

North Dakota Department of Health Public Notice
Reissue of an NDPDES Permit

Public Notice Date: 4/21/2016

Public Notice Number: ND-2016-017

Purpose of Public Notice

The Department intends to reissue the following North Dakota Pollutant Discharge Elimination System (NDPDES) Discharge Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: 1/4/2016

Application Number: ND0026000

Applicant Name: Cargill Corn Milling (Progold)

Mailing Address: 18049 Co Rd 8 E, Wahpeton, ND 58075

Telephone Number: 701.671.1901

Proposed Permit Expiration Date: 6/30/2021

Facility Description

The reapplication is for a corn milling facility located near Wahpeton, North Dakota. This facility uses a wet milling process to produce corn syrup and livestock feed. The facility processes approximately 95,000 bushels of corn per day. The process generates approximately 1.15 million gallons of wastewater per day. The wastewater treatment system consists of an anaerobic digester, activated sludge process (SBRs) and four storage ponds with a total capacity of 98 million gallons. Treated wastewater can be discharged from the mechanical treatment system or the ponds at varying rates, depending on the characteristics of the wastewater and the Red River of the North. The discharge is located in the NE1/4 of Section 7, Township 133N, Range 47W, and is to the Red River of the North, a Class I stream.

Tentative Determinations

Proposed effluent limitations and other permit conditions have been made by the Department. They assure that State Water Quality Standards and applicable provisions of the FWPCAA will be protected.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Health, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by May 25, 2016 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

**FACT SHEET FOR NDPDES PERMIT
ND-0026000**

CARGILL CORN MILLING (PROGOLD)

DATE OF THIS FACT SHEET – April, 2016

INTRODUCTION

The Federal Clean Water Act (CWA, 1972, and later amendments in 1977, 1981, and 1987, etc.) established water quality goals for the navigable (surface) waters of the United States. One mechanism for achieving the goals of the CWA is the National Pollutant Discharge Elimination System (NPDES), which the US Environmental Protection Agency (EPA) has oversight authority. In 1975, the State of North Dakota was delegated primacy of the NPDES program by EPA. The North Dakota Department of Health (NDDoH) has been designated the state water pollution control agency for all purposes of the Federal Water Pollution Control Act, as amended [33 U.S.C. 1251, et seq.], and is hereby authorized to take all action necessary or appropriate to secure to this state the benefits of the act and similar federal acts. The department's authority and obligations for the wastewater discharge permit program is in the NDAC 33-16 (North Dakota Administrative Code), which was promulgated pursuant to NDCC chapter 61-28 (North Dakota Century Code). The department uses North Dakota Pollutant Discharge Elimination System (NDPDES) as its permitting title.

The following rules or regulations apply to NDPDES permits:

- Procedures the department follows for issuing NDPDES permits (NDAC chapter 33-16-01),
- Standards of Quality for Waters of the State (NDAC chapter 33-16-02.1).

These rules require any treatment facility operator to obtain an NDPDES permit before discharging wastewater to state waters. They also define the basis for limits on each discharge and for other requirements imposed by the permit.

According to the North Dakota Administrative Code (NDAC) section 33-16-01-08, the department must prepare a draft permit and accompanying fact sheet, and make it available for public review. The department must also publish an announcement (public notice) during a period of thirty days, informing the public where a draft permit may be obtained and where comments regarding the draft permit may be sent (NDAC chapter 33-16-01-07). For more information regarding preparing and submitting comments about the fact sheet and permit, please see **Appendix A – Public Involvement**. Following the public comment period, the department may make changes to the draft NDPDES permit. The department will summarize the responses to comments and changes to the permit in **Appendix D - Response to Comments**.

TABLE OF CONTENTS

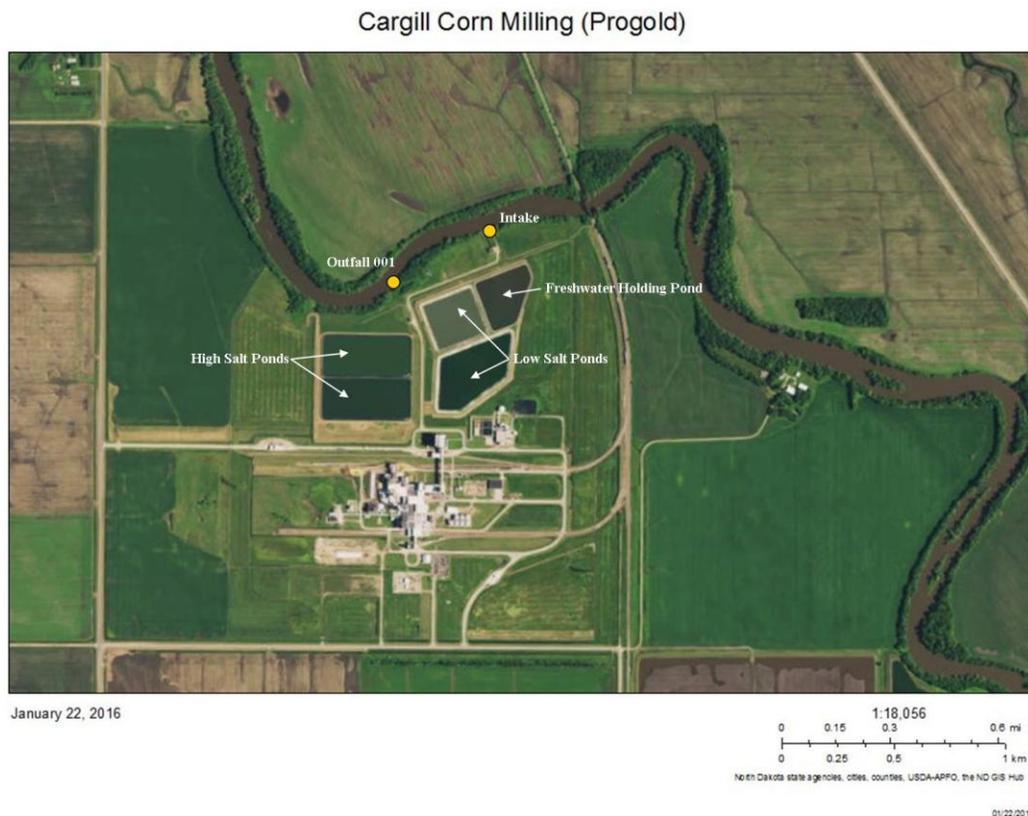
INTRODUCTION..... 1
BACKGROUND INFORMATION 3
 FIGURE 1: AERIAL PHOTOGRAPH OF CARGILL CORN MILLING (PROGOLD) (ND GIS HUB 2014) 3
FACILITY DESCRIPTION 4
 HISTORY 4
 TREATMENT SYSTEM..... 4
 OUTFALL DESCRIPTION 5
PERMIT STATUS 6
SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED 6
 SUMMARY OF DMR DATA EXCURSIONS 7
PROPOSED PERMIT LIMITS AND SELF MONITORING REQUIREMENTS 8
 EFFLUENT LIMITATIONS 9
 SELF-MONITORING REQUIREMENTS 13
SURFACE WATER QUALITY-BASED EFFLUENT LIMITS..... 16
 NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE AND RECREATION 16
 NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH..... 16
 NARRATIVE CRITERIA 16
 ANTIDegradation..... 16
 MIXING ZONES 17
EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA 17
Biochemical Oxygen Demand..... 17
pH..... 18
 HUMAN HEALTH 25
 WHOLE EFFLUENT TOXICITY 26
 BIOSOLIDS..... 28
 TEST PROCEDURES..... 29
OTHER PERMIT CONDITIONS 29
PERMIT ISSUANCE PROCEDURES 31
 PERMIT MODIFICATIONS 31
 PROPOSED PERMIT ISSUANCE 31
APPENDIX A - PUBLIC INVOLVEMENT INFORMATION..... 32
APPENDIX B – GLOSSARY 34
APPENDIX C – DATA AND TECHNICAL CALCULATIONS..... 37
APPENDIX D – RESPONSE TO COMMENTS..... 49

BACKGROUND INFORMATION

Table 1 – General Facility Information

Applicant:	Cargill Corn Milling (Progold)
Facility Name and Address:	Cargill Corn Milling (Progold) 18049 Co Rd 8 E Wahpeton ND 58075 701.671.1901
Permit Number:	ND0026000
Permit Type:	Major, Non-POTW, Reissuance
Type of Treatment:	Mechanical Treatment Plant with storage ponds
SIC Code:	2046
Discharge Location:	Red River of the North, Class I water body Latitude: 46.3504726 Longitude: -96.641491
Hydrologic Code:	09020104 – Upper Red River

Figure 1: Aerial Photograph of Cargill Corn Milling (Progold) (ND GIS Hub 2014)



FACILITY DESCRIPTION

History

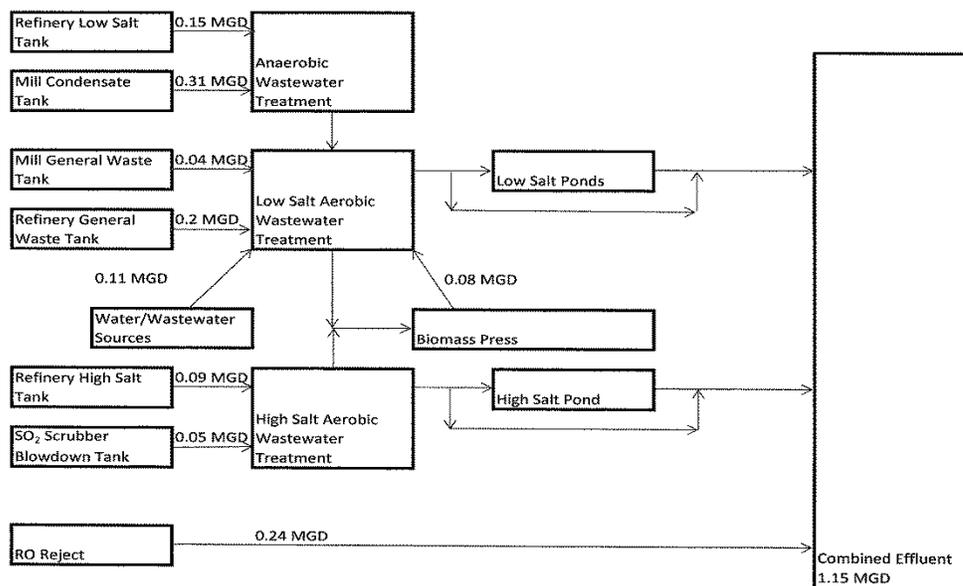
The Cargill Corn Milling (Progold) facility processes corn utilizing a wet milling technique for the production of high fructose corn syrup and livestock feed. The facility processes approximately 95,000 standard bushels of corn per day. The process generates approximately 1.15 million gallons of wastewater per day. The discharge consists primarily of treated wastewater from the wet milling process of corn into high fructose corn syrup and associated livestock feed. The discharge also consists of wastewater from support processes such as reverse osmosis water treatment, cooling tower and boiler blow-down, and syrup rail car vessel cleaning.

Treatment System

The wastewater treatment system consists of an anaerobic digester (anaflux reactor), activated sludge process called a sequencing batch reactor (SBR) and four storage ponds with a total capacity of 98 million gallons. Two of the ponds are for storing high salt wastewater, and the other two ponds are for storing wastewater from other plant sources. The high salt wastewater ponds (brine ponds) have a capacity of 24 million gallons each, the primary wastewater pond has a capacity of 30 million gallons, and the secondary wastewater pond has a capacity of 20 million gallons. Treated wastewater can be discharged from the mechanical treatment system or the ponds at varying rates, depending on the characteristics of the wastewater and the Red River.

Process wastewater from the plant is segregated for treatment. High salt wastewater (steep and mill scrubbers and strong ion exchange waste) is treated to reduce biological oxygen demand (BOD) and stored in the brine ponds until river conditions are suitable for discharge. The remaining process waste streams are treated according to BOD strength. High BOD wastewater from weak ion exchange, evaporation and dryer condensers, transport cleaning, etc, are routed through the anaerobic treatment unit. The high BOD strength waste is then mixed with the general plant waste for aerobic treatment in an SBR. Based on the quality of effluent from the SBR, effluent is either discharged or stored in a general wastewater storage pond. The facility is also adding carbon trailer transfer water, gravity belt thickener wash water, and lime press wash water as additional waste streams. Wastewater from a reverse osmosis water treatment unit at the plant is combined with treated effluent before being discharged. All domestic wastewater is sent to the city of Wahpeton for treatment and is not discharged with process wastewater.

The following flow diagram was submitted by Cargill with their reapplication.



Outfall Description

Outfall 001. Active. Final Outfall. Process Wastewater			
Latitude: 46.3504726	Longitude: -96.641491	County: Richland	
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is the final discharge of process wastewater combined from all plant sources. The discharge enters the receiving stream through a diffuser.			

Outfall 002. Active. Internal Outfall. High Salt Wastewater			
Latitude: 46.3504726	Longitude: -96.641491	County: Richland	
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an internal discharge of high salt wastewater or from the brine ponds. This discharge is combined with process wastewater from all plant sources and enters the receiving stream through the diffuser from outfall 001.			

Outfall 003. Active. Final Outfall. East Plant Area Runoff			
Latitude: 46.3505500	Longitude: -96.6398000	County: Richland	
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an intermittent discharge consisting of storm runoff from the east area of the plant site, and off-site drainage from upstream areas.			

Outfall 004. Active. Final Outfall. West Plant Area Runoff			
Latitude: 46.3505500	Longitude: -96.6478000	County: Richland	
Township: 133	Range: 47	Section: 7	QQ: B
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an intermittent discharge, via a drop structure, consisting of storm runoff from the west area of the plant site.			

PERMIT STATUS

The department issued the previous permit for the facility on July 1, 2011. The previous permit had effluent limits on the following parameters: pH, 5-day BOD, Total Suspended Solids (TSS), Ammonia, Sulfate, Chloride, and Whole Effluent Toxicity.

The department has been in contact with Cargill Corn Milling to obtain information to reissue their permit. The department received EPA applications Form 1, and Form 2C, on January 4, 2016. The application was accepted by the department January 4, 2016. Effluent sample data has been provided to the department through official laboratory reports, discharge monitoring reports, and the permit application Form 2C.

SUMMARY OF COMPLIANCE WITH PREVIOUS PERMIT ISSUED

Four (4) inspections of the facility have been conducted from July 1, 2011 to December 31, 2015. The facility was in non-compliance in September 2011, August 2012, and April and July 2013 for effluent limitation exceedances (**Table 3**). The facility did not have effluent limitation exceedances in 2014 and 2015 (**Table 3**) and were back into compliance. The department's assessment of the compliance is based on review of the facility's Discharge Monitoring Report (DMR) forms and inspections conducted by the department.

Cargill Progold is a continuous discharger. A summary of the data follows:

Table 2: DMR data summary for Cargill Corn Milling (Progold) from 07/01/2011 through 12/31/2015											
Disch Pt	Location	Parameter	Min Conc	Ave Conc	MaxAvg	Max Conc	Max Units	Ave Load	MaxAvg Load	Max Load	Max Load Units
001A	Effluent	Ammonia as Nitrogen	0.04	1.27	5.18	18.8	mg/L				
001A	Effluent	Biochemical Oxygen Demand	1	8.01	22.46	69	mg/L	85.77	492	1781	lb/d
001A	Effluent	Chlorides	60.4	755.55	1668	3840	mg/l				
001A	Effluent	Conductivity	1060	4530.12	9868	14900	uS/cm				
001A	Effluent	Discharge Flow in Million Gals						1.13	1.9	3.4	MGD
001A	Effluent	Dissolved Oxygen	0.55	8.09	18.05	20.67	mg/l				
001A	Up Stream	Flow in the Receiving Stream						1021.02	3213	6235	CFS
001A	Effluent	Flow Total Month								310.86	MGAL
001A	Effluent	Oil & Grease									
001A	Effluent	Oil and Grease Visual								0	Yes=1 No=0
001A	Effluent	pH	7.56			8.96	S.U.				

FACT SHEET FOR NDPDES PERMIT ND0026000
 CARGILL CORN MILLING (PROGOLD)
EXPIRATION DATE: June 30, 2021
 Page 7 of 49

Table 2: DMR data summary for Cargill Corn Milling (Progold) from 07/01/2011 through 12/31/2015

Disch Pt	Location	Parameter	Min Conc	Ave Conc	MaxAvg	Max Conc	Max Units	Ave Load	MaxAvg Load	Max Load	Max Load Units
001A	Effluent	Phosphorus Total	0.4	19.92	51.92	144	mg/L				
001A	Effluent	Sulfates	116	331.93	635.8	1494	mg/l				
001A	Effluent	Total Days Discharging/Month								31	Days
001A	Effluent	Total Dissolved Solids	104	2647.70	4763	9086	mg/l				
001A	Effluent	Total Suspended Solids	1	11.44	28.5	36	mg/l	122.75	433	709	#/Day
001W	Effluent	Acute Toxic Unit Ceriodaphnia TSM3B				2.52	TU a				
001W	Effluent	Acute Toxic Unit Fat Hd Minnows TSN6C				1	TU a				
002A	Down Stream	Chlorides	8	15.03	32.3	35.8	mg/l				
002A	Effluent	Chlorides	458	1388.37	3840	3840	mg/l				
002A	Internal	Conductivity	2960	6830.67	12058	14900	uS/cm				
002A	Internal	Discharge Flow in Million Gals						0.41	1.5	2.3	MGD
002A	Internal	Flow Total Month								24.5	MGAL
002A	Down Stream	Sulfates	18.4	70.83	167	184	mg/l				
002A	Effluent	Sulfates	134	418.67	809	809	mg/l				
002A	Internal	Total Days Discharging/Month								28	Days
002A	Down Stream	Total Dissolved Solids	228	346.82	604	604	mg/l				

Summary of DMR Data Excursions

Eight (8) excursions occurred from July 1, 2011 through December 31, 2015 for Cargill Corn Milling (Progold). One (1) exceedance was 40 percent or greater above the limit.

Table 3: Summary of DMR data excursions for Cargill Corn Milling (Progold) from 07/01/2011 through 12/31/2015										
Name	Disch Pt	Location	Month	Parameter	Min Conc	Avg Conc	Max Conc	Units Conc	Excursions	TRC Exceedance
Cargill Corn Milling (Progold)	001A	Effluent	4/1/2013	BOD5	3.06	22.46	69	mg/L	3	0
Cargill Corn Milling (Progold)	001W	Effluent	7/1/2013	Toxic Unit Cerio			2.52	TU a	1	0
Cargill Corn Milling (Progold)	002A	Down Stream	9/1/2011	Sulfates	56.4	56.4	56.4	mg/l	1	0
Cargill Corn Milling (Progold)	002A	Down Stream	9/1/2011	TDS	604	604	604	mg/l	1	0
Cargill Corn Milling (Progold)	002A	Effluent	8/1/2012	Chlorides	811	1600.3	2270	mg/l	0	-1
Cargill Corn Milling (Progold)	002A	Effluent	4/1/2013	Chlorides	3840	3840	3840	mg/l	2	0

PROPOSED PERMIT LIMITS AND SELF MONITORING REQUIREMENTS

The discharge of wastewater generated in the wet corn milling process is regulated under 40 CFR 406, Subpart A. The New Source Performance Standards (40 CFR 406.15) provides production based limitations for 5-day BOD (BOD5) and total suspended solids (TSS). The new source effluent limitations guidelines are summarized in the table below:

Table 4: New Source Performance Standards 40 CFR 406.15

Parameter	Federal Requirements	
	30 Day Average	Daily Maximum
	(In pounds per 1000 stbu)	
BOD	20	60
TSS	25	75

Effluent limitations based solely on the categorical standards could not be supported by the receiving stream. The ambient dissolved oxygen concentrations have been documented to drop below the water quality standard of 5 mg/l as a daily minimum. As allowed by N.D.A.C. 33-16-01-13(5), the department must include effluent limitations, if the water quality based limitations are more stringent than the standards of performance for new sources.

In developing the original permit, it was determined that the receiving stream could not support the pollutant loadings allowed by the federal standards. The determination was based on modeling done with the STREAMDO mode (STREAMDO IV and supplemental ammonia toxicity models, EPA Region VIII WMD, Bruce Zander and Jed Love, September 1990). The model was used to project the amount of BOD that could be assimilated by the receiving stream,

without compromising the instream dissolved oxygen standard of 5 mg/l. The model has not been calibrated or verified for the Red River of the North at Wahpeton.

Due to the receiving water not being able to support the categorical standards outlined in 40 CFR 406.15, the department proposes the following alternate production based limits:

Table 5: Proposed alternate production based limits.

Parameter	This Permit	
	30 Day Average	Daily Maximum
	(In pounds per 1000 stbu)	
BOD	8.3	12.5
TSS	12.5	25.0

The values for allowable pounds of BOD5 and TSS per thousand bushels of corn processed are based on a comparison of the treatment system and treatment methods evaluated in the development document for grain mills point source category (Grain Processing segment of the Grain Mills Point Source Category, EPA-440/1-1/74-028a, March 1974). The BOD was determined by using Alternative D and the TSS was determined by using Alternative C of the development document for grain mills point source category. In addition, the concentration of these pollutants allowed in discharge permits for comparable discharges in the state are generally in the range of 25 to 30 mg/l.

Effluent Limitations

The permittee must limit and monitor all discharges as specified below:

Parameter	Effluent Limitations				
	Quantity		Concentration		
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Biochemical Oxygen Demand BOD5	788 lbs/day	1,187 lbs/day	20 mg/l	*	30 mg/l
Total Suspended Solids (TSS)	1,187 lbs/day	2,375 lbs/day	30 mg/l	*	45 mg/l
pH 1/	Between 7.0 to 9.0 s.u.				
Ammonia as N	Refer to Ammonia Table				
Oil and Grease 2/	*	*	*	*	10 mg/l
Oil and Grease Visual 2/	*	*	*	*	Report Yes or No
Total Dissolved Solids mg/l 3/	*	*	*	*	*
Electrical Conductivity 4/	*	*	*	*	*
Sulfates Total as SO ₄ mg/l	*	*	1,489 mg/l	*	2,002 mg/l
Chlorides Total mg/l 5/	*	*	3,826 mg/l	*	5,146 mg/l
Phosphorus Total mg/l	*	*	*	*	*
Nitrogen Total mg/l	*	*	*	*	*
Total Organic Carbon mg/l 6/	*	*	*	*	*

Table 6: Effluent Limitations and Monitoring Requirements Outfall 001					
Parameter	Effluent Limitations				
	Quantity		Concentration		
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Chemical Oxygen Demand mg/l 6/	*	*	*	*	*
Stream flow upstream 7/	*	*	*	*	*
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*
Total Drain, MGAL	*	Report Monthly Total	*	*	*
* This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.					
1/ The pH, an instantaneous limitation, shall be between 7.0 s.u. and 9.0 s.u. Up to 10% of representative samples collected during any three (3) year period may exceed this range, provided that lethal conditions are avoided.					
2/ The effluent shall be visibly examined weekly for a sheen or floating oil. If present, a grab sample shall be analyzed for oil and grease to ensure compliance with the concentration limitations.					
3/ Limitations apply to these parameters only when discharging from 002.					
4/ Instantaneous measurements with a direct reading instrument are also acceptable.					
5/ Discharge rates must be maintained at a dilution ratio of 124:1 when the Red River flow is below 806 CFS.					
6/ Sampling would be conditional on a formal request from a downstream water treatment plant for TOC or COD sampling.					
7/ Daily flows of the Red River, measured at the USGS gauge station in Wahpeton, North Dakota, shall be recorded during periods of discharge. Should the gauge at Wahpeton be inoperable or affected by ice backwater, an estimated flow, based on other gauging stations, would be acceptable.					
Stipulations:					
The dates of discharge, frequency of analyses, total number of gallons discharged, discharge flow rates, and number of exceedances shall also be included on the Discharge Monitoring Reports (DMR).					
Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving the facility property or entering the receiving stream.					
Samples collected for compliance with the monitoring specified in this section shall be representative of the final discharge of the combined waste stream and shall be taken prior to mixing with any receiving waters or stormwater runoff.					
There shall be no discharge of floating solids or visible foam in other than trace amounts. There shall be no discharge of sanitary waste.					

Table 7: Ammonia Effluent Limitations and Monitoring Requirements Outfall 001			
Parameter	Effluent Limitations		
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Ammonia 1/	†	*	‡
Stream flow upstream, cfs 2/	*	*	*
Temperature upstream, ° C 2/, 3/	*	*	*
pH upstream, S.U. 2/, 3/	*	*	*
<p>1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.</p> <p>2/ Sample must be collected/ recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained from the USGS gauging station at Wahpeton, North Dakota, if data is not available at the designated upstream monitoring location (Part I(C)(2) of the permit).</p> <p>3/ If the upstream values are not collected then following minimum values base on the 90th percentile upstream STORET and USGS data are to be used: pH: 8.5 S.U., Temperature 23.94 ° C, and ammonia 0.23 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 130 cfs shall be used. The maximum mixing factor is 25.0%.</p> <p>† Chronic Standard (Average Monthly Limit) The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:</p> $\frac{(0.0577}{(1+10^{7.688-pH})} + \frac{2.487}{1+10^{pH-7.688}}) \bullet CV;$ <p>where CV = 2.85, when T ≤ 14°C; or CV = 1.45 * 10^{0.028*(25-T)}, when T > 14°C. Receiving stream pH is used for the calculation</p> <p>‡ Acute Standard (Daily Maximum Limit) The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula:</p> $\frac{(0.411}{(1+10^{7.204-pH})} + \frac{58.4}{1+10^{pH-7.204}})$ <p>where salmonids are absent; or</p> $\frac{(0.275}{(1+10^{7.204-pH})} + \frac{39.0}{1+10^{pH-7.204}})$ <p>where salmonids are present.</p>			
Stipulations			

Table 7: Ammonia Effluent Limitations and Monitoring Requirements Outfall 001			
Effluent Limitations			
Parameter	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
The maximum mixing factor is 25.0%.			

Table 8: Effluent Limitations and Monitoring Requirements Outfall 002					
Effluent Limitations					
Parameter	Quantity		Concentration		
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit
Electrical Conductivity	*	*	*	*	*
Sulfates Total as SO ₄ mg/l	*	*	*	*	*
Chlorides Total mg/l	*	*	*	*	*
General Water Chemistry	*	*	*	*	*
Duration of Discharge (Days)	*	Report Monthly Total	*	*	*
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*
Total Drain, MGAL	*	Report Monthly Total	*	*	*

*. This parameter is not limited. However, the department may impose limitations based on sample history and to protect the receiving waters.

Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to combining with any other waste stream.

All parameters listed shall be included on the Discharge Monitoring Report forms.

Dates of discharge, frequency of analyses, total number of gallons discharged and discharge flow rates shall also be included on the Discharge Monitoring Report forms.

Any discharge from this interior point shall be managed in a manner that ensures compliance with the effluent limitations identified for the combined wastewater discharge (outfall 001) and the instream limitations identified for the Red River.

Table 9: Benchmark Values for Outfall 003*	
Parameter	Benchmark Values
Oil and Grease	No Visible Sheen (15 mg/L)
pH	Between 6.0 and 9.0 S.U.
TSS	100 mg/L
<p>* Benchmark concentrations should not be interpreted as stormwater effluent limitations, individual wastewater effluent limitations, or as state water quality standards. Benchmark concentrations provide an appropriate level to determine whether a facility's stormwater pollution prevention measures are effective. A pollutant concentration that is above the benchmark value represents a potential water quality concern and the need to improve the facility's best management practices. If your samples exceed the benchmark, the best management practices shall be revised to reduce future concentrations.</p>	

Table 10: Benchmark Values for Outfall 004*	
Parameter	Benchmark Values
Oil and Grease	No Visible Sheen (15 mg/L)
pH	Between 6.0 and 9.0 S.U.
TSS	100 mg/L
<p>* Benchmark concentrations should not be interpreted as stormwater effluent limitations, individual wastewater effluent limitations, or as state water quality standards. Benchmark concentrations provide an appropriate level to determine whether a facility's stormwater pollution prevention measures are effective. A pollutant concentration that is above the benchmark value represents a potential water quality concern and the need to improve the facility's best management practices. If your samples exceed the benchmark, the best management practices shall be revised to reduce future concentrations.</p>	

Red River Instream Limitations

Table 11: Red River Instream Limitations For TDS, Sulfate, and Chloride	
Parameter	Discharge Limitations
Total Dissolved Solids TDS 1/	460 mg/l
<p>1/ The limitations apply only during periods when high salt wastewater is being released. The limitations apply to instream samples collected at the downstream monitoring location, the road bridge one mile west of Brushvale, Minnesota.</p> <p>Operating the discharge to meet the instream criteria requires careful management by the operators of the facility. The discharge of high salt wastewater must be planned and managed according to the conditions in the Red River. At times, the discharge of this waste may be prohibited due to low flows or a background concentration that may exceed the stated limits.</p> <p>All parameters listed shall be included on the Discharge Monitoring Reports.</p>	

SELF-MONITORING REQUIREMENTS

All effluent samples shall be collected at a point following the addition of all process waste streams and prior to entering the Red River of the North.

Effluent Parameter	Frequency	Sample Type
BOD5, mg/L	Weekly	Grab
TSS, mg/L	Weekly	Grab
pH	Weekly	Grab
Ammonia as N	Weekly	Grab
pH Upstream	Weekly	Grab
Temperature Upstream	Weekly	Instantaneous
Oil and Grease Visual	Weekly ^a	Visual
Oil and Grease	Conditional ^a	Grab
TDS, mg/L	Weekly	Grab
Electrical Conductivity	Weekly/Daily	Grab/Instantaneous
Sulfates Total as SO ₄ , mg/L	Weekly	Grab
Chlorides Total, mg/L	Weekly	Grab
Phosphorus Total, mg/L	Weekly	Grab
Nitrogen Total, mg/L	Weekly	Grab
Total Organic Carbon, mg/L	Conditional ^b /Monthly	Grab
Chemical Oxygen Demand, mg/L	Conditional ^b /Monthly	Grab
WET, TU _a	Quarterly	Grab
WET, TU _c	1/ permit cycle	Grab
Metals	Semiannual	Grab
Stream flow upstream	Daily	Instantaneous
Flow Effluent, MGD	Continuous	Recorder
Total Drain, MGAL	Monthly	Calculated
Notes:		
a.	The effluent shall be visibly examined weekly for a sheen or floating oil. If present, a grab sample shall be analyzed for oil and grease to ensure compliance with the concentration limitations.	
b.	Sampling would be conditional on a formal request from a downstream water treatment plant for TOC or COD sampling.	

Effluent Parameter	Frequency	Sample Type
Electrical Conductivity	Daily	Grab
Sulfates Total as SO ₄ , mg/L	Weekly	Grab
Chlorides Total, mg/L	Weekly	Grab
General Chemistry	Annual	Grab
Duration of Discharge (Days)	Monthly	Calculated
Flow Effluent, MGD	Continuous	Recorder
Total Drain, MGAL	Monthly	Calculated
Notes:		

Table 14: Self-Monitoring Requirements for Outfall 003		
Effluent Parameter	Frequency	Sample Type
Oil and Grease	Annual	Grab
pH	Annual	Grab
TSS	Annual	Grab
Notes:		

Table 15: Self-Monitoring Requirements for Outfall 004		
Effluent Parameter	Frequency	Sample Type
Oil and Grease	Annual	Grab
pH	Annual	Grab
TSS	Annual	Grab
Notes:		

Table 16: Red River Instream Self-Monitoring Requirements			
Parameter	Frequency		Sample Type
	Outfall 001 1/	Outfall 002 2/	
Total Dissolved Solids TDS	Monthly	Weekly	Grab
Sulfate Total	Monthly	Weekly	Grab
Chloride Total	Monthly	Weekly	Grab
Ammonia as N	Monthly	Weekly	Grab
Dissolved Oxygen 3/ 4/	Weekly	Weekly	Grab
pH 3/	Monthly	Weekly	Grab
Electrical Conductivity 3/	Weekly	Daily	Grab
Temperature in C 3/	Monthly	Weekly	Grab
1/ When high salt wastewater is being stored, no discharge from 002			
2/ When high salt wastewater is being discharged from 002			
3/ Direct reading and/or continuous recording instruments installed instream may be used for D.O., E.C., or pH			
4/ Shall be collected between 6 a.m. and 9 a.m.			
When dangerous conditions exist for personnel (i.e. thin ice, melting ice, flooding, etc.) the scheduled river sampling may be suspended until conditions are deemed suitable.			

SURFACE WATER QUALITY-BASED EFFLUENT LIMITS

The North Dakota State Water Quality Standards (NDAC Chapter 33-16-02.1) are designed to protect existing water quality and preserve the beneficial uses of North Dakota's surface waters. Wastewater discharge permits must include conditions that ensure the discharge will meet the surface water quality standards. Water quality-based effluent limits may be based on an individual waste load allocation or on a waste load allocation developed during a basin wide total maximum daily load (TMDL) study. TMDLs result from a scientific study of the water body and are developed in order to reduce pollution from all sources.

Currently a TMDL has not been developed for the receiving water body. The Red River is listed as impaired under Section 303(d) for fish consumption and recreation. Fish consumption is impaired by methyl mercury and recreation is impaired by *Escherichia coli*. The impairment is for the Red River of the North from its confluence with the Ottetail River downstream to its confluence with the Whiskey Creek on the MN side. The TMDL priority level for this stream reach is low.

Numerical Criteria for the Protection of Aquatic Life and Recreation

Numerical water quality criteria are listed in the water quality standards for surface waters (NDAC Chapter 33-16-02.1). They specify the maximum levels of pollutants allowed in receiving water to protect aquatic life and recreation in and on the water. The department uses numerical criteria along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limits, the discharge must meet the water quality-based limits.

Numerical Criteria for the Protection of Human Health

The U.S. EPA has published numeric water quality criteria for the protection of human health that are applicable to dischargers. These criteria are designed to protect humans from exposure to pollutants linked to cancer and other diseases, based on consuming fish and shellfish and drinking contaminated surface waters. The water quality standards also include radionuclide criteria to protect humans from the effects of radioactive substances.

Narrative Criteria

Narrative water quality criteria (NDAC Chapter 33-16-02.1-08) limit concentrations of pollutants from exceeding applicable standards of the receiving waters. The department adopted a narrative biological goal solely to provide an additional assessment method that can be used to identify impaired surface waters.

Antidegradation

The purpose of North Dakota's Antidegradation Policy (NDAC Chapter 33-16-02(Appendix IV)) is to:

- Provide all waters of the state one of three levels of antidegradation protection.
- Determine whether authorizing the proposed regulated activity is consistent with antidegradation requirements.

The department's fact sheet demonstrates that the existing and designated uses of the receiving water will be protected under the conditions of the proposed permit.

Mixing Zones

The department's WQS contain a Mixing Zone and Dilution Policy and Implementation Procedure, NDAC Chapter 33-16-02.1 (Appendix III). This policy addresses how mixing and dilution of point source discharges with receiving waters will be addressed in developing chemical-specific and whole effluent toxicity discharge limitations for point source discharges. Depending upon site-specific mixing patterns and environmental concerns, some pollutants/criteria may be allowed a mixing zone or dilution while others may not. In all cases, mixing zone and dilution allowances shall be limited, as necessary, to protect the integrity of the receiving water's ecosystem and designated uses.

EVALUATION OF SURFACE WATER QUALITY-BASED EFFLUENT LIMITS FOR NUMERIC CRITERIA

Outfall 001: All process wastewater is combined and discharged through this outfall.

Outfall 002: This is an internal point for monitoring high salt wastewater and/or discharges from the brine ponds. The point has been designated to identify conditions that apply to the discharge of high salt wastewater. No limitations apply directly to this point as it is limited by the requirements specified for the total mixed wastewater at outfall 001 and instream limitations.

Outfalls 003 and 004: These discharges are for stormwater runoff from the plant site. The effluent quality from these outfalls must be controlled through the implementation of best management practices.

Biochemical Oxygen Demand (BOD)

Outfall 001: The department has reviewed the BOD data and sampling frequency. Three excursions occurred for this parameter, but were below the technical review criteria (TRC). The previous permit had loading limits based on processing 90,000 standard bushels per day with BOD5 factors of 6 pounds per 1,000 standard bushels (30 day arithmetic average) and 10 pounds per 1,000 standard bushels (daily maximum).

A determination was made to continue with BOD5 limits of 20 mg/l (30 day arithmetic average) and 30 mg/l (daily maximum). The department proposes to increase the loading limits to 788 pounds per day (30 day arithmetic average) from 540 pounds per day (30 day arithmetic average) and to increase the daily maximum to 1,187 pounds per day from 900 pounds per day.

The proposed changes are based upon utilizing Alternative D of development document for grain mills point source category (Grain Processing segment of the Grain Mills Point Source Category, EPA-440/1-1/74-028a, March 1974). The loading was based upon processing 95,000 standard bushels per day, as indicated on the application, with BOD5 factors of 8.3 pounds per 1,000 standard bushels (30 day arithmetic average) and 12.5 pounds per 1,000 standard bushels (daily maximum), with a discharge rate of 3.4 MGD.

The department has determined to continue with a sampling frequency of weekly based on the previous permit.

Total Suspended Solids (TSS)

Outfall 001: The department has reviewed the TSS data and the sampling frequency. No excursions occurred for this parameter. The previous permit had loading limits based on

processing 90,000 standard bushels per day with TSS factors of 10 pounds per 1,000 standard bushels (30 day average) and 16.7 pounds per 1,000 standard bushels (daily maximum).

A determination was made to continue with TSS limits of 30 mg/l (30 day arithmetic average) and 45 mg/l (daily maximum). The department proposes to increase the loading limits to 1,187 pounds per day (30 day arithmetic average) from 900 pounds per day (30 day arithmetic average) and increase the daily max to 2,375 pounds per day from 1,500 pounds per day.

The proposed changes are based upon utilizing Alternative C of development document for grain mills point source category (Grain Processing segment of the Grain Mills Point Source Category, EPA-440/1-1/74-028a, March 1974). The loading was based upon processing 95,000 standard bushels per day, as indicated on the application, with TSS factors of 12.5 pounds per 1,000 standard bushels (30 day arithmetic average) and 25 pounds per 1,000 standard bushels (daily maximum), with a discharge rate of 3.4 MGD.

The department has determined to continue with a sampling frequency of weekly based on the previous permit.

Outfall 003: The department is proposing a benchmark value of 100 mg/L of TSS based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N), which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Outfall 004: The department is proposing a benchmark value of 100 mg/L of TSS based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N), which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Dissolved Oxygen

Outfall 001: The department has reviewed the dissolved oxygen data and the sampling frequency. The department proposes to continue with monitoring and a sampling frequency of weekly based on the previous permit.

pH

Outfall 001: The limitations for pH are based on the state water quality standards applicable to this water body. In accordance with NDAC § 33-16-02.1, the pH of Class I and IA water bodies "shall remain between 7.0 and 9.0."

The department has reviewed the pH data and the sampling frequency. No excursions occurred for this parameter. The department proposes to change the pH range to 7.0 to 9.0 with a sampling frequency of weekly based on NDAC § 33-16-02.1.

Outfall 003: The department is proposing a benchmark pH value of 6.0 to 9.0 based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N), which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Outfall 004: The department is proposing a benchmark pH value of 6.0 to 9.0 based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N),

FACT SHEET FOR NDPDES PERMIT ND0026000

CARGILL CORN MILLING (PROGOLD)

EXPIRATION DATE: June 30, 2021

Page 19 of 49

which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Ammonia as N

Outfall 001: The department has conducted a reasonable potential analysis for ammonia as N. Based on this analysis it was determined that there is reasonable potential to exceed the North Dakota Standards of Quality for Waters of the State for ammonia as N.

Refer to **Appendix C** for a detailed explanation on the criteria used to determine reasonable potential for this outfall. The department proposes to continue with the ammonia effluent sampling frequency of weekly based on the previous permit.

The department is proposing the following requirements for ammonia as N.

Table 17: Ammonia Effluent Values and Monitoring Requirements Outfall 001					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Ammonia 1/	†	*	‡	1/Week	Grab
Stream flow upstream, cfs 2/	*	*	*	1/Week	Instantaneous
Temperature upstream, ° C 2/, 3/	*	*	*	1/Week	Instantaneous
pH upstream, S.U. 2/, 3/	*	*	*	1/Week	Instantaneous

1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.

2/ Sample must be collected/ recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained from the USGS gauging station at Wahpeton, North Dakota, if data is not available at the designated upstream monitoring location (Part I(C)(2) of the permit).

3/ If the upstream values are not collected then following minimum values base on the 90th percentile upstream STORET and USGS data are to be used: pH: 8.5 S.U., Temperature 23.94 ° C, and ammonia 0.23 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 130 cfs shall be used. The maximum mixing factor is 25.0%.

† Chronic Standard (Average Monthly Limit)
The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$\frac{(0.0577}{(1+10^{7.688-\text{pH}})} + \frac{2.487}{1+10^{\text{pH}-7.688}}) \bullet \text{CV};$$

where CV = 2.85, when T ≤ 14°C; or
CV = 1.45 * 10^{0.028*(25-T)}, when T > 14°C.
Receiving stream pH is used for the calculation

‡ Acute Standard (Daily Maximum Limit)
The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula:

$$\frac{(0.411}{(1+10^{7.204-\text{pH}})} + \frac{58.4}{1+10^{\text{pH}-7.204}})$$

where salmonids are absent; or

$$\frac{(0.275}{(1+10^{7.204-\text{pH}})} + \frac{39.0}{1+10^{\text{pH}-7.204}})$$

where salmonids are present.

Table 17: Ammonia Effluent Values and Monitoring Requirements Outfall 001					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Stipulations					
The maximum mixing factor is 25.0%.					

The previous permit had an average monthly limit (AML) trigger value of 4.10 mg/L and a maximum daily limit (MDL) trigger value of 5.85 mg/L. The department reviewed ammonia discharge data from July 1, 2011 – December 31, 2015 and found no instream excursions for ammonia.

The department is proposing to remove the trigger values for ammonia and use the instream criteria provided in N.D.A.C. 33-16-02.1. The permittee must perform the calculations provided in **Table 17** for each discharge sample utilizing the upstream temperature, pH, and stream flow. If the upstream data is not available at the time of sampling, the following 90th percentile upstream STORET and USGS data must be used: pH: 8.5 S.U., Temperature 23.94 ° C, and ammonia 0.23 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 130 cfs shall be used. The maximum mixing factor is 25.0%. If an exceedance is detected on any one sample, the exceedance must be reported on the DMR.

Oil and Grease Visual

Outfall 001: The department has reviewed the oil and grease visual data and the frequency. No excursions occurred for this parameter. The department proposes to continue with the oil and grease visual requirement of weekly and report if present based on the previous permit.

Outfall 003: The department is proposing a benchmark value of no visible sheen (15 mg/L) of oil and grease based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N), which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Outfall 004: The department is proposing a benchmark value of no visible sheen (15 mg/L) of oil and grease based upon the new requirements of the stormwater industrial general permit NDR050000, Appendix (1)(N), which requires industrial facilities with an SIC codes of 2041-2048 to sample discharges from their outfalls.

Oil and Grease

Outfall 001: The department has reviewed the oil and grease data and sampling frequency. No excursions occurred for this parameter. The department proposes to continue with a limit of 10.0 mg/l for oil and grease and conditional sampling frequency of weekly if a sheen is present based on the previous permit.

Total Dissolved Solids (TDS)

Outfall 001: The department has reviewed the TDS data and sampling frequency. The department proposes to continue with the TDS limitations only when outfall 002 is being combined with this outfall.

Outfall 002: The department has reviewed the TDS data and sampling frequency. One excursion occurred for this parameter and this excursion did not exceed the TRC. The previous permit had an instream TDS limit of 460 mg/l. The department is proposing to continue the 460 mg/l downstream limitation with a sampling frequency of weekly based on the previous permit.

Electrical Conductivity

Outfall 001: The department has reviewed the electrical conductivity data and the sampling frequency. Electrical conductivity (EC) provides a quick indication of effluent TDS. The department proposes to continue with a sampling frequency of weekly based on the previous permit.

Outfall 002: The department has reviewed the electrical conductivity data and the sampling frequency. Electrical conductivity (EC) provides a quick indication of effluent TDS. The department proposes to continue with a sampling frequency of daily based on the previous permit.

Sulfate Total

Outfall 001: The department has reviewed the sulfate data for outfall 001. Based on discharge monitoring data from July 1, 2011 through December 31, 2015, it was determined that there is reasonable potential to exceed the North Dakota Standards of Quality for Waters of the State for sulfate. See **Appendix C** for a detailed explanation on the criteria used to determine reasonable potential for this outfall.

The previous permit had a sulfate limitation only while discharging from Outfall 002. Upon review of the permit, it was determined to move the sulfate requirements to Outfall 001, due to Outfall 002 being an internal point. This is based upon 40 CFR 122.25(h), which internal waste streams may only have effluent limitations when "effluent limitations or standards at the point of discharge are impractical or infeasible." This limitation would apply during all periods of discharge.

The department is proposing the following requirements for sulfate.

Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Value	Avg. Weekly Value	Daily Maximum Value	Sample Frequency	Sample Type
Sulfate	1,489 mg/l	*	2,002 mg/l	1/Week	Grab
<p>*. This parameter is not limit at this time. However, the department may impose a limitation based on sample history and to protect the receiving waters.</p> <p>The stated water quality based effluent limits for sulfate are based on a maximum effluent discharge rate of 4.2 MGD with a Red River flow of 181 CFS. Effluent discharge rates would need to be adjusted whenever the flow in the Red River is below 181 CFS based on the upstream data, flow in the Red River and the effluent water quality for sulfate. If upstream values are not available then the following minimum values based on the average upstream STORET and USGS data are to be used: upstream sulfate 107 mg/l, effluent sulfate 1,494 mg/l. The maximum mixing factor is 50.0%.</p> <p>Discharge rates will need to be carefully managed to meet the AML and MDL effluent limitations when the Red River flow is below 181 CFS.</p>					

Outfall 002: The department has reviewed the sulfate data. One excursion occurred for this parameter and this excursion was did not exceed the TRC. The department proposes to move the sulfate limitation to Outfall 001, due to Outfall 002 being an internal outfall.

Chloride Total

Outfall 001: The department has reviewed the chloride data. Based on discharge monitoring date from July 1, 2011 through December 31, 2015, it was determined that there is reasonable potential to exceed the North Dakota Standards of Quality for Waters of the State for chloride. See **Appendix C** for a detailed explanation on the criteria used to determine reasonable potential for this outfall.

The previous permit had a chloride limitation only while discharging from Outfall 002. Upon review of the permit, it was determined to move the chloride requirements to Outfall 001, due to Outfall 002 being an internal point. This is based upon 40 CFR 122.25(h), which internal waste streams may only have effluent limitations when "effluent limitations or standards at the point of discharge are impractical or infeasible." This limitation would apply during all periods of discharge.

The department is proposing the following requirements for chloride.

Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Value	Avg. Weekly Value	Daily Maximum Value	Sample Frequency	Sample Type
Chloride	3,826 mg/l	*	5,146 mg/l	1/Week	Grab
<p>*. This parameter is not limited at this time. However, the department may impose a limitation based on sample history and to protect the receiving waters.</p> <p>The stated water quality based effluent limits for chloride are based on a maximum effluent discharge rate of 4.2 MGD with a Red River flow of 806 CFS. Effluent discharge rates would need to be adjusted whenever the flow in the Red River is below 806 CFS based on the upstream data, flow in the Red River, and the effluent water quality for chloride. If upstream values are not available then the following minimum values based on the 90th percentile upstream STORET and USGS data are to be used: upstream chloride 19.32 mg/l, effluent chloride 3,840 mg/l. The maximum mixing factor is 50.0%.</p> <p>Discharge rates will need to be adjusted to maintain a 124:1 dilution ratio to meet the AML and MDL effluent limitations when the Red River flow is below 806 CFS.</p>					

Outfall 002: The department has reviewed the chloride data. Three excursions occurred for this parameter with one exceedance over the TRC criteria. The department proposes to move the sulfate limitation to Outfall 001 since Outfall 002 is an internal point.

Phosphorus Total

Outfall 001: The department has reviewed the phosphorus data and sampling frequency. The department proposes to continue with a sampling frequency of weekly based on the previous permit.

Total Organic Carbon (TOC)

Outfall 001: The department has reviewed the total organic carbon data and sampling frequency. The department has sufficient historical data for TOC at this outfall. The department proposes to continue the TOC sampling of conditional monthly. Sampling would be conditional on a formal request from a downstream water treatment plant for TOC sampling. This request would need to be made monthly.

Chemical Oxygen Demand (COD)

Outfall 001: The department has reviewed the chemical oxygen demand data and sampling frequency. The department has sufficient historical data for COD at this outfall. The department proposes to continue the COD sampling of conditional monthly. Sampling would be conditional on a formal request from a downstream water treatment plant for COD sampling. This request would need to be made monthly.

General Chemical Analysis

Outfall 002: The department has reviewed the general chemical analysis data and sampling frequency. The department proposes to continue with a sampling frequency of yearly based on the previous permit and N.D.A.C. 33-16-02.1.

Metals

Outfall 001: The department does not have enough data to conduct a reasonable potential analysis for the following metals which were indicated on the permit application: selenium, acrolein, chromium, copper, lead, and zinc. The department is proposing monitoring for the above referenced metals with a sampling frequency of semiannual. This is based on N.D.A.C. 33-16-02.1 and best professional judgment to obtain enough data to be able to conduct a reasonable potential analysis during the next permit reissuance.

Red River Downstream and Instream Monitoring Requirements

The department has reviewed the downstream limitations and instream monitoring requirements and sampling frequencies. The department proposes to remove the downstream limits for sulfate and chloride due to the proposed sulfate and chloride effluent limits being applied to outfall 001 during all times of discharge.

Below is the proposed instream limitation for TDS.

Table 20: Red River Instream Limitations for TDS.	
Parameter	Discharge Limitations
Total Dissolved Solids TDS 1/	460 mg/l
<p>1/ The limitations apply only during periods when high salt wastewater is being released. The limitations apply to instream samples collected at the downstream monitoring location, the road bridge one mile west of Brushvale, Minnesota.</p> <p>Operating the discharge to meet the instream criteria requires careful management by the operators of the facility. The discharge of high salt wastewater must be planned and managed according to the conditions in the Red River. At times, the discharge of this waste may be prohibited due to low flows or a background concentration that may exceed the stated limits.</p> <p>All parameters listed shall be included on the Discharge Monitoring Report forms.</p>	

The department proposes to continue instream sampling and monitoring requirements based on the previous permit and N.D.A.C. 33-16-02.1.

Ice Conditions

The department has reviewed the sampling requirements. The department has sufficient historical data available at this sample site. The department is proposing to remove this section due to potential endangerment of human life if sampling is requested during ice covered conditions. This section also contradicts the instream monitoring requirements, which say if dangerous conditions exist for personnel the scheduled sampling may be suspended.

Human Health

The department determined the applicant's discharge is unlikely to contain chemicals regulated to protect human health. The department will re-evaluate this discharge for impacts to human health at the next permit reissuance.

Whole Effluent Toxicity

Outfall 001: The department has conducted a reasonable potential analysis for whole effluent toxicity (WET). Based on this analysis, it was determined that there is reasonable potential to exceed the acute standard of 0.3 Toxic Units (TUa). See **Appendix C** for a detailed explanation on the criteria used to determine reasonable potential for this outfall.

The data set consisted of 36 tests and indicated no toxicity occurred to the fathead minnows, while three (3) occurrences of toxicity to the *Ceriodaphnia dubia*. There was one (1) exceedance for TUa for testing done on *Ceriodaphnia dubia*. On 08/19/2010 the department granted Cargill's request to reduce its quarterly acute toxicity requirements to alternating species between *Ceriodaphnia dubia* and *Pimephales promelas*. On 10/4/2013, the department revoked the provision to allow for alternating species due to toxicity being above the permit limit.

The department is proposing to increase the sampling frequency from semiannually to quarterly, based on best professional judgment.

The department is proposing the following requirements for WET.

Acute Toxicity Testing

Table 21: WET requirements for Outfall 001						
Implementation	Limitations Imposed					
Effluent Dilution	0%(Control)	12.5%	25%	50%	75%	100%
Dilution Water	Red River of the North					
Testing Type	Acute Toxicity					
Species and Test Type	<i>Ceriodaphnia dubia</i> 48 Hour Acute Static Renewal 20°C					
	<i>Pimephales promelas</i> 96 Hour Acute Static Renewal 20°C					
Endpoint	Survival reported as TUa					
Compliance Point	End of pipe					
Sample Frequency	Quarterly					
Sample Type	Grab					
Maximum Daily Limit (MDL)	<1 TUa					
Average Monthly Limit (AML)	<1 TUa					
Test Failure	The 48 hour LC50 effluent value must be <1 TUa to indicate a passing test. Any 48 hour LC50 effluent value >1 TUa will constitute a failure. Tests in which the control survival is less than 90% are invalid and must be repeated.					
Reporting Requirements	The permittee shall report the following results of each toxicity test on the DMR for that reporting period: Report the highest TUa for <i>Ceriodaphnia dubia</i> , Parameter No. TSM3B. Report the highest TUa for <i>Pimephales promelas</i> , Parameter No. TSN6C.					
When possible, sampling shall be done when outfall 002 is in operation.						
If acute toxicity occurs in a routine test, an additional test shall be initiated within four weeks of the date of the initial sample. Should acute toxicity occur in the second test, testing shall be conducted at a frequency of once a month and the implementation of a <u>5.Toxicity Reduction Evaluation (TRE)</u> shall be determined by the department. Should there be no discharge during a specified sampling time frame; sampling shall be						

performed as soon as there is a discharge.

The department is proposing a TUa of less than 1 (<1) in order to meet the requirements of N.D.A.C. 33-16-02.1-08(a)(4), which states that “[a]ll waters of the state shall be:…Free from substances attributable to municipal, industrial, or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to humans, animals, plants, or resident aquatic biota. For surface water, this standard will be enforced in part through appropriate whole effluent toxicity requirements in North Dakota pollutant discharge elimination system permits.” This limit will need to be met at the end-of-pipe with no allowance for a zone of initial dilution (ZID), in accordance with N.D.A.C. 33-16-02.1, Appendix III, which states: “Acute whole effluent toxicity (WET) limits shall be achieved at the end-of-pipe with no allowance for a ZID.”

Acute toxicity test requirements are set out in the latest revision of *“Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms,”* EPA-821-R-02-012 (Fifth Ed., October 2002).

Chronic Toxicity Testing

The department does not have enough data to conduct a reasonable potential analysis for TUc. The department is proposing monitoring for chronic toxicity with a sampling frequency of once (1) per permit cycle.

Below are the testing requirements for chronic whole effluent testing.

Chronic WET requirements for Outfall 001						
Implementation	Monitoring Only					
Effluent Dilution	0%(Control)	6.25%	12.5%	25%	50%	100%
Dilution Water	Red River of the North					
Species and Test Type	<i>Ceriodaphnia dubia</i> – 7-Day Chronic – Static Renewal – 25°C					
	Fathead Minnow – 7-Day Chronic – Static Renewal – 25°C					
Endpoint	Survival and Reproduction (<i>Ceriodaphnia dubia</i>) – IC25 reported as TUc					
	Larval Growth and Survival (Fathead Minnow) – IC25 reported as TUc					
Compliance Point	Monitoring Only					
Sample Frequency	1/permit cycle					
Test Acceptability	<p>Test acceptability for <i>Daphnia dubia</i> chronic must have a 80% or greater survival of all control organisms and an average of 15 or more young per surviving female in the control solutions, and 60% of surviving control females must produce three broods. If this condition is not satisfied, the test must be repeated.</p> <p>Test acceptability for <i>Pimephales promelas</i> chronic must have 80% or greater survival in controls and an average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg. If this condition is not satisfied, the test must be repeated.</p>					
Reporting Requirements	<p>The permittee shall report the following results of each toxicity test on the DMR for that reporting period:</p> <p><i>Pimephales promelas</i> (Fathead Minnow)</p> <p>a. Report the highest TUc for Fathead minnow, Parameter No. TTP3B</p> <p><i>Ceriodaphnia dubia</i> (Water Flea)</p> <p>Report the highest TUc for <i>Ceriodaphnia dubia</i>, Parameter No. TTB6C.</p> <p>Cargill shall request their WET testing providers to report a TUa for a 48 hour survival <i>Ceriodaphnia dubia</i> and for <i>Pimephales promelas</i> which can be derived from the chronic test. The reason for this is to develop a representative Acute-to-Chronic (ACR) which is used in determining reasonable potential and/or permit limitations.</p>					

The chronic toxicity test requirements are set out in the latest revision of "*Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*," EPA-821-R-02-013 (Fourth Ed., October 2002).

Biosolids

Currently the department does not have the authority to regulate biosolids. Therefore, you are required under the Direct Enforceability provision of 40 CFR §503.3(b) to meet the applicable requirements of the regulation.

CWA Section 316(b)

The department reviewed the CWA section 316(b) criteria. The facility has an SIC code of 2046, which does not fall in the list of SIC codes under section 316(b). The facility has a designed intake of 5.76 MGD, but the actual intake is 1.14 mgd. Of the 1.14 mgd that is brought in, only 0.22 mgd (19 percent) is used for cooling water. Based upon the SIC code of 2046 and only 19% of the intake water being used specifically for cooling water, the facility is not subject to Section 316(b) of the CWA.

Test Procedures

The collection and transportation of all samples shall conform to EPA preservation techniques and holding times. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

OTHER PERMIT CONDITIONS

Special Conditions

Comprehensive Water Resource Management Plan

The department is proposing to continue with the Comprehensive Water Resource Management Plan, with the following change.

The department proposes to add the following sentences: "The permittee must restrict, and if necessary cease, the discharge from outfall 002, while other facilities in the area are discharging, such that it does not cause interference with other facilities discharges and downstream effluent limitations, or cause adverse effects for downstream users. If necessary, the department may direct the permittee to restrict or cease discharging from outfall 002 to allow other facilities in the area to discharge. The permittee must notify downstream users of any non-compliance while operating outfall 002."

The changes are based upon the N.D.A.C. 33-16-02.1 and best professional judgment in order to maintain the designated use criteria of the Red River of the North for downstream users.

Contingency Plan

The department proposes to continue with the Contingency Plan based upon WQS and best professional judgment in order to maintain the designated use criteria of the Red River of the North for downstream users.

The department proposes to update the table which addresses discharging when flows in the Red River of the North are below 650 CFS to address discharging when flows in the Red River of the North are below 806 CFS. This change is being proposed due to the chloride analysis performed by the USGS not being comparable to the water quality standards as described the sulfate and chloride sections above (pages 20 and 21 respectively).

The flow rate of 806 CFS was established due to the chloride restrictions being more stringent than the sulfate (**Appendix C**).

Table 22: Red River flow rate trigger values.	
Water Quality Based Effluent Limits for chloride was determined based on the following criteria: maximum effluent discharge flow rate of 4.2 MGD, with a Red River flow of 806 CFS with a mixing factor of 50%. The upstream chloride value used was 19.32 mg/l with an effluent chloride value of 3,840 mg/l. Based on these conditions effluent discharge flow rates would need to be carefully managed when Red River flows are below 806 CFS. The adjusted flow rates are as follows:	
Maximum effluent discharge flow rate values. These values are bench marks and are not effluent limitations.	Flow in the Red River
4.2 MGD	>= 800 CFS
3.9 MGD	Between 750 and 799 CFS
3.1 MGD	Between 600 and 749 CFS
2.6 MGD	Between 500 and 599 CFS
2.1 MGD	Between 400 and 499 CFS
1.6 MGD	Between 300 and 399 CFS
1.0 MGD	Between 200 and 299 CFS
0.5 MGD	Between 100 and 199 CFS
0.4 MGD	Between 75 and 99 CFS

Though the above table represents values that are not limitations, the facility must maintain a dilution ratio of 124:1 when the Red River of the North is below 806 CFS in order to comply with the chloride effluent limitations.

The department proposes to change the requirement to send the Minnesota Pollution Control Agency; and the Public Works Departments of the cities of Grand Forks, North Dakota; Fargo, North Dakota; and Moorhead, Minnesota, a copy of the amendments to the Contingency Plan to only be provided upon request. The facility will be required to send the department a copy of the updated Contingency Plan in order for the department to have a current copy on file.

Stormwater

The department proposes to increase self inspections of the plant site and discharge conveyances from annually to quarterly. The increase in inspections is based upon the re-issued NDR050000 Industrial Stormwater Permit (like discharges) and best professional judgment.

Future Expansion Report

The department proposes to add a report to be provided to the department which describes the plan for future expansion, increases in production, and expected changes in effluent at the facility. This report is being proposed to plan for future plant expansion, increased production and the effects of increased production on the effluent. The report shall be due no later than July 1, 2017.

Other Conditions

The department proposes to continue with the ability to increase the monitoring requirements during the permit cycle. This is allowed under 40 CFR 122.63 and N.D.A.C. 33-16-01-25(4).

FACT SHEET FOR NDPDES PERMIT ND0026000

CARGILL CORN MILLING (PROGOLD)

EXPIRATION DATE: June 30, 2021

Page 31 of 49

The department proposes to remove the ability to reduce effluent limitations without providing a public notice and comment period because this type of modification would be considered a major permit modification which requires public notice under 40 CFR 122.62.

The department proposes to remove Part I(E)(2) from the permit. This type of modification would be considered a major permit modification which would require a public notice and comment period under 40 CFR 122.62.

The department proposes to continue the need for notification as required the standard conditions of this permit and 40 CFR 122.62(a)(1), in which changes in material or additions to the permitted facility which have occurred after permit issuance.

PERMIT ISSUANCE PROCEDURES

Permit Modifications

The department may modify this permit to impose numerical limits, if necessary to comply with water quality standards for surface waters, with sediment quality standards, or with water quality standards for ground waters, based on new information from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The department may also modify this permit to comply with new or amended state or federal regulations.

Proposed Permit Issuance

This proposed permit meets all statutory requirements for the department to authorize a wastewater discharge. The permit includes limits and conditions to protect human health and aquatic life, and the beneficial uses of waters of the State of North Dakota. The department proposes to issue this permit for a term of five (5) years.

APPENDIX A - PUBLIC INVOLVEMENT INFORMATION

The department proposes to reissue a permit to **Cargill Corn Milling (Progold)**. The permit includes wastewater discharge limits and other conditions. This fact sheet describes the facility and the department's reasons for requiring permit conditions.

The department will place a Public Notice of Draft on **April 21, 2016** in **The Forum and the Wahpeton Daily News** to inform the public and to invite comment on the proposed draft North Dakota Pollutant Discharge Elimination System permit and fact sheet.

The Notice –

- Tells where copies of the draft permit and fact sheet are available for public evaluation.
- Offers to provide assistance to accommodate special needs.
- Urges people to submit their comments before the end of the comment period.
- Informs the public that if there is significant interest, a public hearing will be scheduled.

You may obtain further information from the department by telephone, 701.328.5210 or by writing to the address listed below.

North Dakota Department of Health
Division of Water Quality
918 East Divide Avenue, 4th Floor
Bismarck, ND 58501

The primary author of this permit and fact sheet is Patrick Schuett.

**North Dakota Department of Health Public Notice
Reissue of an NDPDES Permit**

Public Notice Date: 4/21/2016 Public Notice Number: ND-2016-017

Purpose of Public Notice

The Department intends to reissue the following North Dakota Pollutant Discharge Elimination System (NDPDES) Discharge Permit under the authority of Section 61-28-04 of the North Dakota Century Code.

Permit Information

Application Date: 1/4/2016 Application Number: ND0026000

Applicant Name: Cargill Corn Milling (Progold)
Mailing Address: 18049 Co Rd 8 E, Wahpeton, ND 58075
Telephone Number: 701.671.1901

Proposed Permit Expiration Date: 6/30/2021

Facility Description

The reapplication is for a corn milling facility located near Wahpeton, North Dakota. This facility uses a wet milling process to produce corn syrup and livestock feed. The facility processes approximately 95,000 bushels of corn per day. The process generates approximately 1.15 million gallons of wastewater per day. The wastewater treatment system consists of an anaerobic digester, activated sludge process (SBRs) and four storage ponds with a total capacity of 98 million gallons. Treated wastewater can be discharged from the mechanical treatment system or the ponds at varying rates, depending on the characteristics of the wastewater and the Red River of the North. The discharge is located in the NE1/4 of Section 7, Township 133N, Range 47W, and is to the Red River of the North, a Class I stream.

Tentative Determinations

Proposed effluent limitations and other permit conditions have been made by the Department. They assure that State Water Quality Standards and applicable provisions of the FWPCA will be protected.

Information Requests and Public Comments

Copies of the application, draft permit, and related documents are available for review. Comments or requests should be directed to the ND Dept of Health, Div of Water Quality, 918 East Divide Ave, Bismarck ND 58501-1947 or by calling 701.328.5210.

All comments received by May 25, 2016 will be considered prior to finalizing the permit. If there is significant interest, a public hearing will be scheduled. Otherwise, the Department will issue the final permit within sixty (60) days of this notice. If you require special facilities or assistance relating to a disability, call TDD at 1.800.366.6868.

APPENDIX B – GLOSSARY

DEFINITIONS Standard Permit BP 2013.12.31

1. “**Act**” means the Clean Water Act.
2. “**Average monthly discharge limitation**” means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.
3. “**Average weekly discharge limitation**” means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.
4. “**Best management practices**” (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
5. “**Bypass**” means the intentional diversion of waste streams from any portion of a treatment facility.
6. “**Composite**” sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.
7. “**Daily discharge**” means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.
8. “**Department**” means the North Dakota Department of Health, Division of Water Quality.
9. “**DMR**” means discharge monitoring report.
10. “**EPA**” means the United States Environmental Protection Agency.
11. “**Geometric mean**” means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.
12. “**Grab**” for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.

13. "**Instantaneous**" for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.
14. "**Maximum daily discharge limitation**" means the highest allowable "daily discharge."
15. "**Salmonid**" means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.
16. "**Sanitary Sewer Overflows (SSO)**" means untreated or partially treated sewage overflows from a sanitary sewer collection system.
17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
18. "**Total drain**" means the total volume of effluent discharged.
19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

DEFINITIONS Whole Effluent Toxicity (WET) BP 2010.03.24

20. "**Acute toxic unit**" ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e., $100/\text{LC50}$).
21. "**Chronic toxic unit**" ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e., $100/\text{NOEC}$).
22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).
23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.
24. "**No observed effect concentration**", ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

DEFINITIONS Permit Specific

25. **General Water Chemistry**” means sampling and testing for the following parameters:

Sodium	Sulfate	Hardness Total as CaCO ₃	Nitrate and Nitrite
Calcium	Carbonate	Total Dissolved Solids	Phosphorus (Total)
Magnesium	Bicarbonate	Sodium Adsorption Ratio	Turbidity
Potassium	Hydroxide	Percent Sodium	Fluoride
Silica	Alkalinity	Iron	Total Suspended Solids
Chloride	Conductivity	Manganese	pH

APPENDIX C – DATA AND TECHNICAL CALCULATIONS

DFLOW

The department obtained stream flow data from USGS site 05051500 from January 1, 2005 to January 3, 2016. Below are the critical low flows calculated by the DFLOW (3.1b).

DFLOW 1B3 (ACUTE)	99.7	CFS
DFLOW 4B3 (CHRONIC)	104	CFS
DFLOW 1Q10 (ACUTE)	125	CFS
DFLOW 7Q10 (CHRONIC)	162	CFS
DFLOW 30B10 (AMMONIA)	130	CFS

Reasonable Potential

Sulfate

The reasonable potential determination for sulfate is provided below. The determination is conducted utilizing the Technical Support Document For Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). The coefficient of variation used was 0.5.

**Receiving Water Concentration (RWC)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000	1Q10 Acute	125 cfs
Daily Maximum Flow (mgd):	3.40	1B3 Acute	99.7 cfs
Daily Average Flow (mgd):	1.90	7Q10 Chronic	162 cfs
Stream Design Mixing:	50.0%	4B3 Chronic	104 cfs
Statistical Multiplier:	1.0		
Upstream Concentration:	250.0000 mg/l	Parameter:	
Effluent Concentration (max):	1494.0000 mg/l	Sulfate	
		Outfall:	
RWC	$\frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$	001	

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)

Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)

Qe = Effluent Design Flow

Ce = Highest effluent concentration reported.

pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.

Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Cs = Background concentration of the receiving water.

Qe - Acute	3.40	mgd	Qs - 1Q10	80.75	mgd
Qe - Chronic	1.90	mgd	Qs - 1B3	64.41	mgd
Ce	1494.0000	mg/l	Qs - 7Q10	104.65	mgd
Cs	250.0000	mg/l	Qs - 4B3	67.18	mgd
Stat	1.00				
pmf	50.0%				

Acute RP		Chronic RP	
RWC - 1Q10	346.6214 mg/l	RWC - 7Q10	293.5879 mg/l
RWC - 1B3	368.7986 mg/l	RWC - 4B3	316.5953 mg/l

Criterion Maximum Concentration (CMC)	Criterion Continuous Concentration (CCC)
Acute Criterion	250.0000 mg/l
Chronic Criterion	250.0000 mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		CCC RP Present:	
1Q10 Acute OR	YES	7Q10 Chronic OR	YES
1B3 Acute	YES	4B3 Chronic	YES

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

Due to the ambient 90th percentile sulfate concentration being at the WQS (250 mg/l), the department developed a flow restriction based on river flow by using the technical support document to determine the dilution ratio and adjusting the river flow.

The daily average flow was adjusted to the maximum design flow of 4.2 MGD to simulate a worst-case-scenario situation. The upstream concentration was adjusted to the upstream average concentration of 107 mg/l because at times the upstream concentration may be above the water quality standard of 250 mg/l. The Chronic Criterion was decreased to 200 mg/l from 250 mg/l in order to provide assimilative capacity for potential future growth of Breckenridge, MN.

The river flow for 7Q10 and 4B3 were adjusted until no biological reasonable potential was determined. The 7Q10 and 4B3 river flow rates were determined to be 181 cfs.

**Receiving Water Concentration (RWC)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000		1Q10 Acute cfs
Daily Maximum Flow (mgd):			1B3 Acute cfs
Daily Average Flow (mgd):	4.20		7Q10 Chronic 181 cfs
Stream Design Mixing:	50.0%		4B3 Chronic 181 cfs
Statistical Multiplier:	1.0		
Upstream Concentration:	107.0000	mg/l	Parameter: Sulfate
Effluent Concentration (max):	1494.0000	mg/l	
			Outfall: 001
RWC	$\frac{(StatQeCe)+(Cs(pm)Qs)}{Qe+(pm)Qs}$		

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)

Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)

Qe = Effluent Design Flow

Ce = Highest effluent concentration reported.

pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.

Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Cs = Background concentration of the receiving water.

Qe - Acute	0.00	mgd	Qs - 1Q10	0.00	mgd
Qe - Chronic	4.20	mgd	Qs - 1B3	0.00	mgd
Ce	1494.0000	mg/l	Qs - 7Q10	116.93	mgd
Cs	107.0000	mg/l	Qs - 4B3	116.93	mgd
Stat	1.00				
pmf	50.0%				

Acute RP			Chronic RP		
RWC - 1Q10	#DIV/0!	mg/l	RWC - 7Q10	199.9640	mg/l
RWC - 1B3	#DIV/0!	mg/l	RWC - 4B3	199.9640	mg/l

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion		mg/l	Chronic Criterion	200.0000	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:			CCC RP Present:		
1Q10 Acute OR	#DIV/0!		7Q10 Chronic OR		NO
1B3 Acute	#DIV/0!		4B3 Chronic		NO

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

Maximum Daily Limit (MDL) Determination

Maximum Daily Limit (MDL) - EPA recommends using the 99th percentile (see TSD, Table 5-2, page 103)

MDL = LTA x e^{^[zq-0.5q2]}

z 1.95

MDL		
1Q10	#DIV/0!	mg/l
1B3	#DIV/0!	mg/l
7Q10	2002.1576	mg/l
4B3	2002.1576	mg/l

Average Monthly Limit (AML) Determination

Average Monthly Limit (AML) - EPA recommends using the 95th percentile (see TSD, Table 5-2, page 103)

AML = LTA x e^{^[zq-0.5q2]}

z 1.45

AML		
1Q10	#DIV/0!	mg/l
1B3	#DIV/0!	mg/l
7Q10	1488.7839	mg/l
4B3	1488.7839	mg/l

Following these procedures, the maximum daily limit and average monthly limit may then be incorporated into the permit as justifiable WQBELs.

BIOLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	#DIV/0!	#DIV/0!	mg/l	2002.1576	1488.7839
ug/l	#DIV/0!	#DIV/0!	ug/l	#####	#####

HYDROLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	#DIV/0!	#DIV/0!	mg/l	2002.1576	1488.7839
ug/l	#DIV/0!	#DIV/0!	ug/l	#####	#####

The sulfate MDL was determined to be 2,002 mg/L and the AML was 1,489 mg/L. If the flow of the Red River of the North falls below 181 CFS, the facility would then need to carefully manage their discharge in order to meet the MDL and AML limitations.

The department then calculated the dilution ratio utilizing the maximum design flow discharge rate and a stream flow of 181 CFS. The calculation is shown below:

FACT SHEET FOR NDPDES PERMIT ND0026000

CARGILL CORN MILLING (PROGOLD)

EXPIRATION DATE: June 30, 2021

Page 41 of 49

	Daily Average Flow
Facility Flow, MGD	4.2
Facility Flow, cfs (calculated)	6.50

	Condition	Receiving Water Flow, cfs
Aquatic Life - Chronic	7Q10	181
Aquatic Life - Chronic	4B3	181

Condition	Dilution Ratio	Dilution Factor
Aquatic Life - Chronic	27.9	28.9

The calculation determined a dilution ratio of 27.9 parts river water to one (1) part effluent with a stream flow of 181 CFS and a discharge rate of 6.5 CFS. This dilution ration would need to be maintained at stream flows below 181 CFS in order to meet the chronic criterion of 200 mg/L, if discharging at the MDL and AML concentrations.

Chloride

The reasonable potential determination for chloride is provided below. The determination is conducted utilizing the Technical Support Document For Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). The coefficient of variation used was 0.5.

FACT SHEET FOR NDPDES PERMIT ND0026000
 CARGILL CORN MILLING (PROGOLD)
EXPIRATION DATE: June 30, 2021
 Page 42 of 49

**Receiving Water Concentration (RWC)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000	1Q10 Acute	125 cfs
Daily Maximum Flow (mgd):	3.40	1B3 Acute	99.7 cfs
Daily Average Flow (mgd):	1.90	7Q10 Chronic	162 cfs
Stream Design Mixing:	50.0%	4B3 Chronic	104 cfs
Statistical Multiplier:	1.0		
Upstream Concentration:	19.3200 mg/l		Parameter:
Effluent Concentration (max):	3840.0000 mg/l		Chloride
			Outfall:
RWC	$\frac{(StatQeCe)+(Cs(pm)Qs)}{Qe+(pm)Qs}$		001

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)

Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)

Qe = Effluent Design Flow

Ce = Highest effluent concentration reported.

pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.

Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Cs = Background concentration of the receiving water.

Qe - Acute	3.40	mgd	Qs - 1Q10	80.75	mgd
Qe - Chronic	1.90	mgd	Qs - 1B3	64.41	mgd
Ce	3840.0000	mg/l	Qs - 7Q10	104.65	mgd
Cs	19.3200	mg/l	Qs - 4B3	67.18	mgd
Stat	1.00				
pmf	50.0%				

Acute RP			Chronic RP		
RWC - 1Q10	316.0718	mg/l	RWC - 7Q10	153.1911	mg/l
RWC - 1B3	384.1846	mg/l	RWC - 4B3	223.8532	mg/l
Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion		mg/l	Chronic Criterion	80.0000	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		CCC RP Present:	
1Q10 Acute OR	YES	7Q10 Chronic OR	YES
1B3 Acute	YES	4B3 Chronic	YES

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

Maximum Daily Limit (MDL) Determination

Maximum Daily Limit (MDL) - EPA recommends using the 99th percentile (see TSD, Table 5-2, page 103)

MDL = LTA x e^z[zq-0.5q2]

z 1.95

MDL	
1Q10	-229.9527 mg/l
1B3	-183.4103 mg/l
7Q10	2345.8976 mg/l
4B3	1544.3785 mg/l

Average Monthly Limit (AML) Determination

Average Monthly Limit (AML) - EPA recommends using the 95th percentile (see TSD, Table 5-2, page 103)

AML = LTA x e^z[zq-0.5q2]

z 1.45

AML	
1Q10	-170.9905 mg/l
1B3	-136.3820 mg/l
7Q10	1744.3854 mg/l
4B3	1148.3840 mg/l

Following these procedures, the maximum daily limit and average monthly limit may then be incorporated into the permit as justifiable WQBELs.

BIOLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	-183.4103	-136.3820	mg/l	1544.3785	1148.3840
ug/l	-183410.2556	#####	ug/l	#####	#####

HYDROLOGICALLY BASED LIMITS					
WQBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	-229.9527	-170.9905	mg/l	2345.8976	1744.3854
ug/l	-229952.6775	#####	ug/l	#####	#####

The Chronic Criterion was decreased to 80 mg/l from 100 mg/l in order to provide assimilative capacity for potential future growth of Breckenridge, MN. The analysis showed a reasonable potential for the facility to cause an exceedance of the water quality standards for chloride. The chloride calculated biological based MDL was 1,544 mg/L and the AML was 1,148 mg/L. This would be a 49 percent (%) reduction for the AML and a 50 percent (%) reduction for the MDL, from the previous permit. The department determined that large of a reduction would be unrealistic for the facility since the average chloride concentration from the facility was 1,286 mg/L. The department determined to develop a flow restriction based on river flow by using the technical support document to determine the dilution ratio and adjusting the river flow.

The daily average flow was adjusted to the maximum design flow of 4.2 MGD to simulate a worst-case-scenario situation. The river flow for 7Q10 and 4B3 were adjusted until no biological reasonable potential was determined. The 7Q10 and 4B3 river flow rates were determined to be 806 CFS.

FACT SHEET FOR NDPDES PERMIT ND0026000
 CARGILL CORN MILLING (PROGOLD)
EXPIRATION DATE: June 30, 2021
 Page 44 of 49

**Receiving Water Concentration (RWC)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000	1Q10 Acute	cfs
Daily Maximum Flow (mgd):		1B3 Acute	cfs
Daily Average Flow (mgd):	4.20	7Q10 Chronic	806 cfs
Stream Design Mixing:	50.0%	4B3 Chronic	806 cfs
Statistical Multiplier:	1.0		
Upstream Concentration:	19.3200 mg/l		Parameter:
Effluent Concentration (max):	3840.0000 mg/l		Chloride
			Outfall:
RWC	$\frac{(StatQeCe)+(Cs(pm)Qs)}{Qe+(pm)Qs}$		001

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)

Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)

Qe = Effluent Design Flow

Ce = Highest effluent concentration reported.

pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.

Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Cs = Background concentration of the receiving water.

Qe - Acute	0.00	mgd	Qs - 1Q10	0.00	mgd
Qe - Chronic	4.20	mgd	Qs - 1B3	0.00	mgd
Ce	3840.0000	mg/l	Qs - 7Q10	520.68	mgd
Cs	19.3200	mg/l	Qs - 4B3	520.68	mgd
Stat	1.00				
pmf	50.0%				

Acute RP			Chronic RP		
RWC - 1Q10	#DIV/0!	mg/l	RWC - 7Q10	79.9799	mg/l
RWC - 1B3	#DIV/0!	mg/l	RWC - 4B3	79.9799	mg/l
Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion		mg/l	Chronic Criterion	80.0000	mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		CCC RP Present:	
1Q10 Acute OR	#DIV/0!	7Q10 Chronic OR	NO
1B3 Acute	#DIV/0!	4B3 Chronic	NO

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

FACT SHEET FOR NDPDES PERMIT ND0026000
 CARGILL CORN MILLING (PROGOLD)
EXPIRATION DATE: June 30, 2021
 Page 45 of 49

Maximum Daily Limit (MDL) Determination

Maximum Daily Limit (MDL) - EPA recommends using the 99th percentile (see TSD, Table 5-2, page 103)

MDL = LTA x e^[zq-0.5q²]

z 1.95

MDL	#DIV/0!	mg/l
1Q10	#DIV/0!	mg/l
1B3	#DIV/0!	mg/l
7Q10	5145.9496	mg/l
4B3	5145.9496	mg/l

Average Monthly Limit (AML) Determination

Average Monthly Limit (AML) - EPA recommends using the 95th percentile (see TSD, Table 5-2, page 103)

AML = LTA x e^[zq-0.5q²]

z 1.45

AML	#DIV/0!	mg/l
1Q10	#DIV/0!	mg/l
1B3	#DIV/0!	mg/l
7Q10	3826.4754	mg/l
4B3	3826.4754	mg/l

Following these procedures, the maximum daily limit and average monthly limit may then be incorporated into the permit as justifiable QBELs.

BIOLOGICALLY BASED LIMITS					
QBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	#DIV/0!	#DIV/0!	mg/l	5145.9496	3826.4754
ug/l	#DIV/0!	#DIV/0!	ug/l	#####	#####

HYDROLOGICALLY BASED LIMITS					
QBELs	CMC - Acute Limit		CCC - Chronic Limit		
	MDL	AML	MDL	AML	
mg/l	#DIV/0!	#DIV/0!	mg/l	5145.9496	3826.4754
ug/l	#DIV/0!	#DIV/0!	ug/l	#####	#####

The MDL was determined to be 5,146 mg/L and the AML was 3,826 mg/L. If the flow of the Red River of the North falls below 806 CFS, the permittee would need to carefully manage their discharge in order to meet the MDL and AML limitations.

The department then calculated the dilution ratio utilizing the maximum design flow discharge rate and a stream flow of 806 CFS. The calculation is shown below:

	Daily Average Flow
Facility Flow, MGD	4.2
Facility Flow, cfs (calculated)	6.50

	Condition	Receiving Water Flow, cfs
Aquatic Life - Chronic	7Q10	806
Aquatic Life - Chronic	4B3	806

Condition	Dilution Ratio	Dilution Factor
Aquatic Life - Chronic	124.0	125.0

FACT SHEET FOR NDPDES PERMIT ND0026000

CARGILL CORN MILLING (PROGOLD)

EXPIRATION DATE: June 30, 2021

Page 46 of 49

The calculation determined a dilution ratio of 124 parts river water to one (1) part effluent with a stream flow of 806 CFS and a discharge rate of 4.2 MGD (6.5 CFS). This dilution ratio would need to be maintained at stream flows below 806 CFS in order to meet the chronic criterion of 80 mg/L, if the facility is discharging chloride at the MDL and AML concentrations. This dilution ratio is more restrictive than the dilution ratio determined for sulfate; therefore the facility must begin carefully managing their discharge to maintain a dilution ratio of 124:1 to meet the MDL and AML effluent limitations, when the Red River of the North stream flow is below 806 CFS. Below is a calculation of the discharge rate based upon the receiving stream flow as determined with a dilution ratio of 124:1.

Dilution Ratio	124.0	
Receiving Stream Flows (cfs)	Discharge Rate (cfs)	Discharge Rate (MGD)
900.0	7.3	4.2
850.0	6.9	4.2
800.0	6.5	4.2
750.0	6.0	3.9
700.0	5.6	3.6
650.0	5.2	3.4
600.0	4.8	3.1
550.0	4.4	2.9
500.0	4.0	2.6
450.0	3.6	2.3
400.0	3.2	2.1
350.0	2.8	1.8
300.0	2.4	1.6
250.0	2.0	1.3
200.0	1.6	1.0
150.0	1.2	0.8
100.0	0.8	0.5
75.0	0.6	0.4
50.0	0.4	0.3

This table was used as the trigger values listed under the special conditions section of this fact sheet and in the permit.

Ammonia

The reasonable potential determination for ammonia is provided below. The determination is conducted utilizing the Technical Support Document For Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991). The coefficient of variation used was 1.1.

**Receiving Water Concentration (RWC)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000	1Q10 Acute	125 cfs
Daily Maximum Flow (mgd):	3.40	1B3 Acute	99.7 cfs
Daily Average Flow (mgd):	1.90	30B10 Chronic	130 cfs
Stream Design Mixing:	25.0%	4B3 Chronic	104 cfs
Statistical Multiplier:	1.7		
Upstream Concentration:	0.2300 mg/l		Parameter:
Effluent Concentration (max):	18.8000 mg/l		Ammonia
			Outfall:
RWC	$\frac{(StatQeCe)+(Cs(pmf)Qs)}{Qe+(pmf)Qs}$		001

RWC = Receiving water concentration, the resultant magnitude of concentration in the receiving water after effluent discharge concentration (also known as the in-stream waste concentration)
 Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)
 Qe = Effluent Design Flow
 Ce = Highest effluent concentration reported.
 pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.
 Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)
 Cs = Background concentration of the receiving water.

Qe - Acute	3.40	mgd	Qs - 1Q10	80.75	mgd
Qe - Chronic	1.90	mgd	Qs - 1B3	64.41	mgd
Ce	18.8000	mg/l	Qs - 30B10	83.98	mgd
Cs	0.2300	mg/l	Qs - 4B3	67.18	mgd
Stat	1.70				
pmf	25.0%				

Acute RP		Chronic RP	
RWC - 1Q10	4.8037 mg/l	RWC - 30B10	2.8632 mg/l
RWC - 1B3	5.7620 mg/l	RWC - 4B3	3.4546 mg/l

Criterion Maximum Concentration (CMC)	Criterion Continuous Concentration (CCC)		
Acute Criterion	3.2 mg/l	Chronic Criterion	0.5900 mg/l

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		CCC RP Present:	
1Q10 Acute OR	YES	30B10 Chronic OR	YES
1B3 Acute	YES	4B3 Chronic	YES

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design and harmonic mean flows to determine Water Quality Based Effluent Limits (WQBELs) and Whole Effluent Toxicity (WET) limits.

The data used in the reasonable potential analysis was the 90th percentile ammonia concentration obtained from STORET and upstream monitoring results (07/01/2011 through 12/31/2015). The receiving stream flow was the 30B10 critical low flow (130 cfs) determined by DFLOW utilizing data from the USGS site 05051500. The receiving stream temperature (23.94 °C) and pH (8.5 S.U.) was the 90th percentile from available STORET and USGS upstream sites from 1971 to December 2015.

Whole Effluent Toxicity

The reasonable potential determination for whole effluent toxicity is provided below. The determination is conducted utilizing the Technical Support Document For Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991 (TSD; March 1991).

FACT SHEET FOR NDPDES PERMIT ND0026000
 CARGILL CORN MILLING (PROGOLD)
EXPIRATION DATE: June 30, 2021
 Page 48 of 49

**Whole Effluent Toxicity (WET)
 Reasonable Potential (RP)
 Determination**

Technical Support Document (TSD) For Water Quality-based Toxics Control
 EPA/505/2-90-001; March 1991

Facility Name:	Cargill Corn Milling	Receiving Stream:	Red River of the North
NDPDES Permit:	ND0026000	1Q10 Acute	125 cfs
Effluent Flow (mgd):	3.400	1B3 Acute	99.7 cfs
Stream Design Mixing:	0.0%	7Q10 Chronic	cfs
WET TUs (max):	2.52	4B3 Chronic	cfs
ACR:	10.00		
Statistical Multiplier:	1.2		

RWC	$\frac{\text{StatQeCe}}{\text{Qe}+(\text{pmf})\text{Qs}}$	Outfall:	001
-----	---	----------	-----

RWC = Receiving water concentration, the resultant magnitude of toxicity in the receiving water after effluent discharge in TUs (also known as the in-stream waste concentration)

Stat = Statistical multiplier for effluent parameter (Table 3-1 and 3-2; page 57 of the TSD)

Qe = Effluent Design Flow

Ce = Highest Toxicity Unit (TU) reported. (Use 1 if no WET data is available.)

pmf = Partial mix factor, percent of Qs allowed for mixing by State authority.

Qs = Receiving Water Flow (1Q10 or 1B3 for acute and 7Q10 or 4B3 for chronic)

Qe	3.400	mgd	Qs - Acute	80.750	mgd
Ce	2.52	TU	Qs - Acute 1B3	64.406	mgd
pmf	0.0%		Qs - Chronic		mgd
Stat	1.2		Qs - Chronic 4B3		mgd
ACR	10.00				

Acute RP			Chronic RP		
RWC - 1Q10	3.02	TUa	RWC - 7Q10	30.24	TUc
RWC - 1B3	3.02	TUa	RWC - 4B3	30.24	TUc

Criterion Maximum Concentration (CMC)			Criterion Continuous Concentration (CCC)		
Acute Criterion	0.3	TUa	Chronic Criterion		TUc

If the calculated RWC is greater than its respective criterion then there is RP and if RWC is less than the criterion then there is no RP.

CMC RP Present:		CCC RP Present:		
1Q10 Acute OR	YES	7Q10 Chronic OR	N/A	
1B3 Acute	YES	4B3 Chronic	N/A	

The North Dakota State Water Quality Standards (WQS) Chapter 33-16-02.1 use biologically based design flows to determine Whole Effluent Toxicity (WET) limits for acute and chronic endpoints.

APPENDIX D – RESPONSE TO COMMENTS

Responses to comments received during the public comment period will be placed here.

Permit No: ND0026000
Effective Date: July 1, 2016
Expiration Date: June 30, 2021

AUTHORIZATION TO DISCHARGE UNDER THE
NORTH DAKOTA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with Chapter 33-16-01 of the North Dakota Department of Health rules as promulgated under Chapter 61-28 (North Dakota Water Pollution Control Act) of the North Dakota Century Code,

Cargill Corn Milling

is authorized to discharge from their corn wet milling facility located at Wahpeton, North Dakota

to the Red River of the North

provided all the conditions of this permit are met.

This permit and the authorization to discharge shall expire at midnight,

June 30, 2021.

Signed this _____ day of _____, _____.

Karl H. Rockeman, P.E.
Director
Division of Water Quality

BP 2014.06.12

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TABLE OF CONTENTS

DEFINITIONS.....	4
SPECIAL CONDITIONS.....	7
I. LIMITATIONS AND MONITORING REQUIREMENTS.....	9
A. Discharge Authorization.....	9
B. Outfalls 003 and 004. Stormwater	12
C. Red River Downstream Limitations and Instream Monitoring Requirements	13
D. Other Conditions.....	15
E. Whole Effluent Toxicity (WET) Requirements BP 2011.06.13	15
II. MONITORING, RECORDING, AND REPORTING REQUIREMENTS BP 2015.12.30	19
A. Representative Sampling (Routine and Non-Routine Discharges).....	19
B. Test Procedures.....	19
C. Recording of Results.....	19
D. Additional Monitoring.....	20
E. Reporting of Monitoring Results.....	20
F. Records Retention	20
III. COMPLIANCE RESPONSIBILITIES.....	20
A. Duty to Comply	20
B. Proper Operation and Maintenance.....	21
C. Planned Changes.....	21
D. Duty to Provide Information	21
E. Signatory Requirements.....	21
F. Twenty-four Hour Notice of Noncompliance Reporting	22
G. Bypass of Treatment Facilities.....	22
H. Upset Conditions	23
I. Duty to Mitigate.....	23
J. Removed Materials	23
K. Duty to Reapply.....	23
IV. GENERAL PROVISIONS	24
A. Inspection and Entry.....	24
B. Availability of Reports	24
C. Transfers	24
D. New Limitations or Prohibitions	24
E. Permit Actions.....	24
F. Need to Halt or Reduce Activity Not a Defense	24
G. State Laws	24
H. Oil and Hazardous Substance Liability	24
I. Property Rights.....	24
J. Severability.....	25

DEFINITIONS

DEFINITIONS Standard Permit BP 2013.12.31

1. “**Act**” means the Clean Water Act.
2. “**Average monthly discharge limitation**” means the highest allowable average of “daily discharges” over a calendar month, calculated as the sum of all “daily discharges” measured during a calendar month divided by the number of “daily discharges” measured during that month.
3. “**Average weekly discharge limitation**” means the highest allowable average of “daily discharges” over a calendar week, calculated as the sum of all “daily discharges” measured during a calendar week divided by the number of “daily discharges” measured during that week.
4. “**Best management practices**” (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage areas.
5. “**Bypass**” means the intentional diversion of waste streams from any portion of a treatment facility.
6. “**Composite**” sample means a combination of at least 4 discrete sample aliquots, collected over periodic intervals from the same location, during the operating hours of a facility not to exceed a 24 hour period. The sample aliquots must be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.
7. “**Daily discharge**” means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the “daily discharge” is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the “daily discharge” is calculated as the average measurement of the pollutant over the day.
8. “**Department**” means the North Dakota Department of Health, Division of Water Quality.
9. “**DMR**” means discharge monitoring report.
10. “**EPA**” means the United States Environmental Protection Agency.
11. “**Geometric mean**” means the n^{th} root of a product of n factors, or the antilogarithm of the arithmetic mean of the logarithms of the individual sample values.
12. “**Grab**” for monitoring requirements, means a single "dip and take" sample collected at a representative point in the discharge stream.
13. “**Instantaneous**” for monitoring requirements, means a single reading, observation, or measurement. If more than one sample is taken during any calendar day, each result obtained shall be considered.
14. “**Maximum daily discharge limitation**” means the highest allowable “daily discharge.”
15. “**Salmonid**” means of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

16. "**Sanitary Sewer Overflows (SSO)**" means untreated or partially treated sewage overflows from a sanitary sewer collection system.
17. "**Severe property damage**" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
18. "**Total drain**" means the total volume of effluent discharged.
19. "**Upset**" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

DEFINITIONS Whole Effluent Toxicity (WET) BP 2010.03.24

20. "**Acute toxic unit**" ("TUa") is a measure of acute toxicity. TUa is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end on the acute exposure period (i.e., $100/\text{LC}_{50}$).
21. "**Chronic toxic unit**" ("TUc") is a measure of chronic toxicity. TUc is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of the chronic exposure period (i.e., $100/\text{NOEC}$).
22. "**Inhibition concentration**", ("IC"), is a point estimate of the toxicant concentration that causes a given percent reduction (p) in a non-quantal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., Interpolation Method).
23. "**LC50**" means the concentration of toxicant (e.g., effluent) which is lethal to 50 percent of the organisms exposed in the time period prescribed by the test.
24. "**No observed effect concentration**", ("NOEC"), is the highest concentration of toxicant (e.g., effluent) to which organisms are exposed in a chronic toxicity test [full life-cycle or partial life-cycle (short term) test], that causes no observable adverse effects on the test organisms (i.e., the highest concentration of effluent in which the values for the observed responses are not statistically significantly different from the controls).

DEFINITIONS Permit Specific

25. "**General Water Chemistry**" means sampling and testing for the following parameters:

Sodium	Sulfate	Hardness Total as CaCO ₃	Nitrate and Nitrite
Calcium	Carbonate	Total Dissolved Solids	Phosphorus (Total)
Magnesium	Bicarbonate	Sodium Adsorption Ratio	Turbidity
Potassium	Hydroxide	Percent Sodium	Fluoride
Silica	Alkalinity	Iron	Total Suspended Solids
Chloride	Conductivity	Manganese	pH

OUTFALL DESCRIPTIONS

Outfall 001. Active. Final Outfall. Process Wastewater			
Latitude: 46.3504726	Longitude: -96.641491		
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is the final discharge of process wastewater combined from all plant sources. The discharge enters the receiving stream through a diffuser.			

Outfall 002. Active. Internal Outfall. High Salt Wastewater			
Latitude: 46.3504726	Longitude: -96.641491		
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an internal discharge of high salt wastewater or from the brine ponds. This discharge is combined with process wastewater from all plant sources and enters the receiving stream through the diffuser from outfall 001.			

Outfall 003. Active. Final Outfall. East Plant Area Runoff			
Latitude: 46.3505500	Longitude: -96.6398000		
Township: 133	Range: 47	Section: 7	QQ: A
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an intermittent discharge consisting of storm runoff from the east area of the plant site, and off-site drainage from upstream areas.			

Outfall 004. Active. Final Outfall. West Plant Area Runoff			
Latitude: 46.3505500	Longitude: -96.6478000		
Township: 133	Range: 47	Section: 7	QQ: B
Receiving Stream: Red River of the North		Classification: Class 1	
Outfall Description: This is an intermittent discharge, via a drop structure, consisting of storm runoff from the west area of the plant site.			

PERMIT SUBMITTALS SUMMARY

Coverage Point	Submittal	Frequency	First Submittal Date
001A	Discharge Monitoring Report	1/month	August 31, 2016
001M	Discharge Monitoring Report	1/6 months	February 28, 2017
001W	Discharge Monitoring Report	1/3 months	October 31, 2016
002A	Discharge Monitoring Report	1/month	August 31, 2016
002G	Discharge Monitoring Report	1/12 months	July 31, 2017
003S	Discharge Monitoring Report	1/12 months	July 31, 2017
004S	Discharge Monitoring Report	1/12 months	July 31, 2017
Special Conditions	Future Expansion Report	1/permit cycle	July 1, 2017
Application Renewal	NPDES Application Renewal	1/permit cycle	January 1, 2021

SPECIAL CONDITIONS

Comprehensive Water Resource Management Plan

The permittee shall be involved in the ongoing review of the comprehensive water resource management plan involving the reach of the Red River from Wahpeton to Fargo. The plan is designed to evaluate and implement management strategies aimed at maintaining designated use criteria and providing optimal quality for growing water supply demands on the Red River. At a minimum the permittee must coordinate their discharge activities with those of other dischargers in the area to minimize the cumulative impact on the Red River from all discharges in the Wahpeton area. The permittee must restrict, and if necessary cease, the discharge from outfall 002, while other facilities in the area are discharging, such that it does not cause interference with other facilities discharges and downstream effluent limitations, or cause adverse effects for downstream users. If necessary, the department may direct the permittee to restrict or cease discharging from outfall 002 to allow other facilities in the area to discharge. The permittee must notify downstream users identified in the Contingency Plan of any non-compliance while operating outfall 002.

Contingency Plan

The permittee shall maintain a contingency plan outlining steps that will be taken in response to incidents or circumstances which may adversely impact the receiving stream and downstream uses. The goal of the plan is to minimize any impacts to the receiving stream and keep downstream users informed of incidents which may potentially interfere with their intended use. At a minimum the plan shall contain the following items:

1. List of key personnel responsible for implementing and maintaining the plan.
2. List of downstream users to be notified in the event of an incident. At a minimum, the list must include the water treatment plants at Fargo, North Dakota, Moorhead, Minnesota, and Grand Forks, North Dakota.
3. The standard operating procedures to be employed in response to the following:
 - a. Extended periods of river conditions which prevent the discharge of waste in compliance with the limitations specified in Part I. The following table lists specific parameters and the expected effluent discharge rates based on the flow in the Red River.

Water Quality Based Effluent Limits for chloride was determined based on the following criteria: maximum effluent discharge flow rate of 4.2 MGD, with a Red River flow of 806 CFS with a mixing factor of 50%. The upstream chloride value used was 19.32 mg/l with an effluent chloride value of 3,840 mg/l. Based on these conditions effluent discharge flow rates would need to be carefully managed when Red River flows are below 806 CFS. The adjusted flow rates are as follows:	
Maximum effluent discharge flow rate trigger values. These values are bench marks and are not effluent limitations.	Flow in the Red River
4.2 MGD	>= 800 CFS
3.9 MGD	Between 750 and 799 CFS
3.1 MGD	Between 600 and 749 CFS
2.6 MGD	Between 500 and 599 CFS
2.1 MGD	Between 400 and 499 CFS
1.6 MGD	Between 300 and 399 CFS
1.0 MGD	Between 200 and 299 CFS
0.5 MGD	Between 100 and 199 CFS
0.4 MGD	Between 75 and 99 CFS

- b. Upsets in the wastewater treatment process.

- c. Spills of untreated wastewater, stored high salt wastewater, sludges, chemicals used in processing and finished product.
4. Brief description of spill prevention procedures, equipment or materials available for spill response, and backup or auxiliary systems.
5. Material Safety Data Sheets for chemicals used in processing which have a reasonable potential to impact surface water and all cooling tower or boiler water additives.
6. Facility layout map identifying the location of response equipment and site drainage including storm conveyances which have a reasonable potential to carry spilled material to the receiving stream.

The plan may reflect requirements for Spill Prevention Control and Countermeasures (SPCC) plans required under 40 CFR 112. The contingency plan may incorporate, by reference, all relevant parts of a SPCC plan developed for the facility.

The permittee shall amend the plan whenever there is a change at the facility which materially increases the potential for an incident adversely impacting the receiving stream or the plan proves ineffective in protecting downstream uses. A copy of any amendments to the plan shall be provided to the following upon request: Minnesota Pollution Control Agency, Water Quality Division; the Public Works Departments of the cities of Grand Forks, North Dakota; Fargo, North Dakota; and Moorhead, Minnesota. The permittee shall provide an updated copy of the Contingency Plan to the department when amendments are made to the plan.

Future Expansion Report

The permittee shall provide the department with a report which describes the plan for future expansion, increases in production and expected changes in effluent at the facility. This report is due no later than July 01, 2017.

I. LIMITATIONS AND MONITORING REQUIREMENTS

A. Discharge Authorization

During the effective period of this permit, the permittee is authorized to discharge pollutants from the outfalls as specified to the following: **Red River of the North, a Class 1 stream.**

This permit authorizes the discharge of only those pollutants resulting from facility processes, waste streams, and operations that have been clearly identified in the permit application process.

The permittee must limit and monitor all discharges as specified below:

Effluent Limitations and Monitoring Requirements Outfall 001							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration			Sample Frequency	Sample Type
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit		
Biochemical Oxygen Demand BOD5	788 lbs/day	1,187 lbs/day	20 mg/l	*	30 mg/l	1/week	Grab
Total Suspended Solids (TSS)	1,187 lbs/day	2,375 lbs/day	30 mg/l	*	45 mg/l	1/week	Grab
pH 1/	Between 7.0 to 9.0 s.u.					1/week	Grab
Ammonia as N	Refer to Ammonia Table					1/week	Grab
Oil and Grease 2/	*	*	*	*	10 mg/l	Conditional Weekly	Grab
Oil and Grease Visual 2/	*	*	*	*	Report Yes or No	1/week	Visual
Total Dissolved Solids mg/l 3/	Refer to Part I(C)(1)					1/week	Grab
Electrical Conductivity 4/	*	*	*	*	*	1/week	Grab
Sulfates Total as SO ₄ mg/l	*	*	1,489 mg/l	*	2,002 mg/l	1/week	Grab
Chlorides Total mg/l 5/	*	*	3,826 mg/l	*	5,146 mg/l	1/week	Grab
Phosphorus Total mg/l	*	*	*	*	*	1/week	Grab
Nitrogen Total mg/l	*	*	*	*	*	1/week	Grab
Total Organic Carbon mg/l 6/	*	*	*	*	*	Conditional Monthly	Grab
Chemical Oxygen Demand mg/l 6/	*	*	*	*	*	Conditional Monthly	Grab
Metals	*	*	*	*	*	1/6 months	Grab
Stream flow upstream 7/	*	*	*	*	*	Daily	Instantaneous
WET, TUa	Refer to Part I(F)(1)					1/Quarter	Grab
WET, TUC	Refer to Part I(F)(2)					1/Permit Cycle	Composite
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*	Continuous	Recorder
Total Drain, MGAL	*	Report Monthly Total	*	*	*	1/month	Calculated
*. This item is not limited or applicable for the stated parameter. However, the department may impose limitations based on sample history and to protect the receiving waters.							
1/ The pH, an instantaneous limitation, shall be between 7.0 s.u. and 9.0 s.u. Up to 10% of representative samples							

Effluent Limitations and Monitoring Requirements Outfall 001							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration			Sample Frequency	Sample Type
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit		
collected during any three (3) year period may exceed this range, provided that lethal conditions are avoided.							
2/ The effluent shall be visibly examined weekly for a sheen or floating oil. If present, a grab sample shall be analyzed for oil and grease to ensure compliance with the concentration limitations.							
3/ Limitations apply to these parameters only when discharging from 002.							
4/ Instantaneous measurements with a direct reading instrument are also acceptable.							
5/ Discharge rates must be maintained at a dilution ratio of 124:1 when the Red River flow is below 806 CFS.							
6/ Sampling would be conditional on a formal request from a downstream water treatment plant for TOC or COD sampling.							
7/ Daily flows of the Red River, measured at the USGS gauge station in Wahpeton, North Dakota, shall be recorded during periods of discharge. Should the gauge at Wahpeton be inoperable or affected by ice backwater, an estimated flow, based on other gauging stations, would be acceptable.							
<p>Stipulations:</p> <p>The dates of discharge, frequency of analyses, total number of gallons discharged, discharge flow rates, and number of exceedances shall also be included on the Discharge Monitoring Reports (DMR).</p> <p>Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to leaving the facility property or entering the receiving stream.</p> <p>Samples collected for compliance with the monitoring specified in this section shall be representative of the final discharge of the combined waste stream and shall be taken prior to mixing with any receiving waters or storm runoff.</p> <p>The Department may specify additional discharge conditions or restrictions at any time to maintain the temperature and pH dependent Water Quality Standard for unionized ammonia in the receiving stream.</p> <p>There shall be no unsightly or deleterious floating materials present in the discharge. There shall be no discharge of sanitary waste.</p> <p>There shall be no discharge of floating solids or visible foam in other than trace amounts.</p>							

Ammonia Effluent Limitations and Monitoring Requirements Outfall 001					
Parameter	Effluent Limitations			Monitoring Requirements	
	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit	Sample Frequency	Sample Type
Ammonia 1/	†	*	‡	1/Week	Grab
Stream flow upstream, cfs 2/	*	*	*	1/Week	Instantaneous
Temperature upstream, ° C 2/, 3/	*	*	*	1/Week	Instantaneous
pH upstream, S.U. 2/, 3/	*	*	*	1/Week	Instantaneous

1/ Calculations must be performed for each discharge sample. If an exceedance is detected on any single sample, the exceedance must be reported on the DMR.

2/ Sample must be collected/ recorded the same day as the ammonia sample. The upstream flow, temperature, and pH may be obtained from the USGS gauging station at Wahpeton, North Dakota, if data is not available at the designated upstream monitoring location (Part I(C)(2) of the permit).

3/ If the upstream values are not collected then following minimum values base on the 90th percentile upstream STORET and USGS data are to be used: pH: 8.5 S.U., Temperature 23.94 ° C, and ammonia 0.23 mg/l. If the upstream flow is not available then, the 30B10 critical low flow of 130 cfs shall be used. The maximum mixing factor is 25.0%.

† Chronic Standard (Average Monthly Limit)

The 30-day average concentration of total ammonia (expressed as N in mg/L) does not exceed, more often than once every three years on the average, the numerical value given by the following formula; and the highest 4-day average concentration of total ammonia within the 30-day averaging period does not exceed 2.5 times the numerical value given by the following formula:

$$\frac{(0.0577}{(1+10^{7.688-pH})} + \frac{2.487}{1+10^{pH-7.688}}) \bullet CV;$$

where CV = 2.85, when T ≤ 14°C; or
CV = 1.45 * 10^{0.028*(25-T)}, when T > 14°C.
Receiving stream pH is used for the calculation

‡ Acute Standard (Daily Maximum Limit)

The one-hour average concentration of total ammonia (expressed as N in mg/l) does not exceed, more often than once every three years on the average, the numerical value given by the following formula:

$$\frac{(0.411}{(1+10^{7.204-pH})} + \frac{58.4}{1+10^{pH-7.204}})$$

where salmonids are absent; or

$$\frac{(0.275}{(1+10^{7.204-pH})} + \frac{39.0}{1+10^{pH-7.204}})$$

where salmonids are present.

Stipulations

The maximum mixing factor is 25.0%.

The permittee is authorized to discharge from the high salt wastewater system including the brine pond through Outfall 002. The facility must restrict, and if necessary cease, the discharge from outfall 002, upon notification from other facilities in the area of their intent to discharge. If the discharge from outfall 002 continues while other facilities are discharging, the discharge may not cause interference with other facilities discharges and downstream effluent limitations, or cause adverse effects for downstream users. If necessary, the department may direct the permittee to restrict or cease discharging from outfall 002 to allow other facilities in the area to discharge. Any discharge shall be limited and monitored by the permittee as specified below:

Effluent Limitations and Monitoring Requirements Outfall 002							
Parameter	Effluent Limitations					Monitoring Requirements	
	Quantity		Concentration			Sample Frequency	Sample Type
	Avg. Monthly Limit	Daily Maximum Limit	Avg. Monthly Limit	Avg. Weekly Limit	Daily Maximum Limit		
Electrical Conductivity	*	*	*	*	*	Daily	Grab
Sulfates Total as SO ₄ mg/l	*	*	*	*	*	1/Week	Grab
Chlorides Total mg/l	*	*	*	*	*	1/Week	Grab
General Water Chemistry	*	*	*	*	*	Annual	Grab
Duration of Discharge (Days)	*	Report Monthly Total	*	*	*	Monthly	Calculated
Flow Effluent, MGD	Report Avg. Monthly Value	Report Max. Daily Value	*	*	*	Continuous	Recorder
Total Drain, MGAL	*	Report Monthly Total	*	*	*	1/month	Calculated

Stipulations:

*. This item is not limited or applicable for the stated parameter. However, the department may impose limitations based on sample history and to protect the receiving waters.

Samples taken in compliance with the monitoring requirements specified in this permit shall be taken prior to combining with any other waste stream.

All parameters listed shall be included on the Discharge Monitoring Reports.

Dates of discharge, frequency of analyses, total number of gallons discharged and discharge flow rates shall also be included on the Discharge Monitoring Reports.

Any discharge from this interior point shall be managed in a manner that ensures compliance with the effluent limitations identified for the combined wastewater discharge (outfall 001) and the instream limitations identified for the Red River.

B. Outfalls 003 and 004. Stormwater

The permittee is authorized to discharge stormwater runoff through 003 and 004. These stormwater discharges shall be limited and monitored as follows:

Benchmark Values for Outfall 003* and Outfall 4*			
Parameter	Benchmark Trigger Values	Sample Frequency	Sample Type
Oil and Grease	No Visible Sheen (15 mg/L)	Annual	Visual/grab
pH	Between 6.0 and 9.0 S.U.	Annual	Grab
TSS	100 mg/L	Annual	Grab

* Benchmark concentrations should not be interpreted as stormwater effluent limitations, individual wastewater effluent limitations, or as state water quality standards. Benchmark concentrations provide an appropriate level to determine whether a facility's stormwater pollution prevention measures are effective. A pollutant concentration that is above the benchmark value represents a potential water quality concern and the need to improve the facility's best management practices. If your samples exceed the benchmark, the best management practices shall be revised to reduce future concentrations.

1. The quality of stormwater discharges from the plant site shall reflect the best which is attainable through the use of Best Management Practices and shall not cause a violation of the state water quality standards.
2. The facility shall be operated and maintained to minimize, to the extent reasonably practicable, stormwater contact with raw materials, intermediate products, finished products, by-products or waste materials. The material handling activities including loading/unloading, storage and processing at the plant shall be conducted in a manner to minimize exposure to stormwater. Good housekeeping practices should be employed to maintain a clean, orderly facility. Spill prevention and response procedures must be employed to minimize the potential for the discharge of spilled material with stormwater.
3. The adherence to a Spill Prevention Control and Countermeasures (SPCC) plans developed to satisfy 40 CFR 112 also serves as a stormwater pollution prevention measure.
4. The plant site and discharge conveyances must be inspected quarterly by the permittee. The inspection shall be made to assess the overall adherence to and effectiveness of Best Management Practices used at the facility. Items to consider include evidence of non-storm related discharges, erosion and sedimentation, deterioration or ineffectiveness of structural controls. If necessary, the stormwater pollution prevention practices shall be revised based on the observations and deficiencies noted during the inspection. The permittee shall maintain inspection records for a period of at least three (3) years.

C. Red River Downstream Limitations and Instream Monitoring Requirements

1. Downstream Limitations
The limitations described below apply only during periods when high salt wastewater is being released from Outfall 002.

Red River Downstream Limitations For TDS, Sulfate, and Chloride for Outfall 002	
Parameter	Discharge Limitations
Total Dissolved Solids TDS 1/	460 mg/l
<p>1/ The limitations apply only during periods when high salt wastewater is being released. The limitations apply to instream samples collected at the downstream monitoring location, the road bridge one mile west of Brushvale, Minnesota.</p> <p>Operating the discharge to meet the instream criteria requires careful management by the operators of the facility. The discharge of high salt wastewater must be planned and managed according to the conditions in the Red River. At times, the discharge of this waste may be prohibited due to low flows or a background concentration that may exceed the stated limits.</p> <p>All parameters listed shall be included on the Discharge Monitoring Reports.</p>	

2. Instream Monitoring Requirements

The Red River shall be monitored during all periods of discharge. The minimum river sampling requirements are described below.

Samples taken in compliance with the requirements of this section shall be taken at the following locations:

- a. Upstream of the facility's discharge, at a location in the vicinity of the facility's raw water intake from the Red River, and
- b. Downstream of the facility's discharge, in the vicinity of the road bridge one mile west of Brushvale, Minnesota.

Red River Instream Monitoring Requirements			
Parameter	Frequency		Sample Type
	Outfall 001 1/	Outfall 002 2/	
Total Dissolved Solids TDS	Monthly	Weekly	Grab
Sulfate Total	Monthly	Weekly	Grab
Chloride Total	Monthly	Weekly	Grab
Ammonia as N	Monthly	Weekly	Grab
Dissolved Oxygen 3/ 4/	Weekly	Weekly	Grab
pH 3/	Monthly	Weekly	Grab
Electrical Conductivity 3/	Weekly	Daily	Grab
Temperature in C 3/	Monthly	Weekly	Grab
<p>1/ When high salt wastewater is being stored, no discharge from 002</p> <p>2/ When high salt wastewater is being discharged from 002</p> <p>3/ Direct reading and/or continuous recording instruments installed instream may be used for D.O., E.C., or pH</p> <p>4/ Shall be collected between 6 a.m. and 9 a.m.</p> <p>When dangerous conditions exist for personnel (i.e. thin ice, melting ice, flooding, etc.) the scheduled river sampling may be suspended until conditions are deemed suitable.</p>			

D. Other Conditions

1. The department may make certain adjustments to the monitoring requirements described in this part without providing a public notice and comment period. Increased or additional monitoring may be required if deemed necessary to further evaluate the impact of the discharge (refer to Part IV(E) of the permit).
2. The department must be notified, in advance, of any facility expansions, additions or modifications to increase plant capacity as required by Part III(C) of this permit. This permit may be modified to reflect new or revised permit conditions necessary as a result of changes to the facility. The change of any effluent limitation is considered a major permit modification. Major modifications require the issuance of a public notice inviting public comment.

E. Whole Effluent Toxicity (WET) Requirements BP 2011.06.13

1. Acute Toxicity Testing

Acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of "Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms," EPA-821-R-02-012 (Fifth Ed., October 2002). The permittee shall conduct an acute 48-hour static renewal toxicity test using freshwater fleas, *Ceriodaphnia dubia* and an acute 96-hour static renewal toxicity test using fathead minnows, *Pimephales promelas*.

Toxicity is defined as:

Acute test failure is defined as lethality to 50% or more of the test organisms exposed to 100% effluent or >1.0 TUa for *Ceriodaphnia dubia* 48 hour and fathead minnow 96 hour test. The 48 hour and 96 hour effluent value must be <1.0 TUa to indicate a passing test. Any 48 hour or 96 hour effluent value of >1.0 TUa will constitute a failure. Tests in which the control survival is less than 90% are invalid and must be repeated.

Acute WET requirements for Outfall 001						
Effluent Dilution	0%(Control)	12.5%	25%	50%	75%	100%
Dilution Water	Red River					
Species and Test Type	<i>Ceriodaphnia dubia</i> - 48 Hour Acute - Static Renewal - 20°C					
	Fathead minnow - 96 Hour Acute - Static Renewal - 20°C					
Endpoint	TUa					
Compliance Point	End-of-pipe					

If toxicity occurs in a routine test, an additional test shall be initiated within 14 days from the date of the initial toxicity findings. Should there be no discharge during a specified sampling time frame; sampling shall be performed as soon as there is a discharge. Should toxicity occur in the second test, testing shall be conducted at a frequency of once a month and the implementation of a 5.Toxicity Reduction Evaluation (TRE) shall be determined by the department. If no toxicity is found in the second test, testing shall occur as outlined in the permit.

The permittee shall report the following results of each toxicity test on the DMR for that reporting period:

***Pimephales promelas* (Fathead Minnow)**

- a. Report the highest TUa for Fathead minnow, Parameter No. TSN6C.

***Ceriodaphnia dubia* (Water Flea)**

a. Report the highest TUa for *Ceriodaphnia dubia*, Parameter No. TSM3B.

2. Chronic Toxicity Testing

Chronic toxicity testing is monitoring only, at a frequency of once (1) per permit cycle. Test acceptability for *Daphnia dubia* chronic must have a 80% or greater survival of all control organisms and an average of 15 or more young per surviving female in the control solutions, and 60% of surviving control females must produce three broods. If this condition is not satisfied, the test must be repeated.

Test acceptability for *Pimephales promelas* chronic must have 80% or greater survival in controls and an average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg. If this condition is not satisfied, the test must be repeated.

Chronic WET requirements for Outfall 001						
Implementation	Monitoring Only					
Effluent Dilution	0%(Control)	6.25%	12.5%	25%	50%	100%
Dilution Water	Red River of the North					
Species and Test Type	<i>Ceriodaphnia dubia</i> – 7-Day Chronic – Static Renewal – 25°C					
	Fathead Minnow – 7-Day Chronic – Static Renewal – 25°C					
Endpoint	Survival and Reproduction (<i>Ceriodaphnia dubia</i>) – IC25 reported as TUc					
	Larval Growth and Survival (Fathead Minnow) – IC25 reported as TUc					
Compliance Point	Monitoring Only					
Sample Frequency	1/permit cycle					
Test Acceptability	<p>Test acceptability for <i>Daphnia dubia</i> chronic must have a 80% or greater survival of all control organisms and an average of 15 or more young per surviving female in the control solutions, and 60% of surviving control females must produce three broods. If this condition is not satisfied, the test must be repeated.</p> <p>Test acceptability for <i>Pimephales promelas</i> chronic must have 80% or greater survival in controls and an average dry weight per surviving organism in control chambers equals or exceeds 0.25 mg. If this condition is not satisfied, the test must be repeated.</p>					
Reporting Requirements	<p>The permittee shall report the following results of each toxicity test on the DMR for that reporting period:</p> <p><i>Pimephales promelas</i> (Fathead Minnow)</p> <p>a. Report the highest TUc for Fathead minnow, Parameter No. TTP3B</p> <p><i>Ceriodaphnia dubia</i> (Water Flea)</p> <p>Report the highest TUc for <i>Ceriodaphnia dubia</i>, Parameter No. TTB6C.</p> <p>Cargill shall request their WET testing providers to report a TUa for a 48 hour survival <i>Ceriodaphnia dubia</i> and for <i>Pimephales promelas</i> which can be derived from the chronic test. The reason for this is to develop a representative Acute-to-Chronic (ACR) which is used in determining reasonable potential and/or permit limitations.</p>					

The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of "Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," EPA-821-R-02-013 (Fourth Ed., October 2002). Test species shall consist of freshwater fleas, *Ceriodaphnia dubia* and fathead minnows, *Pimephales promelas*.

3. Reduced Monitoring For Toxicity Testing

a. Alternating Species

If the results of a minimum of four consecutive samples taken over at least a 12 month period indicate no toxicity, the permittee may request the department for a test reduction. This reduction would only be testing one species per sampling frequency. If fathead minnows are used first then the next test would be *C. dubia* or vice versa and continue alternating. The department may approve or deny the request, based on the biomonitoring results and other available information. If the request is approved, the test procedures are to be the same as outlined in 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing.

If toxicity occurs in any single species test the provision for alternating species shall be immediately revoked and 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing shall be followed in whole.

b. Monthly Testing

If the results of 5. Toxicity Reduction Evaluation (TRE) have been accepted by the department or a period of time has indicated no toxicity, the permittee may request the department to allow a reduction from monthly to quarterly toxicity testing for both species. The department may approve or deny the request, based on the bio-monitoring results and other available information. If the request is approved, the test procedures are to be the same as outlined in 1. Acute Toxicity Testing and/or 2. Chronic Toxicity Testing.

4. Reporting Requirements

Test results shall be submitted with the Discharge Monitoring Report (DMR) form for each reporting period. The format for the report shall be consistent with the above reference manual(s) as outlined in the section "Report Preparation and Test Review." Each lab generated report shall document the findings for each species reference toxicity testing chart.

5. Toxicity Reduction Evaluation (TRE)

If toxicity is detected, and it is determined by the department that a TRE is necessary, the permittee shall be so notified and shall initiate a TRE immediately thereafter. A TRE shall reference the latest revision of "Technical Support Document For Water Quality-based Toxics Control," EPA/505/2-90-001 – PB91-127415 (March 1991). The purpose of the TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and control or provide treatment for the toxicity.

If the TRE establishes that the toxicity cannot be eliminated by the current treatment system, the permittee shall submit a proposed compliance plan to the department. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the department, this permit may be reopened and modified.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations or proper discharge management as approved by the department, the permittee may:

1. Submit an alternative control program for compliance with the numerical requirements; or
2. If necessary, provide a modified biomonitoring protocol which compensates for the pollutant(s)

being controlled numerically.

If acceptable to the department, this permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the department, and/or a modified biomonitoring protocol.

Failure to conduct an adequate TRE, or failure to submit a plan or program as described above, or the submittal of a plan or program judged inadequate by the department, shall in no way relieve the permittee from maintaining compliance with the whole effluent toxicity requirements of this permit.

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II. MONITORING, RECORDING, AND REPORTING REQUIREMENTS BP 2015.12.30

A. Representative Sampling (Routine and Non-Routine Discharges)

All samples and measurements taken shall be representative of the monitored discharge.

In order to ensure that the effluent limits set forth in this permit are not violated at times other than when routine samples are taken, the permittee must collect additional samples at the appropriate outfall whenever any discharge occurs that may reasonably be expected to cause or contribute to a violation that is unlikely to be detected by a routine sample. The permittee must analyze the additional samples for those parameters limited under **Part I Effluent Limitations and Monitoring** requirements of this permit that are likely to be affected by the discharge.

The permittee must collect such additional samples as soon as the spill, discharge, or bypassed effluent reaches the outfall. The samples must be analyzed in accordance with **B. Test Procedures**. The permittee must report all additional monitoring in accordance with **D. Additional Monitoring**.

B. Test Procedures

The collection and transportation of all samples shall conform with EPA preservation techniques and holding times found in 40 CFR 136. All laboratory tests shall be performed by a North Dakota certified laboratory in conformance with test procedures pursuant to 40 CFR 136, unless other test procedures have been specified in this permit or approved by EPA as an alternate test procedure under 40 CFR 136.5. The method of determining the total amount of water discharged shall provide results within 10 percent of the actual amount.

C. Recording of Results

Records of monitoring information shall include:

1. the date, exact place and time of sampling or measurements;
2. the name(s) of the individual(s) who performed the sampling or measurements;
3. the name of the laboratory;
4. the date(s) and time(s) analyses were performed;
5. the name(s) of the individual(s) who performed the analyses;
6. the analytical techniques or methods used; and
7. the results of such analyses.

D. Additional Monitoring

If the discharge is monitored more frequently than this permit requires, all additional results, if in compliance with B. Test Procedures, shall be included in the summary on the Discharge Monitoring Report.

E. Reporting of Monitoring Results

1. Monitoring results shall be summarized and reported to the department using Discharge Monitoring Reports (DMRs). If no discharge occurs during a reporting period, "No Discharge" shall be reported. Prior to December 21, 2016, the permittee may elect to submit DMRs, electronically, using the electronic reporting system. Beginning December 21, 2016, the permittee must submit DMRs using the electronic reporting system.
2. Beginning December 21, 2020, the permittee must report the following using the electronic reporting system:
 - a. General permit reports [e.g., notices of intent (NOI); notices of termination (NOT); no exposure certifications (NOE)];
 - b. Municipal separate storm sewer system program reports;
 - c. Pretreatment program reports;
 - d. Sewer overflow/bypass event reports; and
 - e. Clean Water Act 316(b) annual reports
3. The permittee may seek a waiver from electronic reporting. To obtain a waiver, the permittee must complete and submit an Application for Temporary Electronic Reporting Waiver form (SFN 60992) to the department. The department will have 120 days to approve or deny the waiver request. Once the waiver is approved, the permittee may submit paper versions of monitoring data and reports to the department. The waiver from electronic reporting will expire upon the expiration date of this permit and may not be transferred to a new party. Any request to renew the electronic reporting waiver should be made six months prior to the expiration date of this permit.

All reports must be postmarked by the last day of the month following the end of each reporting period. All original documents and reports required herein shall be signed and submitted to the department at the following address:

ND Department of Health
Division of Water Quality
918 East Divide Ave
Bismarck ND 58501-1947

F. Records Retention

All records and information (including calibration and maintenance) required by this permit shall be kept for at least three years or longer if requested by the department or EPA.

III. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply

The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

B. Proper Operation and Maintenance

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit. If necessary to achieve compliance with the conditions of this permit, this shall include the operation and maintenance of backup or auxiliary systems.

C. Planned Changes

The department shall be given advance notice of any planned changes at the permitted facility or of an activity which may result in permit noncompliance. Any anticipated facility expansions, production increase, or process modifications which might result in new, different, or increased discharges of pollutants shall be reported to the department as soon as possible. Changes which may result in a facility being designated a "new source" as determined in 40 CFR 122.29(b) shall also be reported.

D. Duty to Provide Information

The permittee shall furnish to the department, within a reasonable time, any information which the department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the department, upon request, copies of records required to be kept by this permit. When a permittee becomes aware that it failed to submit any relevant facts or submitted incorrect information in a permit application or any report, it shall promptly submit such facts or information.

E. Signatory Requirements

All applications, reports, or information submitted to the department shall be signed and certified.

All permit applications shall be signed by a responsible corporate officer, a general partner, or a principal executive officer or ranking elected official.

All reports required by the permit and other information requested by the department shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

The authorization is made in writing by a person described above and submitted to the department;
and

The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters.

If an authorization under E. Signatory Requirements is no longer accurate for any reason, a new authorization satisfying the above requirements must be submitted to the department prior to or together with any reports, information, or applications to be signed by an authorized representative.

Any person signing a document under this section shall make the following certification:

"I 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 who manage the system, or those persons directly 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 and imprisonment for knowing violations."

F. Twenty-four Hour Notice of Noncompliance Reporting

1. The permittee shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of the circumstances. The following occurrences of noncompliance shall be included in the oral report to the department at 701.328.5210:
 - a. Any lagoon cell overflow or any unanticipated bypass which exceeds any effluent limitation in the permit under G. Bypass of Treatment Facilities;
 - b. Any upset which exceeds any effluent limitation in the permit under H. Upset Conditions; or
 - c. Violation of any daily maximum effluent or instantaneous discharge limitation for any of the pollutants listed in the permit.
2. A written submission shall also be provided within five days of the time that the permittee became aware of the circumstances. The written submission shall contain:
 - a. A description of the noncompliance and its cause;
 - b. The period of noncompliance, including exact dates and times;
 - c. The estimated time noncompliance is expected to continue if it has not been corrected; and
 - d. Steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

Reports shall be submitted to the address in Part II.E. Reporting of Monitoring Results. The department may waive the written report on a case by case basis if the oral report has been received within 24 hours by the department at 701.328.5210 as identified above.

All other instances of noncompliance shall be reported no later than at the time of the next Discharge Monitoring Report submittal. The report shall include the four items listed in this subsection.

G. Bypass of Treatment Facilities

1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to any of the following provisions in this section.
2. Bypass exceeding limitations-notification requirements.
 - a. Anticipated Bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least ten (10) days before the date of bypass.
 - b. Unanticipated Bypass. The permittee shall submit notice of an unanticipated bypass as required under F. Twenty-four Hour Notice of Noncompliance Reporting.
3. Prohibition of Bypass. Bypass is prohibited, and the department may take enforcement action against a permittee for bypass, unless:
 - a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 - b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

- c. The permittee submitted notices as required under the 1. Anticipated Bypass subsection of this section.

The department may approve an anticipated bypass, after considering its adverse effects, if the department determines that it will meet the three (3) conditions listed above.

H. Upset Conditions

An upset constitutes an affirmative defense to an action brought for noncompliance with technology-based permit effluent limitations if the requirements of the following paragraph are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.

A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

1. An upset occurred and the permittee can identify its cause(s);
2. The permitted facility was, at the time being, properly operated;
3. The permittee submitted notice of the upset as required under F. Twenty-four Hour Notice of Noncompliance Reporting and
4. The permittee complied with any remedial measures required under I. Duty to Mitigate.

In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

I. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment. The permittee, at the department's request, shall provide accelerated or additional monitoring as necessary to determine the nature and impact of any discharge.

J. Removed Materials

Collected screenings, grit, solids, sludges, or other pollutants removed in the course of treatment shall be buried or disposed of in such a manner to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not be directly blended with or enter either the final plant discharge and/or waters of the state. The permit issuing authority shall be contacted prior to the disposal of any sewage sludges. At that time, concentration limitations and/or self-monitoring requirements may be established.

K. Duty to Reapply

Any request to have this permit renewed should be made six months prior to its expiration date.

IV. GENERAL PROVISIONS

A. Inspection and Entry

The permittee shall allow department and EPA representatives, at reasonable times and upon the presentation of credentials if requested, to enter the permittee's premises to inspect the wastewater treatment facilities and monitoring equipment, to sample any discharges, and to have access to and copy any records required to be kept by this permit.

B. Availability of Reports

Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the department and EPA. As required by the Act, permit applications, permits, and effluent data shall not be considered confidential.

C. Transfers

This permit is not transferable except upon the filing of a Statement of Acceptance by the new party and subsequent department approval. The current permit holder should inform the new controller, operator, or owner of the existence of this permit and also notify the department of the possible change.

D. New Limitations or Prohibitions

The permittee shall comply with any effluent standards or prohibitions established under Section 306(a), Section 307(a), or Section 405 of the Act for any pollutant (toxic or conventional) present in the discharge or removed substances within the time identified in the regulations even if the permit has not yet been modified to incorporate the requirements.

E. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. This includes the establishment of limitations or prohibitions based on changes to Water Quality Standards, the development and approval of waste load allocation plans, the development or revision to water quality management plans, changes in sewage sludge practices, or the establishment of prohibitions or more stringent limitations for toxic or conventional pollutants and/or sewage sludges. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

F. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

G. State Laws

Nothing in this permit shall be construed to preclude the institution of legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation preserved under Section 510 of the Act.

H. Oil and Hazardous Substance Liability

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

J. Severability

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby.

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