Water Quality Division
Montana Pollutant Discharge Elimination System (MPDES) ▪ Fact Sheet

Permit Number:	MT0028321
Permittee:	ExxonMobil Corporation
Receiving Water:	Non-contact cooling water conveyance ditch to the Yellowstone River
Facility Information:	ExxonMobil Fuels and Lubricants, Billings Refinery 700 ExxonMobil Road Billings, MT 59101
County:	Yellowstone
Facility Contact:	James Forsyth, Environmental Coordinator P.O. Box 1163 Billings, MT 59103-1163
Type of Facility:	Petroleum Refinery
Number of Outfalls:	1 (For fee determination Only)
Outfall Name:	001 (Treated wastewater)
Outfall Location:	45.8191670, -108.436389
Fact Sheet Date:	October 26, 2020

1. OVERVIEW AND SUMMARY OF PROPOSED CHANGES

The Montana Department of Environmental Quality (DEQ) proposes to renew the Montana Pollutant Discharge Elimination System (MPDES) permit for ExxonMobil Fuels and Lubricants (ExxonMobil), MT0028321. This fact sheet details the legal requirements and technical rationale associated with developing effluent limits, monitoring and reporting requirements, and special conditions which are specific to ExxonMobil's suction dredging activity.

1.1 Permit Status

- May 1, 2015 — Previous permit (2015-permit) became effective
- November 11, 2019 — DEQ received permit renewal application (Forms 1 and 2C)
- October 31, 2019 — DEQ received applicable fees
- May 4, 2020 — DEQ issued a notice of completeness and administratively extended the 2015-Permit

1.2 Proposed Changes to Effluent Limits

This permit renewal added a requirement to develop, implement, and maintain an Best Management Practices Plan for dredging activities.

2. FACILITY INFORMATION

2.1 Facility Description and Design Criteria

ExxonMobil Refining and Supply Company (ExxonMobil) is a petroleum refining company. The facility processes, treats, and transforms crude oil and other raw materials into refined hydrocarbon products, by-products, and intermediates.

This MPDES permit renewal is only for dredging the Yellowstone River in front of the river water intake pump house. Each year the river intake channel in front of the pump house fills with river sediment, gravel, and rocks during the high runoff season. Dredging the channel is required to maintain ExxonMobil's vested water rights for the safe and reliable operation of the refinery. Up to 10,000 cubic yards of river deposits are removed annually with a portable, eight-inch hydraulic suction dredge and the suction dredge operation is completely separate from the refinery processes. Hydraulic dredge spoils from dredging activities near the river pump house intake structure are placed into Pond 1 for settling. Settled water from Pond 1 flows to Pond 2 for additional settling time. River deposits collected in the Pond 1 may be crushed and used as road base material on-site.

Pond 2 discharges into the non-contact cooling water ditch via Outfall 001. The two-stage settling process treats the water from dredging to reduce turbidity. **Appendix A** displays ExxonMobil's Hydraulic Dredging Operations Schematic.

ExxonMobil's refinery operations' discharge is permitted by a separate MPDES permit, MT0000477.

2.2 Existing Permit Requirements

The effluent limits and monitoring requirements for ExxonMobil established in the 2015-Permit are presented in **Table 1**.

Table 1. Numeric Effluent Limits--Outfall 001[1][2]

Parameter	Units	Average Monthly	Daily Maximum
Net Turbidity[3]	NTU	--	100
Oil and grease	mg/L	--	10
pH	s.u.[4]	6.0-9.0[5]	

[1] Dredging is allowed during the period of July 1 through October 31 of each year.
[2] See Definition at end of permit for explanation of terms
[3] Calculated by subtracting the in-stream sample result from the effluent sample result.
[4] Standard units.
[5] For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit

2.3 Effluent Quality

Table 2 summarizes self-monitoring submitted by ExxonMobil to DEQ for the Period of Record (POR) May 2015 through August 2020.

Table 2. Effluent Characteristics, May 2015-August 2020

Parameter	Units	Minimum Value	Maximum Value	Average Value	Sample Size
Flow	gpm	531	2990	1960	7

Table 2. Effluent Characteristics, May 2015-August 2020					
Parameter	Units	Minimum Value	Maximum Value	Average Value	Sample Size
Net turbidity	NTU	2.8	40.8	13.0	7
Oil and grease[(1)]	mg/L	--	--	--	0
pH	s.u.	7.1	8.2	7.8	7

(1) No visible sheen observed during the POR. Therefore, no oil and grease sampling was required.

2.4 Compliance History

DEQ conducted inspections of ExxonMobil on November 29, 2017 and December 4, 2017. The findings reported the following violation:

- Failure to collect a valid sample in accordance with permit conditions

ExxonMobil notified DEQ that it took corrective actions to address the violation. DEQ acknowledged receipt of this written response.

3. RECEIVING WATER: YELLOWSTONE RIVER

ExxonMobil's suction dredge operation discharges into the Yellowstone River, a tributary of the Missouri River. As the water does not come into contact with the refinery process, no new pollutants will be added to the suction dredge discharge that are not already present in the Yellowstone River.

3.1 Receiving Water Summary

The following information is used to develop water quality based effluent limits (WQBELS):

- Water Use Classification: B-3
- Basin: Yellowstone
- Watershed: Upper Yellowstone
- USGS Hydrologic Unit Code: 10070007
- MT Stream Segment Identification Number: MT43F001_010
- 7Q10: 1,225 cfs
- Ecoregion: Northwestern Great Plains
- Impairments (2018 303(d) list): Yes; Algae, arsenic, benthic macroinvertebrates, dissolved oxygen, eutrophication, oil and grease, periphyton (Aufwuchs) indicator bioassessments, sediment

3.2 Water Use Classification

Yellowstone River and its tributaries are classified as B-3 according to Montana Water Use Classifications. Waters classified B-3 are to be maintained suitable for:

- drinking, culinary, and food processing purposes
- bathing, swimming, and recreation
- growth and propagation of non-salmonid fishes and associated aquatic life, waterfowl and furbearers
- agricultural and industrial water supply

Yellowstone River is listed as impaired on the 2018 303(d) list citing partial support for aquatic life, drinking water, and primary contact recreation. Probable causes are excess algal growth, arsenic, benthic macroinvertebrates, dissolved oxygen, eutrophication, oil and grease, periphyton (Aufwuchs) indicator bioassessments, and sediment. Probable sources of impairment include natural sources, agriculture, municipal point source discharges, and pipeline breaks. A TMDL has not been completed for the receiving water or any applicable downstream receiving water.

3.3 Applicable Water Quality Standards

Each waterbody classification has numeric and narrative water quality standards designed to ensure that beneficial uses are protected.

3.4 Ambient Stream Conditions

3.4.1 Instream Pollutant Concentrations

DEQ uses the upper bound of the interquartile range (75th percentile) of the available data for a given pollutant to determine the assimilative capacity of the receiving water.

ExxonMobil was required to monitor turbidity in Yellowstone River in the 2015-Permit. The 75th percentile of turbidity was calculated using seven samples collected by the permittee during the POR. Ambient water quality data for Yellowstone River is summarized in **Table 3**.

Table 3. Yellowstone River Ambient Water Quality

Parameter	Units	75th Percentile	Minimum Value	Maximum Value	Sample Size
Turbidity	NTU	17.45	2.8	40.8	7

3.4.2 Low Flow

Flow data recorded from 1929 through the present are available for a stream gage (06214500) located on the Yellowstone River approximately two river miles upstream from Outfall 001. Based on USGS data at this gage, the 7Q10 low flow of the Yellowstone River at Billings is 1,225 cubic feet per second (cfs). There are no known flow controls between this location and the discharge. There is an additional volume input from Alkali Creek between the gage and the facility, but historical data shows that these contributions are insignificant, and were not considered to alter the flow regime.

4. TECHNOLOGY-BASED EFFLUENT LIMITS (TBELS)

Technology-based effluent limitations (TBELs) represent the minimum treatment requirements implemented in MPDES permits. The limits are based on widely available technologies to treat pollutants and must be met prior to dilution.

4.1 Technology-based Effluent Limits

ELGs are national regulatory standards based on the performance of treatment and control technologies. Current ELGs address the gold placer mine subcategory, which includes large scale operations that dredge more than 50,000 cubic yards of material per year. These ELGs are not applicable to Exxon Mobil's suction dredging activity because they are not dredging for mining purposes and Exxon Mobil will not dredge more than 50,000 cubic yards per year.

Non-numeric effluent limits are practice-based effluent limits which require implementation of control measures through Best Management Practices (BMPs). DEQ used Best Professional Judgement to develop BMPs as non-numeric effluent limits. These BMP will be incorporated in the permit as an enforceable condition.

4.1.1 Best Management Practices (BMPs)

The BMPs listed below, when properly implemented, are appropriate treatment methods for suction dredge activities to protect water quality.

a. General Operation Practices

1) Maintain equipment to prevent release of oil and grease or fuels; keep equipment surfaces free of oil and grease; check equipment for fuel and oil leaks daily.

b. Stream banks must not be disturbed

1) Undercutting of stream banks or any activity that would cause caving or erosion is not allowed.
2) Sluice discharge must not be directed into the stream bank or cause the stream channel to widen.
3) Boulders, rooted vegetation, and embedded woody plants must not be disturbed or removed from the stream banks.

c. The nature of the stream channel must be preserved

1) Damming, diversions, or concentration streamflow is prohibited.
2) Wheeled or tracked equipment must not be used in-stream.

d. Equipment must not carry or contain invasive species

1) All equipment must be clean, drained, and dry.

e. Dredging activities must not interfere with fish passage

1) Fish must be able to swim past the operation at any stage.

f. Refueling

1) Care shall be taken by the operator during refueling of equipment to prevent spillage. When using a fuel container without a nozzle, a funnel must be used while pouring. Absorbent material, such as a towel, must be placed under the fuel tank to catch any spillage from refueling operations. A spill kit that includes materials for minimizing the effects of a spill, such as sorbent pads and a boom, must be available in case of accidental spills.
2) Suction dredges must be checked for leaks, and all leaks repaired, prior to the start of operations each day. Equipment must be in proper working order and shall not leak petroleum products.
3) Discharge of oil, grease, and fuel is prohibited: Do not refuel over open water. Waste oil or other cleanup materials contaminated with petroleum products must be properly disposed of off-site.

5. WATER QUALITY-BASED EFFLUENT LIMITATIONS (WQBELS)

Permits are required to include Water Quality-Based Effluent Limits (WQBELs) when TBELs are not adequate to protect state water quality standards. WQBELs are developed for each parameter demonstrating reasonable potential to cause or contribute to an excursion from any water quality standard, including narrative criteria. The purpose of this section is to provide a basis and rationale for establishing effluent limits that will protect designated uses of the receiving water.

5.1 Scope and Authority

The Montana Water Quality Act states that a permit may only be issued if DEQ finds that it will not result in pollution of state waters. The purpose of this section is to provide a basis and rationale for establishing effluent limits that will protect designated uses of the receiving water based on Montana water quality standards and water use classifications.

5.2 Applicable Water Quality Standards

5.2.1 B-3 Classification Standards

ExxonMobil's discharge to Yellowstone River is subject to the specific water quality standards of B-3 waters.

5.2.2 General Prohibitions

The discharge from ExxonMobil must comply with general prohibitions (narrative standards) which require that state waters, including mixing zones, must be free from substances that will:

- settle to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines;
- create floating debris, scum, a visible oil film (or be present in concentrations at or in excess of 10 milligrams per liter), or globules of grease or other floating materials;
- produce odors, colors or other conditions as to which create a nuisance or render undesirable tastes to fish flesh or make fish inedible;
- create concentrations or combinations of materials which are toxic or harmful to human, animal, plant or aquatic life; and
- create conditions which produce undesirable aquatic life.

5.3 Pollutants of Concern

Parameters are identified as a pollutant of concern for the following reasons:

- Listed as TBELs
- Identified as needing WQBELs in the previously issued permit
- Identified as present in effluent monitoring or otherwise expected to be present in the discharge
- Associated with impairment which may or may not have a wasteload allocation (WLA) in a total maximum daily load (TMDL)

The pollutants of concern with ExxonMobil's suction dredge operation are turbidity, based on the nature of the operation, and oil and grease based on the petroleum refining operations on site.

5.4 Mixing Zone

A mixing zone was not granted in the previous permit and has not been requested by the facility. All effluent limits must be met at end-of-pipe.

5.5 Effluent Limit Calculations

Turbidity

The maximum allowable increase above naturally occurring turbidity is 10 NTU. Equation 1 is used to calculate the net turbidity limit in accordance to the maximum allowable increase.

$$X = \frac{Q_s + Q_d}{Q_d}\ (T) \qquad \textbf{Equation 1}$$

X = Calculated turbidity limit expressed in NTUs
Q_s = Receiving water low flow rate (1,225 cfs)
Q_d = POR Maximum Discharge flow rate (4921 gpm or 11 cfs)
T = Maximum allowed turbidity increase (10 NTU)

The calculated turbidity limit is 1124 NTU. However, the maximum calculated net turbidity limit shall not exceed 100 NTU in order to reduce the chances of nuisance or aesthetic turbidity problems in the discharge plume or receiving water.

Oil and Grease

The water quality standard for oil and grease is 10 mg/L or no visible oil sheen.

6. FINAL EFFLUENT LIMITS

6.1 Numeric Final Effluent Limits

Outfall 001 is located at the end of the discharge pipe from Pond 2, discharging settled suction dredge water to the non-contact cooling water ditch.

Effluent limits for net turbidity apply in the non-contact cooling water ditch approximately 50 feet downstream from where the settling pond discharge pipe (Outfall 001) empties into the non-contact cooling water ditch and prior to the vertical drop structure where the non-contact cooling water ditch enters the Yellowstone River. Effluent limits for oil and grease apply at the end of pipe at Outfall 001. Effluents limits are summarized in Table 5 below. Appendix B displays Outfall 001.

Table 4. Effluent Limits

Parameter	Units	Average Monthly	Daily Maximum
Net Turbidity[(1)]	NTU	--	100
Oil and grease	mg/L	--	10
pH	s.u.	6.0-9.0[(2)]	

(1) Calculated by subtracting the in-stream sample result from the effluent sample result
(2) For compliance purposes, any single analysis and/or measurement beyond this limitation shall be considered a violation of the conditions of this permit

- There shall be no discharge of floating solids or visible foam other than in trace amounts
- There shall be no discharge which causes visible oil sheen in the receiving stream
- There shall be no discharge that settles to form objectionable sludge deposits or emulsions beneath the surface of the water or upon adjoining shorelines.

6.2 Non-Numeric Final Effluent Limits

Dredging is allowed during the period of June 1 through August 31 of each year.

Exxon Mobil must develop, maintain, and implement a Best Management Practice Plan addressing the BMPs outlined in Section 4.1.1.

7. MONITORING AND REPORTING REQUIREMENTS

7.1 Requirement to Monitor and Report

ExxonMobil must monitor their effluent. The samples collected and analyzed must be representative of the volume and nature of the facility's discharge. The Required Reporting Value is DEQ's best determination of a level of analysis that can be achieved by the majority of commercial, university, or governmental laboratories using EPA-approved methods or methods approved by DEQ.

- Monitoring will start with the effective date of the permit and last for the duration of the permit cycle
- All analytical procedures must comply with the specifications of 40 CFR Part 136.
- ExxonMobil must submit monitoring results through NetDMR for each month. Each month's data must be submitted by the 28th of the following month
- Monitoring must meet the requirements with sample type and frequency as presented in **Table 5**, and required reporting values (RRVs) as presented in Circular DEQ-7.

7.2 Monitoring Locations, Frequency, Sample Type, and Calculations

Starting with the effective date of the permit and lasting for the duration of the permit cycle, self-monitoring must be conducted at the following locations, unless another location is requested and approved by DEQ in writing.

7.2.1 Turbidity

Turbidity Samples must be collected in the non-contact cooling water ditch approximately 50 feet downstream from where the settling pond discharge pipe (Outfall 001) empties into the non-contact cooling water ditch and prior to the vertical drop structure where the non-contact cooling water ditch enters the Yellowstone River. The turbidity sample must consist of three (3) equal volumes of water from the non-contact cooling water ditch (reference sample location in **Appendix B)**. Upstream turbidity samples of the receiving stream must be taken 600 feet upstream from the river pump house. The sample location must be clearly marked. The upstream sample must be collected within 30 minutes of collecting the effluent sample and analyzed within 48 hours.

The turbidity monitoring location is the same as in the previous permit and accounts for the commingling of non-contact cooling water prior to discharge into the Yellowstone River. This monitoring location will continue to provide a representative sample of the discharge that will impact the receiving water.

7.2.2. Oil and Grease

Oil and grease visual observations must be made at the end of the discharge pipe (Outfall 001).

Monitoring for oil and grease at the end of the discharge pipe is representative of water treated in the settling ponds. The oil and grease monitoring location is the same as in the previous permit and will continue to allow ExxonMobil to determine oil sheen origins prior to commingling of effluents.

DMRs must be submitted to DEQ for the months of June, July and August, which correspond with the period of dredging allowance. Monitoring requirements are in **Table 5** below.

Table 5. Monitoring Requirements

Parameter	Unit	Sample Location	Sample Frequency	Sample Type
Flow[(1)]	gpm	End of Discharge pipe	Daily	Instantaneous
Turbidity[(2)]	NTU	Ditch	Daily	Composite
	NTU	Upstream	Daily	Grab
Net turbidity[(3)]	NTU	Effluent Net	Daily	Calculated
Oil and Grease[(4)]	Y/N[(5)]	End of Discharge pipe	Daily	Visual
	mg/L	End of Discharge pipe	Daily	Grab
pH	s.u.	End of Discharge pipe	Daily	Instantaneous

(1) Measured at the end of the discharge pipe using pump curves or tables, Marsh-McBurney velocity meter, or another DEQ approved method.
(2) Measured, using a composite of three (3) individual grab samples, approximately 50 feet downstream from where the settling pond discharge pipe empties into and mixes with the non-contact cooling water ditch and prior to the vertical drop structure where the non-contact cooling water ditch enters the Yellowstone River.
(3) Calculated by subtracting the upstream sample value from the effluent sample value.
(4) If a visual sheen indicates the presence of oil and grease, a grab sample of the effluent must be analyzed using EPA Method 1664 and discharge must cease if the concentration is found to be > 10 mg/L
(5) Yes/No.

8. PUBLIC PARTICIPATION

DEQ issued Public Notice No. MT-20-18 dated November 16, 2020. The public notice states that a tentative decision has been made to issue an MPDES permit to the Permittee and that a draft permit, fact sheet and environmental assessment (EA) have been prepared. Public comments are invited any time prior to the close of the business on December 4, 2019. Comments may be directed to:

Department of Environmental Quality
Water Protection Bureau
PO Box 200901
Helena, MT 59620
or
DEQWPBPublicComments@mt.gov

All comments received or postmarked prior to the close of the public comment period will be considered in the formulation of the final permit. DEQ will respond to all substantive comments and issue a final decision within sixty days of the close of the public comment period or as soon as possible thereafter.

All persons, including the applicant, who believe any condition of a draft permit is inappropriate or that DEQ's tentative decision to deny an application, terminate a permit, or prepare a draft permit is inappropriate, shall raise all reasonably ascertainable issues and submit all reasonably

available arguments supporting their position by the close of the public comment period (including any public hearing).

8.1 Notification of Interested Parties

Copies of the public notice were mailed to the discharger, state and federal agencies and interested persons who have expressed an interest in being notified of permit actions. A copy of the distribution list is available in the administrative record for this permit. In addition to mailing the public notice, a copy of the notice and applicable draft permit, fact sheet and EA were posted on DEQ's website for 30 days.

Any person interested in being placed on the mailing list for information regarding this MPDES permit should contact DEQ, reference this facility, and provide a name, address, and email address.

8.2 Public Hearing

During the public comment period provided by the notice, DEQ will accept requests for a public hearing. A request for a public hearing must be in writing and must state the nature of the issue proposed to be raised in the hearing.

8.3 Permit Appeal

After the close of the public comment period, DEQ will issue a final permit decision. A final permit decision means a final decision to issue, deny, modify, revoke and reissue, or, terminate a permit. A permit decision is effective 30 days after the date of issuance unless a later date is specified in the decision, a stay is granted, or the applicant files an appeal pursuant to 75-5-403, MCA.

The applicant may file an appeal within 30 days of DEQ's action to the following address:

Secretary, Board of Environmental Review
Department of Environmental Quality
1520 East Sixth Avenue
PO Box 200901
Helena, Montana 59620-0901

8.4 Additional Information

Requests for additional information or questions regarding this permit should be directed to the Water Protection Bureau at 406-444-5546.

9. INFORMATION SOURCES

Administrative Rules of Montana Title 17 Chapter 30 – Water Quality

- Subchapter 2 - *Water Quality Permit and Application Fees.*
- Subchapter 5 - *Mixing Zones in Surface and Ground Water*.
- Subchapter 6 - *Montana Surface Water Quality Standards and Procedures.*
- Subchapter 7 - *Nondegradation of Water Quality.*
- Subchapter 12 - *Montana Pollutant Discharge Elimination (MPDES) Standards*.
- Subchapter 13 - *Montana Pollutant Discharge Elimination (MPDES) Permits.*

CWAIC: Clean Water Act Information Center, Department of Environmental Quality. 2019. Accessed October 2019.

Federal Water Pollution Control Act (Clean Water Act), 33 U.S.C. §§ 1251-1387, October 18, 1972, as amended 1973-1983, 1987, 1988, 1990-1992, 1994, 1995 and 1996.

Montana Code Annotated (MCA), Title 75-5-101, *et seq.*, "Montana Water Quality Act."

Montana DEQ. 2019. *Department Circular DEQ-7, Montana Numeric Water Quality Standards.*

Montana DEQ. 2017. Compliance Inspection Report, ExxonMobil Refining and Supply Co/Suction Dredge.

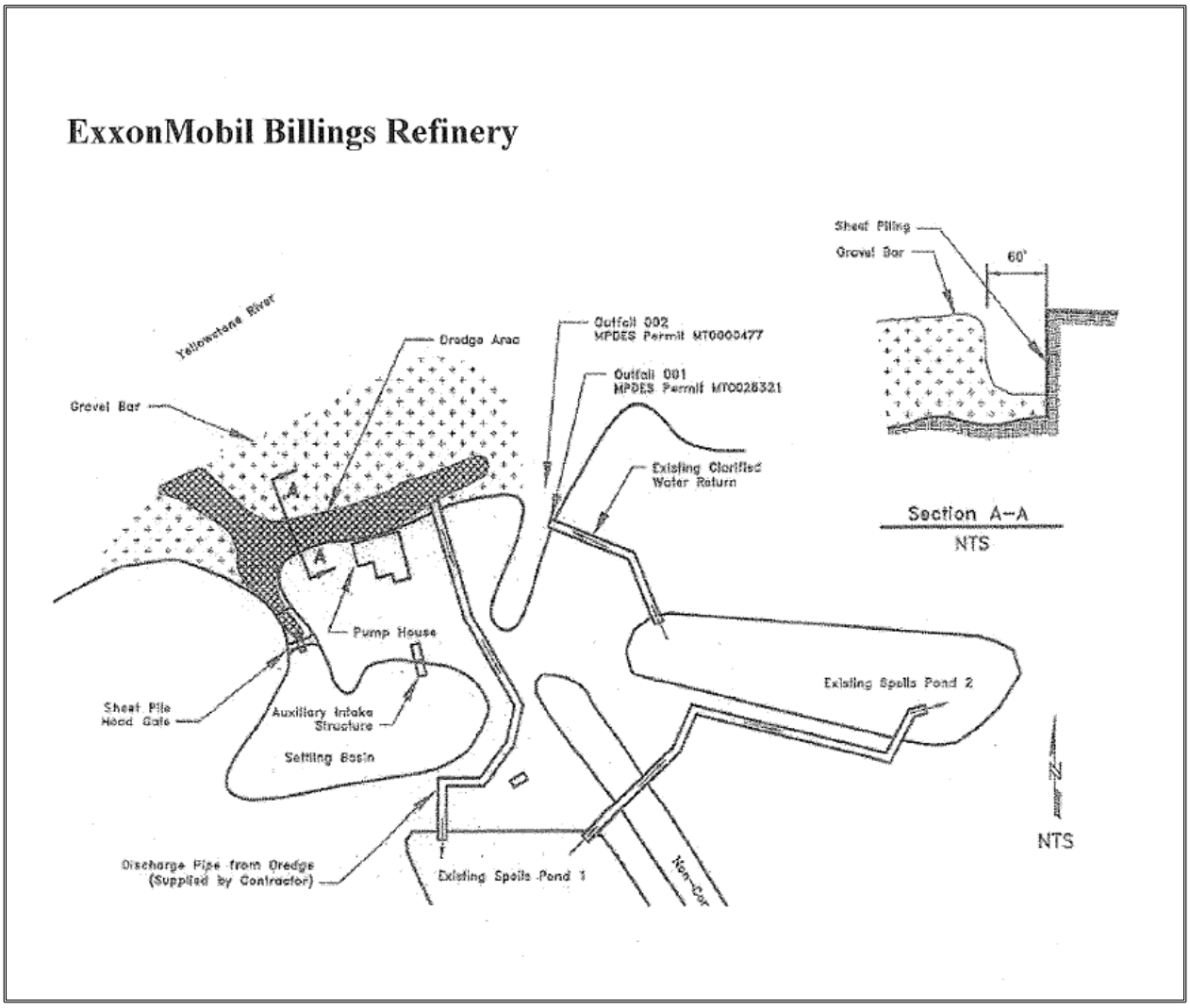
Montana DEQ. Montana Pollutant Discharge Elimination System (MPDES) Permit Number MT0028321.

- Administrative Record
- Renewal Application Forms DEQ-1, 2020 and EPA Form 2C, 2019

US Code of Federal Regulations, 40 CFR Parts 122-125, 130-133, & 136.

Prepared by: Hannah New
Date: October 2020

Appendix A: Hydraulic Dredging Operations Schematic as provided by ExxonMobil



Appendix B: Reference for Effluent Limits and Monitoring Requirements