of Total Kjeldahl Nitrogen and Nitrate + Nitrite as Nitrogen, which is shown in the graph below for each sampling location. Due to the Nitrate + Nitrite as Nitrogen values being below the detection limit, the values for Total Nitrogen are the same as the values for Total Kjeldahl Nitrogen. EPA's nutrient criteria for Total Nitrogen based on the 25th percentile is 0.56 mg/L. Concentrations from the Upstream 3 sampling point to the Downstream 3 sampling point all exceeded EPA's nutrient criteria for Total Nitrogen.



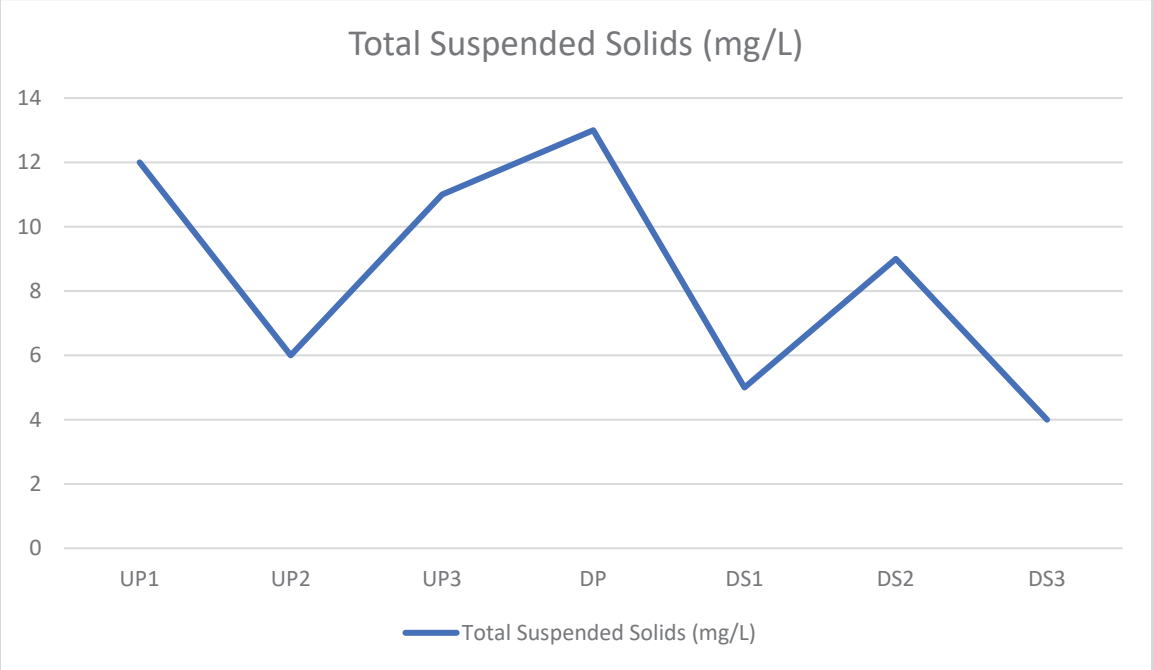
Biochemical Oxygen Demand

The Biochemical Oxygen Demand concentration was lowest at the Upstream 2 sampling location, increased at the Upstream 3 sampling location, decreased slightly at the Discharge Point, and then increased for all Downstream sampling locations.



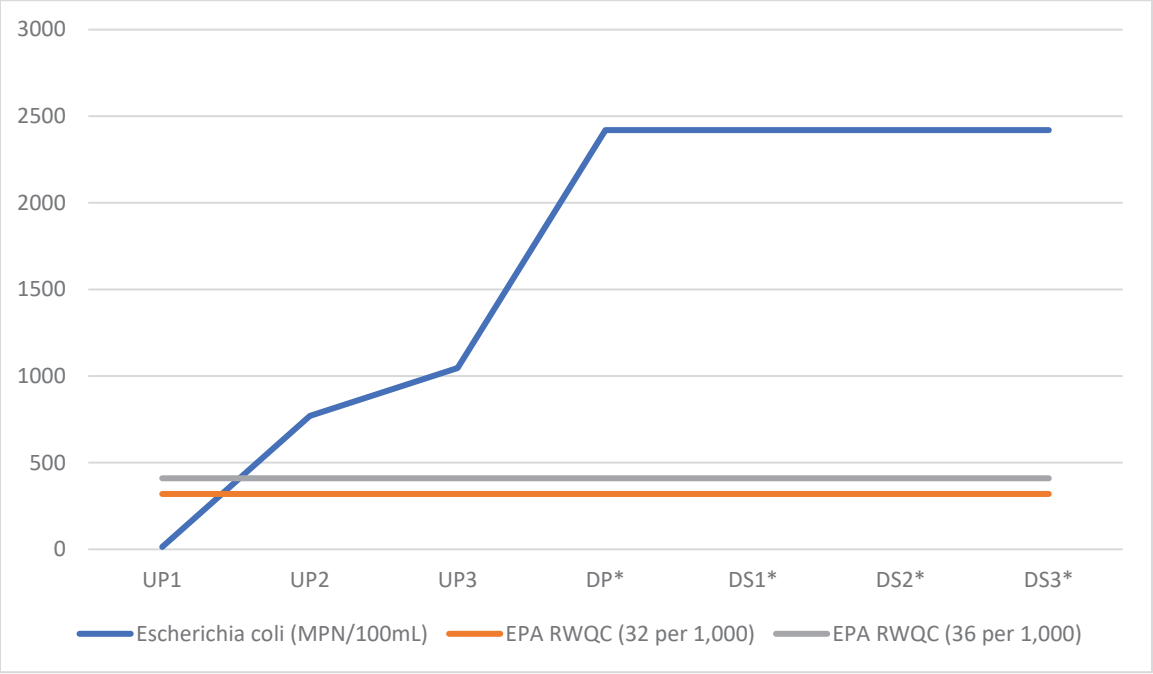
Total Suspended Solids

The Total Suspended Solids concentrations varied across all sampling locations.



Escherichia coli

Escherichia coli (E. coli) concentrations show an increasing trend from the Upstream 1 sampling point to the Downstream 3 sampling point. The sampling locations from the Discharge Point to Upstream 3 sampling point all exceeded the high-end detection limit of 2419.6 MPN/100mL. EPA's Recreational Water Quality Criteria (RWQC) for E. coli based on the 90th percentile for an estimated illness rate of 36 per 1,000 is 410 MPN/100mL and for an estimated illness rate of 32 per 1,000 the RWQC based on the 90th percentile is 320 MPN/100mL. Each sample location except for the Upstream 1 sampling location exceeded EPA's water quality criteria for E. coli.



Section 7.0 – Observations, Findings, and Corrective Actions

Based on the sample results, a general increasing trend was observed for Ammonia as Nitrogen, Phosphorous, Total Kjeldahl Nitrogen, Biochemical Oxygen Demand, and E. coli. EPA's WQS Criteria was exceeded for Phosphorous, Total Nitrogen, and E. coli. These trends and WQS exceedances demonstrate Maher Cattle, LLC is contributing pollutants to High Bank Creek.

Due to the impact on High Bank Creek, EPA requires all process wastewater discharges from Maher Cattle, LLC to High Bank Creek to cease and the facility must submit an NPDES permit application to the EPA.

Photographs for Maher Cattle, LLC Compliance Sampling Inspection

Inspection Type: Concentrated Animal Feeding Operation

Photo number 61 taken by Emilio Llamozas on 6/27/2023.

Description:

Overview of the upstream 1 sampling location

Photo number 62 taken by Emilio Llamozas on 6/27/2023.

The direction of the photo is West.

Description:

Overview of the upstream 2 sampling location

Photo number 63 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is West.

Description:

Overview of the upstream 3 sampling location

Photo number 65 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is East.

Description:

Overview of the downstream 1 sampling location

Photo number 66 taken by Stephanie Meyers on 6/27/2023.

Description:

Algae growth downstream of the downstream 1 sampling location

Photo number 67 taken by Stephanie Meyers on 6/27/2023.

Description:

Overview of High Bank Creek flowing through the yearling pens

Photo number 69 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is East.

Description:

Overview of the discharge point sampling location

Photo number 70 taken by Stephanie Meyers on 6/27/2023.

Description:

Algae growth upstream of the downstream 2 sampling location

Photo number 72 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is Southeast.

Description:

Overview of the downstream 2 sampling location

Photo number 74 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is North.

Description:

Overview of the downstream 3 sampling location

Photo number 75 taken by Stephanie Meyers on 6/27/2023.

The direction of the photo is Northeast.

Description:

Overview of hay bales stored along High Bank Creek east of the feed pad

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Account #: 78840 **Client:** US EPA Region 8
Workorder: SDU000001 (19360)

Stephanie Meyers
US EPA Region 8
1595 Wynkoop St
Denver, CO 80202

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carroll

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS:
MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS:
MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

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Account #: 78840 **Client:** US EPA Region 8

Workorder Summary

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

Analysis Results Comments

19360002 (UP2)

Matrix spike and/or matrix spike duplicate recovery was low; the associated laboratory control sample recovery was acceptable.(Nitrate + Nitrite as N)

19360004 (DP)

Matrix spike and/or matrix spike duplicate recovery was high; the associated laboratory fortified blank recovery was acceptable.(Ammonia as N)

19360008 (DS3)

Sample/sample duplicate relative percent difference exceeded the laboratory acceptance limit. Absolute difference of sample/sample duplicate was within the laboratory acceptance limit.(Total Suspended Solids)

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360001 **Date Collected:** 06/27/2023 06:40 **Matrix:** Wastewater
Sample ID: UP1 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	<0.2	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:05	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:26	06/28/2023 16:26	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:27	06/29/2023 10:27	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**0.35**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 07:58	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	<5.0	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**5.22**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**12**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	**14.6**	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360002 **Date Collected:** 06/27/2023 07:03 **Matrix:** Wastewater
Sample ID: UP2 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.40**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:06	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:27	06/28/2023 16:27	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:29	06/29/2023 10:29	EJV	*

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.05**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 07:59	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	<5.0	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**4.90**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**6**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	**770.1**	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360003 **Date Collected:** 06/27/2023 07:32 **Matrix:** Wastewater
Sample ID: UP3 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.38**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:07	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:28	06/28/2023 16:28	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:39	06/29/2023 10:39	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.32**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:00	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**5.38**	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**6.32**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**11**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	**1046.2**	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360004 **Date Collected:** 06/27/2023 08:20 **Matrix:** Wastewater
Sample ID: DP **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.44**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:08	AMC	*

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:29	06/28/2023 16:29	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:40	06/29/2023 10:40	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.59**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:01	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**5.36**	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**5.38**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**13**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360005 **Date Collected:** 06/27/2023 08:22 **Matrix:** Wastewater
Sample ID: DP2 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.42**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:15	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:31	06/28/2023 16:31	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:41	06/29/2023 10:41	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.51**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:02	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**5.43**	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**5.78**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**11**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.MVTL.com

Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360006 **Date Collected:** 06/27/2023 07:59 **Matrix:** Wastewater
Sample ID: DS1 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.48**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:16	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:32	06/28/2023 16:32	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:42	06/29/2023 10:42	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.67**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:03	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**5.90**	mg/L	5.0	1	07/07/2023 12:55	07/10/2023 15:34	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**6.65**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**5**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360007 **Date Collected:** 06/27/2023 08:55 **Matrix:** Wastewater
Sample ID: DS2 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.37**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:17	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:33	06/28/2023 16:33	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:43	06/29/2023 10:43	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**1.87**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:04	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**6.18**	mg/L	5.0	1	07/10/2023 12:14	07/10/2023 13:00	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**7.61**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**9**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

Analytical Results

Lab ID: 19360008 **Date Collected:** 06/27/2023 09:14 **Matrix:** Wastewater
Sample ID: DS3 **Date Received:** 06/27/2023 13:25 **Collector:** Client

Temp @ Receipt (C): 2.7 **Received on Ice:** Yes

Inorganic Chemistry

Method: EPA 350.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Ammonia as N	**0.51**	mg/L	0.2	1	06/30/2023 08:10	06/30/2023 11:18	AMC	

Method: EPA 353.2

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Nitrite as N	<0.2	mg/L	0.2	1	06/28/2023 16:34	06/28/2023 16:34	AMC	
Nitrate + Nitrite as N	<0.2	mg/L	0.2	1	06/29/2023 10:44	06/29/2023 10:44	EJV	

Method: EPA 365.1

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Phosphorus as P	**2.28**	mg/L	0.1	1	06/29/2023 17:08	06/30/2023 08:50	EJV	

Method: PAI-DK01

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Kjeldahl Nitrogen	**6.73**	mg/L	5.0	1	07/10/2023 12:14	07/10/2023 13:00	BLJ	

Method: SM5210B-2016

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Biochemical Oxygen Demand	**8.24**	mg/L	2	1	06/28/2023 08:15	06/28/2023 08:15	BLJ	

Method: USGS I-3765-85

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Suspended Solids	**4**	mg/L	2	1	06/27/2023 16:00	06/27/2023 16:00	RAA	*

Microbiology

Method: SM 9223B-16 (23rd Ed)

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	By	Qual
Total Coliforms	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	
Escherichia coli	>2419.6	MPN/100 mL	1	1	06/27/2023 14:35	06/27/2023 14:35	BLJ	

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Account #: 78840 **Client:** US EPA Region 8

QC Results Summary WO #: 19360

Ammonia as N Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			2	98.0		90	110		
LFB			2	90.0		90	110		
LFB			2	94.5		90	110		
LFB			2	98.0		90	110		
LFB			2	93.5		90	110		
MB		<0.2							
MB		<0.2							
MS/MSD	19360004		2	114.0	114.0	90	110	0.4	20
MS/MSD	19503001		2	109.0	110.0	90	110	0.5	20
MS/MSD	19627001		2	118.0	119.0	90	110	0.4	20
MS/MSD	19661001		20	104.0	106.0	90	110	0.3	20

Nitrate + Nitrite as N Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
LFB			0.5	100.0		90	110		
MS/MSD	19106003		1	101.0	101.0	90	110	0.0	20
MS/MSD	19177010		1	100.0	101.0	90	110	1.0	20
MS/MSD	19177022		50	114.0	116.0	90	110	0.6	20
MS/MSD	19260008		1	97.0	97.0	90	110	0.0	20
MS/MSD	19360002		1	73.0	73.0	90	110	0.0	20
MS/MSD	19360008		1	73.0	72.0	90	110	1.4	20
MS/MSD	19621001		1	94.0	94.0	90	110	0.0	20

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Account #: 78840 **Client:** US EPA Region 8

Nitrite as N — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.4	95.0		90	110		
MS/MSD	19360008		1	105.0	105.0	90	110	0.0	20

Phosphorus as P — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.5	98.0		90	110		
LFB			0.5	108.0		90	110		
MB		<0.1							
MB		<0.1							
MS/MSD	19360007		1	101.0	109.0	90	110	2.7	20
MS/MSD	19572001		1	96.0	102.0	90	110	1.4	20
MS/MSD	19657003		5	105.0	105.0	90	110	0.0	20

Total Kjeldahl Nitrogen — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			28.4	104.0		90	110		
CRM			28.4	104.0		90	110		
LFB			10	97.2		80	120		
LFB			10	97.2		80	120		
MB		<5.0							
MB		<5.0							
MS/MSD	19360003		10	100.0	80.4	80	120	13.9	20
MS/MSD	19572001		10	102.0	90.8	80	120	3.9	20

Total Suspended Solids — Units: mg/L

QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			50	100.0		77.2	109.2		
CRM			50	101.6		77.2	109.2		
MB		<2							
MB		<2							
DUP	18565001							11.8	20
DUP	19360004							8.0	20
DUP	19360008							28.6	20

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Account #: 78840 **Client:** US EPA Region 8

US EPA Region 8
WO: 19360

US ENVIRONMENTAL PROTECTION AGEN ...tody

Region 8 Laboratory
16194 W. 45th Drive
Golden, CO 80403
Fax: 303-312-7800

PROJECT NAME: SDU000001 | LSR #:

SAMPLER(S):
Name: Stephanie Meyers Signature: Date: 6/27/23
Name: Emilio Llamozas Signature: Date: 6/27/23

Comments: mailing address: Stephanie Meyers 1595 Wynkoop St Denver, CO 80202 meyers.stephanie@epa.gov

STATION ID.	STATION DESCRIPTION + NOTES	DATE	TIME	MATRIX	PRESERVATIVE	TKN/nitrate-nitrite	ammonia	phosphorus	nitrite	BOD	TSS	E. coli	NUMBER OF CONTAINERS	BOTTLE ID.	LAB ID.
UP1	SDU000001-062722023-UP1	6/27/23	6:40am	WW	3,6	X	X						1	UP1	001
UP1	SDU000001-062722023-UP1	6/27/23	6:40am	WW	6			X					1	UP1	
UP1	SDU000001-062722023-UP1	6/27/23	6:40am	WW	6				X	X			1	UP1	
UP1	SDU000001-062722023-UP1	6/27/23	6:40am	WW	5,6						X		1	UP1	
UP2	SDU000001-062722023-UP2	6/27/23	7:03am	WW	3,6	X	X						1	UP2	002
UP2	SDU000001-062722023-UP2	6/27/23	7:03am	WW	6			X					1	UP2	
UP2	SDU000001-062722023-UP2	6/27/23	7:03am	WW	6				X	X			1	UP2	
UP2	SDU000001-062722023-UP2	6/27/23	7:03am	WW	5,6						X		1	UP2	
UP3	SDU000001-062722023-UP3	6/27/23	7:32am	WW	3,6	X	X						1	UP3	003
UP3	SDU000001-062722023-UP3	6/27/23	7:32am	WW	6			X					1	UP3	
UP3	SDU000001-062722023-UP3	6/27/23	7:32am	WW	6				X	X			1	UP3	
UP3	SDU000001-062722023-UP3	6/27/23	7:32am	WW	5,6						X		1	UP3	
DP	SDU000001-062722023-DP	6/27/23	8:20am	WW	3,6	X	X						1	DP	004
DP	SDU000001-062722023-DP	6/27/23	8:20am	WW	6			X					1	DP	
DP	SDU000001-062722023-DP	6/27/23	8:20am	WW	6				X	X			1	DP	
DP	SDU000001-062722023-DP	6/27/23	8:20am	WW	5,6						X		1	DP	
DP2	SDU000001-062722023-DP2	6/27/23	8:22am	WW	3,6	X	X						1	DP2	005
DP2	SDU000001-062722023-DP2	6/27/23	8:22am	WW	6			X					1	DP2	
DP2	SDU000001-062722023-DP2	6/27/23	8:22am	WW	6				X	X			1	DP2	
DP2	SDU000001-062722023-DP2	6/27/23	8:22am	WW	5,6						X		1	DP2	

1-Relinquished By: Date/Time 6/27/23 1:25pm
2-Relinquished By: Date/Time
3-Relinquished By: Date/Time

1-Received By: Heather Horst 27Jun23 1325 Date/Time
2-Received By: Date/Time
3-Received By: Date/Time

PRESERVATIVES 1- HNO_3 2- H_3PO_4 3- H_2SO_4 4-HCl 5- $Na_2S_2O_3$ 6- Ice 7-Dry Ice 8- NaOH 9- Other_____

MATRIX W- Water S- Soil Sed- Sediment Bio- Bio Tissue O- Other_____

Shaded Areas = Lab use only
Cooler Temperature = 2.7°C

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Account #: 78840 **Client:** US EPA Region 8

US ENVIRONMENTAL PROTECTION AGENCY REGION 8 - Chain Of Custody

Region 8 Laboratory
16194 W. 45th Drive
Golden, CO 80403
Fax: 303-312-7800

PROJECT NAME: SDV000001 LSR #:

SAMPLER(S):
Name: Stephanie Meyers Signature: Date: 6/27/23
Name: Emilia Llamozas Signature: Date: 6/27/23

STATION ID.	STATION DESCRIPTION + NOTES	DATE	TIME	MATRIX	PRESERVATIVE	ANALYSIS: TKN/nitrate-nitrite as N	ANALYSIS: ammonia total phosphorus	ANALYSIS: nitrite	ANALYSIS: BOD	ANALYSIS: TSS	ANALYSIS: E. coli	NUMBER OF CONTAINERS	BOTTLE ID.	LAB ID.
DS1	SDV000001-062720223-DS1	6/27/23	7:59am	WW	3,6	X	X					1	DS1	006
DS1	SDV000001-062720223-DS1	6/27/23	7:59am	WW	6			X				1	DS1	
DS1	SDV000001-062720223-DS1	6/27/23	7:59am	WW	6				X	X		1	DS1	
DS1	SDV000001-062720223-DS1	6/27/23	7:59am	WW	5,6						X	1	DS1	
DS2	SDV000001-062720223-DS2	6/27/23	8:55am	WW	3,6	X	X					1	DS2	007
DS2	SDV000001-062720223-DS2	6/27/23	8:55am	WW	6			X				1	DS2	
DS2	SDV000001-062720223-DS2	6/27/23	8:55am	WW	6				X	X		1	DS2	
DS2	SDV000001-062720223-DS2	6/27/23	8:55am	WW	5,6						X	1	DS2	
DS3	SDV000001-062720223-DS3	6/27/23	9:14am	WW	3,6	X	X					1	DS3	008
DS3	SDV000001-062720223-DS3	6/27/23	9:14am	WW	6			X				1	DS3	
DS3	SDV000001-062720223-DS3	6/27/23	9:14am	WW	6				X	X		1	DS3	
DS3	SDV000001-062720223-DS3	6/27/23	9:14am	WW	5,6						X	1	DS3	

1-Relinquished By: Date/Time 6/27/23 1:25pm
2-Relinquished By: Date/Time
3-Relinquished By: Date/Time

1-Received By: AHH 27Jun23 Date/Time 1335
2-Received By: Date/Time
3-Received By: Date/Time

PRESERVATIVES 1- HNO_3 2- H_2PO_4 3- H_2SO_4 4-HCl 5- $Na_2S_2O_3$ 6- Ice 7-Dry Ice 8- NaOH 9- Other_____

MATRIX W- Water S- Soil Sed- Sediment Bio- Bio Tissue O- Other_____

Shaded Areas = **Lab use only**
Cooler Temperature = 2.7°C

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TM805
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Appendix E – [Reserved for decision document]