

STATEMENT OF BASIS

APPLICANT NAME: Chemtrade Refinery Services, Inc

MAILING ADDRESS: 140 Goes In Lodge Road
Riverton, Wyoming 82501

PERMIT NUMBER: WY-0034207

FACILITY LOCATION: 140 Goes In Lodge Road
Riverton, Wyoming 82501
SW 1/4 Section 4 & NW 1/4 Section 9, Township. 1 S, R. 4 E, 1st
Standard Parallel North, Wind River Meridian
Fremont County, Wyoming
42.998611° N, 108.415833° W

FACILITY CONTACT: Craig Tylenda, Plant Manager
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Summary of Specific Changes from the Previous EPA Issued Permit

1. The required approval for chemical uses from the permit issuing authority in the cooling tower system is removed for this National Pollution Discharge Elimination System (NPDES) Permit (Permit) renewal. The Permittee is responsible to verify, conduct testing, and make decisions to select chemicals that will work for their facility to meet this Permit requirements. However, if the Permittee changes chemicals used in the cooling tower system, a written notification of the change must be submitted to the permit issuing authority which contains the product Safety Data Sheet (SDS), the quantities used, and the frequency of use. The notification must be submitted with the DMR for the quarter immediately after the chemical change went into effect.
2. The form for reporting Whole Effluent Toxicity (WET) has been updated for consistency of reporting WET results.
3. The stormwater requirements have been re-formatted into a more logical structure for clarity which will lead to improved implementation.

Background

This facility is located on the Wind River Indian Reservation and is thus in “Indian country” as defined at 18 U.S.C. 1151. The EPA has not approved the Eastern Shoshone Tribe, Northern Arapaho Tribe, or the State of Wyoming to implement the CWA NPDES program in Indian country. The EPA directly implements the Clean Water Act (CWA) NPDES program on Indian country lands within the State of Wyoming.

The discharge from this facility had been permitted by the State of Wyoming until February 9, 2004. It was determined that the facility was located within Indian country (Wind River Indian Reservation). After consultation between the EPA and the State of Wyoming, it was decided that the EPA should be the permit issuing authority instead of the State of Wyoming. The EPA permitted this facility for two permit cycles so far. The first permit cycle expired on December 31, 2008. The second permit cycle expired on March 31, 2015 and this permit is currently administratively extended.

Koch Sulfur Products Company, LLC (KSPC) submitted a permit application to the EPA Region 8 on August 23, 2001 for the EPA to issue its first permit. In the April 5, 2002 letter, KSPC and Peak Sulfur, Inc. stated that ownership of the facility was transferred to Peak Sulfur, Inc and requested that the Permit be issued to Peak Sulfur, Inc. On August 2, 2005, Chemtrade Sulfur US Holdings purchased Peak Sulfur, Inc. On December 1, 2005, there was a name change from Peak Sulfur, Inc. to Chemtrade Refinery Services, Inc. (Chemtrade)

This facility produces sulfuric acid. In Part XII (Nature of Business) of Form 1 of the permit application, the following information was given:

“Production of sulfuric acid from elemental sulfur and spent sulfuric acid, both involving the contact process. In the elemental sulfur portion of the process, sulfur is burned to form SO₂, and SO₂ is converted to SO₃. The SO₃ can then be used to enhance the strength of existing oleum (fuming sulfuric acid) or mixed with water to form sulfuric acid. The spent portion of the process involves decomposition of the spent acid into gaseous components, cleaning of the gas, and formation of sulfuric acid from SO₂.”

The permit application, Form 2C Part IIB, gives the average flow of total wastewater at 0.202 million gallons per day (mgd), April 2013 through March 2014. The application includes the following average flows for the waste streams going to the wastewater treatment system:

<u>Source</u>	<u>Approximate Flow, mgd</u>
Cooling tower blowdown	0.094
Process Condensate-Weak acid stripper	0.010
TGS SBS/Acidulation Stripper blowdown	0.017
Tanker (Maintenance wash water)	<0.001
Hydrostatic testing wash water	<0.001
Steam heating condensate	0.006
Water softener regeneration	<0.001
Boiler blowdown	0.006
Reverse osmosis concentrate	0.003
Machinery coolers and pump seals	0.086
Neutralization (Lime and soda ash)	0.01
Stormwater runoff	Negligible

Treatment System

According to Part IIB of Form 2C Figure 2, treatment consists of mixing, neutralization, settling, and non-biological aeration. Wastewaters enter sump A, where a lime slurry is added at approximately 1.4 lbs/min. Wastewater then enters sump B, where soda ash slurry is added at 0.75 lbs/min. Wastewater then passes through sump C and into the retention ponds, where aeration fountains begin aerating the wastewater. After the wastewater leaves the retention ponds it is aerated again in an aeration basin prior to discharge.

Table 1 below is a summary of the discharge monitoring report (DMR) self-monitoring results for outfall 001 from May 2010 – June 2019. It shows there were TSS exceedances.

Table 1. Summary of Self-Monitoring Results for Outfall 001 May 2010 – June 2019

Effluent Characteristic	Monthly Average			7-day Average			Daily Maximum			Effluent Limitation		
	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Monthly	7-day	Daily
TSS (mg/L)	2	18	160	-	-	-	2	18	160	30	-	60
TDS (mg/L)	633	2189	3583	-	-	-	668	2734	4940	3940	-	5000
Oil and Grease (mg/L)	0									No sheen & 10 mg/L max.		
pH	-						6.2	-	8.8	Not less than 6.0 nor greater than 9		
Temperature (°C)	8.5	19.8	27.2	9.1	21.9	28.7	10.3	23.0	29.7	-	-	-
Oxygen (mg/L)	-	-	-	-	-	-	7.12	10	15.8	-	-	-
Oxygen Saturation (%)	-	-	-	-	-	-	80	98	111	-	-	-
Sulfate (mg/L)	-	-	-	-	-	-	254	1383	3200	-	-	-
Flow (MGD)	0.020	0.211	0.307	-	-	-	0.152	0.255	0.557	-	-	-

Receiving Waters

The facility uses well water for their operation. The discharge from the wastewater treatment system goes to an unnamed ditch that flows to the southwest where it flows into the “West Side Irrigation Ditch” (drainage way named by the Wind River Environmental Quality Commission (WREQC), in July 29, 2003 report) that flows into the Little Wind River near St. Stevens. The West Side Irrigation Ditch is unnamed on the USGS 7 ½ minute topographic map of that area, Arapahoe Quadrangle. The topographic map indicates that the West Side Irrigation Ditch is naturally occurring and that it passes under an irrigation ditch, which may be part of Left Hand Ditch, at the common corner of Sections 5, 6, 7, and 8 of T.1 S, R. 4 E. The total distance from the point of discharge to the confluence with the Little Wind River appears to be approximately 1 to 1 ½ stream miles.

Water Quality Considerations

The Northern Arapahoe Tribe and Eastern Shoshone Tribe (Tribes) adopted surface water quality requirements that apply to waters on the Wind River Indian Reservation. These water quality requirements were adopted into Tribal code as Water Quality Rules and Regulations, effective September 25, 2007.

The water quality requirements were submitted to the EPA for review and returned to the Tribes with comments. The Tribal requirements have not been formally approved by the EPA; however, the Tribes have indicated that they expect dischargers on the Wind River Indian Reservation to comply with their adopted Water Quality Rules and Regulations. The EPA is considering these water quality requirements when determining reasonable potential (RP) and evaluating the need for any water quality based effluent limitations (WQBELs) in this renewal Permit. The EPA relied on CWA Section 301(b)(1)(C) and principles of tribal sovereignty in establishing WQBELs based on these tribally-adopted water quality requirements.

The water quality requirements designated uses were established in which the Tribes classified this segment, the West Side Cr, same as “West Side Irrigation Ditch” (from conf. with Little Wind R, upstream to Peak Sulphur (now Chemtrade) discharge) as 2E.

“Class 2E waters are those whose flows are primarily the result of authorized effluent discharges and are known to support or to have the potential to support game or nongame fish populations or spawning and nursery areas at least seasonally. Uses designated on Class 2E waters include game and nongame fisheries, aquatic life other than fish, secondary contact recreation, wildlife, industry, agriculture, cultural/traditional and aesthetic uses.”

Based on the available USGS gaging station (No. 06235500) flow information at the Little Wind River and Chemtrade flow of 200,000 gpd, the vast majority of the time the dilution ratio would be at least 100 to 1. Chemtrade also aerates the discharges before it goes into the West Side Irrigation Ditch. With the addition of an effluent limitation that requires the discharge to be at least 80% saturated with dissolved oxygen, it appears that the discharge is no longer causing a water quality problem as in previous the EPA permit cycles, (i.e. black residue from sulfate reducing bacteria in the West Side Irrigation Ditch). Additionally, it is anticipated that the discharge will not cause any water quality problems in the Little Wind River because of the dilution provided by the river.

Effluent Limitations

Effluent limitations for process water, except for the limitation on WET, are given in Part 1.3.1 of the Permit and are shown below. The limitations are similar to those in the previous permit, with some changes, discussed further below.

EFFLUENT LIMITATIONS FROM PART 1.3.1 OF THE PERMIT

Effluent Characteristic	Effluent Limitation			
	Monthly Avg. <u>a/</u>	7-Day Avg. <u>a/</u>	Daily Max. <u>a/</u>	Basis for Limitation <u>c/</u>

Total Suspended Solids, mg/L	30	N/A	60	PP
Total Dissolved Solids, mg/L	3,940	N/A	5,000	PP
Oil and Grease, mg/L <u>b/</u>	N/A	N/A	10	PJ
There shall be no acute toxicity in the effluent (LC ₅₀ > 100% effluent) discharged from Outfall 001.				PP
The discharge shall be free from oil in such quantities that cause a film or sheen upon or discoloration of the surface of the receiving water or adjoining shorelines or cause a sludge or emulsion to be deposited beneath the surface of the receiving water or upon adjoining shorelines.				PP
The pH of the discharge shall not be less than 6.0 nor greater than 9.0 at any time.				PP
The concentration of dissolved oxygen in the discharge shall not be less than eighty (80) percent of saturation. The saturation value for dissolved oxygen at the point of discharge shall be based on the temperature of the discharge, in degrees Celsius, and the corresponding value from the table in Addendum A, Part 6 of this Permit. For purposes of determining the saturation value, the temperature value at the time of monitoring shall be rounded up to the next whole number.				PP

a/ See Definitions, Part I.A. for definition of terms.

b/ The concentration of oil and grease shall be determined using the EPA method 1664, Rev A, the silica gel treated n-hexane extractable material (SGT-HEM, non-polar material) by extraction and gravimetry procedure.

c/ Basis for limitation: PJ is the permit writer professional judgment for technology based limitation. PP means the same limitation as in previous permit and is retained based on anti-backsliding (per CWA section 402(o) requirements).

Note: The Sulfuric Acid Production Subcategory (Subpart U) of the Inorganic Chemicals Manufacturing Point Source Category (40 CFR Part 415) is still reserved as of December 6, 2019. Effluent limitation guidelines (ELG) for this subcategory were promulgated in 1974 (39FR9611, March 12, 1974) and required no discharge of process wastewater. However, as part of a ruling by the U.S. Fourth Circuit Court of Appeals (*E.I. DuPont de Numours & Company, et. al. v. Train* 541 F.2d 1018 (4th Cir. 1976) most parts of Subpart U (Sulfuric Acid) were remanded. The U.S. Supreme Court (430 U.S. 112 (1977) later affirmed most of the ruling by the Fourth Court of Appeals. (See page 49451 of July 24, 1980 Federal Register.) In the June 29, 1982 Federal Register, page 28277, the EPA published a list of subcategories in the Inorganic Chemicals Manufacturing point Source Category for which the Agency was not going to develop national regulations because the amount and the toxicity of each pollutant observed in samples collected from plants in each subcategory does not justify developing national regulations. (Sulfuric Acid, Subpart U, was included in that list.) This was in accordance with a settlement agreement involving *Natural Resources Defense Council, Inc v. Train*, 9 ERC 2120 (D.D.C. 1976), modified 12 ERC 1833 (D.D.C. 1979).

Limitations on total suspended solids (TSS) have been included in the Permit as a safeguard because of the settleable material (e.g., carbon and iron) present in the influent wastewater. The limitations are 30 mg/L as a monthly average and 60 mg/L as a daily maximum and are based on

PJ. These limitations are carried over from the previous permit that was issued by the EPA on February 9, 2004.

The daily maximum limitation of 5,000 mg/L on total dissolved solids (TDS) is the same as in the previous permit issued by the EPA on March 29, 2010. This limit was included in the original facility permit that was issued by the State of Wyoming on December 31, 1988. This limit was based on chapter one of the Wyoming Water Quality Rules and Regulations and limiting the concentration of TDS in the discharge and protecting downstream water quality for irrigation uses. The limit was retained based on PJ of the permit writer and carried over into this permit renewal.

The monthly average limitation of 3,940 mg/L is also the same as in the previous permit that was issued by the EPA on March 29, 2010. This limitation was calculated by using a statistical analysis with the self-monitoring TDS results from January 3, 2005 to November 6, 2006. The monthly average limit is more restrictive than the daily maximum limitation of 5,000 mg/L. Considering the day-to-day variations that occur in the concentrations of TDS, the Permittee will need to provide tighter operational controls in order to consistently meet the monthly average limitation.

The effluent limitation on pH of 6.0 to 9.0 is the same as in the previous permit issued by the EPA on March 29, 2010. This limit was included in the original facility permit that was issued by the State of Wyoming on December 31, 1988. It is based on professional judgment and is kept the same based on anti-backsliding (per CWA section 402(o) requirements).

In an effort to maintain water quality in the West Side Irrigation Ditch, the Permit requires an effluent limitation on dissolved oxygen (DO) at least 80% of saturation. The DO limitations are carried over from the previous permit. The purpose of the DO limitation is to try to prevent the growth of sulfate reducing bacteria that previously caused water quality impacts, (i.e. caused an unsightly black residue in the receiving waters). The 80% of saturation limitation was selected instead of a specific numeric concentration (e.g., 5.0 mg/L) because of the variations in effluent temperature and the unknown effects that the weather may have on the effluent temperature. The saturation value is to be based on the temperature of the discharge and the table in Addendum A in Part 6 of the Permit. That table is based on values calculated from an updated program that the United States Geological Survey (USGS) has on the internet at <http://water.usgs.gov/software/DOTABLES>.¹ The table was calculated for a barometric pressure of 636 mm of mercury (5000 feet elevation), salinity of 0.394% (monthly TDS effluent limitation), and temperature increments of 1 °C from 0 °C to 40 °C.

The Permittee provided a list of chemicals in the permit application Attachment E, Table 3 - Current Water Treatment Additives (see table below) that are currently being used in the cooling water system. If the Permittee changes chemicals used in the cooling tower system, a written notification of the change must be submitted to the EPA which contains the product Safety Data Sheet (SDS), the quantities used, and the frequency of use. The notification must be submitted with the DMR for that quarter after the change is in effect.

¹ To access the original table, set the "Optional measured DO to 0 mg/L"; then click "Submit" button (last version 3.5, January 14, 2013).

Chemical	Manufacturer	System Used
Biosperse 550	Solenis	Cooling water
Biosperse 261T	Solenis	Cooling water
Performax 2021A	Solenis	Cooling water
Catalyzed Sulfito	Solenis	Boiler
MEKOR	Solenis	Boiler
Amersite 2 (secondary)	Solenis	Boiler
Advantage Plus 1455	Solenis	Boiler

The Permit also includes a prohibition on using chlorine based chemicals since Chemtrade has only used a non-chlorine-based biocide since 2005. The prohibition is because total residual chlorine can cause toxicity in small amounts and the Permit does not have any chlorine limit. Ultimately, it is the Permittee's responsibility to keep track of chemicals used in the cooling tower system and to avoid the discharge of pollutants in unacceptable concentrations.

The toxicity identification evaluation/toxicity reduction evaluation (TIE/TRE) conducted by the Permittee during summer of 2003 showed that acute toxicity to *Ceriodaphnia dubia* was due primarily to total dissolved solids (TDS) and the low hardness of the well water and wastewater, which made the wastewater more toxic. Studies involving the addition of lime showed that adding lime, there was an increase in the TDS concentration at which acute toxicity began occurring. The results of studies involving *Ceriodaphnia dubia* and *Daphnia magna* as the test species and with and without the addition of lime are shown below:

Species With & Without Lime Addition	TDS, mg/L at Toxicity Threshold
<i>Ceriodaphnia dubia</i> without lime addition	2,000
<i>Daphnia magna</i> without lime addition	3,000
<i>Ceriodaphnia dubia</i> with lime addition	3,450
<i>Daphnia magna</i> with lime addition	4,800

The Permittee investigated and implemented various options for reducing the TDS in the effluent including: flow augmentation; separating out concentrated waste streams and disposing of them separately; and/or treating the effluent to reduce the TDS concentration to an acceptable concentration. After reviewing the various options, the EPA decided to replace *Ceriodaphnia dubia* with *Daphnia magna* as one of the specified test organisms in the acute toxicity test provided that the Permit includes a monthly average TDS effluent limitation of 3940 mg/L and weekly monitoring. The EPA believes the above results are still valid for this permit term.

With this permit reissuance, Chemtrade requests the continued use of *Daphnia magna* as the WET test species in the permit application. Since circumstances have not changed, and *Daphnia magna* is retained as the test species in this permit renewal.

The Permittee requested a reduction of WET testing from semi-annual to annual in the permit application. The EPA evaluated the WET data summary in Table 1 of the permit application and noted that there was a failure in January 2013. The facility passed follow up retesting on the species that had failed. Due to the nature of the discharge, WET testing result failure, previously reduced WET testing frequency, and current alternate test species allowance, the Permit will retain the semi-annual WET testing requirement.

Self-Monitoring Requirements

The self-monitoring requirements are given in Part 1.3.2 of the Permit. Part 1.3.2.1 of the Permit requires continuation of semi-annual monitoring for acute WET. The Permit allows for a grab sample because of the equalizing effect of the pond portion of the treatment system. The semi-annual samples are to be collected on a two-day progression; i.e., if the first sample is collected on a Monday, the next sample shall be collected on a Wednesday, etc., in case there is a variation of the operation during the week that could result in a variation of the toxicity of the discharge. The purpose of the DO and sulfate monitoring is to collect sufficient data to evaluate water quality impacts. Previously, the growth of sulfate reducing bacteria caused water quality impacts resulting in an unsightly black residue in the receiving waters.

Reporting of Monitoring Results: With the effective date of this Permit, the Permittee must electronically report all monitoring data into the discharge monitoring reports (DMR) on a quarterly frequency using NetDMR. Electronic submissions by the Permittee must be submitted to the EPA Region 8 no later than the 28th of the month following the completed reporting period. The Permittee must sign and certify all electronic submissions in accordance with the signatory requirements of the Permit. NetDMR is accessed from the internet at <https://netdmr.zendesk.com/home>.

The DMRs are due quarterly and are due by the dates listed below and shall not be submitted until the reporting period is complete.

Compliance Monitoring Period	Due Date
January through March	April 28
April through June	July 28
July through September	October 28
October through December	January 28

Legible copies of all other reports shall be signed and certified in accordance with the Signatory Requirements (see section 4.7), and submitted to the EPA Region 8 Enforcement and Compliance Assurance Division and the tribes at the addresses given below:

original to: U.S. EPA, Region 8 (8ENF-W)
Attention: *DMR Coordinator*
1595 Wynkoop Street
Denver, Colorado 80202-1129

copy to: Environmental Director, Northern Arapahoe Tribe of Wind River Reservation
P.O. Box 396
Fort Washakie, WY 82514

Environmental Director, Eastern Shoshone Tribe of Wind River Reservation
P.O. Box 538
Fort Washakie, WY 82514

Until December 21, 2020, all other reports (e.g., Parts 2.8 and 2.9) as well as sewer overflow event reports, are to be submitted by mail to the given addresses above. Effective December 21, 2020, or as otherwise specified in 40 CFR Part 127, these reports are to be submitted using the NPDES Electronic Reporting Tool (NeT). If the NeT tool is not available, the reports can continue to be submitted to the addresses above until such time as the tool is available. NeT is a tool suite developed by the EPA to facilitate electronic submittal of data by the regulated community directly to the EPA and its partners. It uses commercial "off-the-shelf" software and can support diverse form and data submission formats. For more information about NeT, please visit: <https://www.epa.gov/compliance/national-pollutant-discharge-elimination-system-npdes-electronic-reporting-tool-net-fact>.

Storm Water Requirements

Several changes were made to the storm water requirements of the Permit. Most significant is the re-formatting of stormwater requirements into a more logical structure. Whereas the previous permit included requirements that were both integrated into the Stormwater Pollution Prevention Plan, this Permit focuses on 7 "Stormwater Control Measures (SCMs)." The term SCMs replaces the term "Best Management Practices (BMPs)", in concert with industry practices where the term BMP is being phased out. The SCMs in this Permit focus on the following seven areas:

1. Diverting Stormwater Runoff
2. Industrial Material Storage
3. Material Tracking
4. Loading and Unloading Operations
5. Waste Disposal Practices
6. Spill Prevention Procedures
7. Erosion and Sediment Control

The requirements for each of these SCMs is very similar to those of the previously issued permit. The re-formatting of this section was completed to reduce the burden on the operator for determining how to comply with the Permit by stating up-front the expectations for each of these areas. This specificity allows the Stormwater Pollution Prevention Plan to be used as a tool for more effectively documenting compliance with each control measure.

One additional significant change is that of the inspection schedule and annual report. The frequency of comprehensive site inspections was increased from semi-annual to quarterly and the requirements for the quarterly inspections are now directly tied to the requirements for each stormwater control measure. It is believed that this will allow for better recordkeeping and a more prescriptive approach to evaluating permit compliance at the facility. The requirement to provide an annual report based on semi-annual inspections was also eliminated. This reporting requirement was eliminated as pollution prevention and treatment of stormwater runoff may be more effectively addressed through iterative processes such as the maintenance of an active Stormwater Pollution Prevention Plan.

Endangered Species Act (ESA) Requirements

Section 7(a) of the Endangered Species Act requires federal agencies to ensure that any actions authorized, funded, or carried out by an agency are not likely to jeopardize the continued existence of any federally-listed endangered or threatened species or adversely modify or destroy critical habitat of such species.

Federally listed threatened and endangered species found in Fremont County, Wyoming include:

Species/Critical Habitat	Scientific Name	Status
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Threatened
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened
Desert Yellowhead	<i>Yermo xanthocephalus</i>	Threatened
Grizzly Bear	<i>Ursus arctos horribilis</i>	Threatened
Black-footed Ferret	<i>Mustela nigripes</i>	Endangered
Canada Lynx	<i>Lynx canadensis</i>	Threatened

The EPA finds that this Permit is “Not Likely to Adversely Affect” or “No Effect” any of the species listed by the U.S. Fish and Wildlife Service (FWS) under the Endangered Species Act. This facility discharges to a ditch that goes to a tributary of the Little Wind River which flows into the Wind River; which then flows into the Bighorn River further downstream heading northward into Montana. There are no listed aquatic species for Fremont County. Informal discussions with the U.S. Fish and Wildlife Service Field Office in Cheyenne, Wyoming in the past indicated that the only concern to listed species would involve the presence of metals in the effluent and its resulting bioaccumulative effects on sensitive bird species dependent upon an aquatic species based food chain. However, the only listed bird species present in Fremont County is the Yellow-billed Cuckoo, and this species does not depend on a largely aquatic based food chain. Further, metals are not used in the production process and any metals present in the effluent would be a result of impurities found in elemental sulfur.

FWS issued a letter dated December 21, 2015 and concurred with the EPA’s determination that this project is “Not Likely to Adversely Affect” Ute ladies’-tresses. There is “No Effect” for the other species listed above as they do not occur in the project area.

National Historic Preservation Act (NHPA) Requirements

Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470(f) requires that federal agencies consider the effects of federal undertakings on historic properties. The EPA has evaluated its planned reissuance of the NPDES Permit for Chemtrade to assess this action’s potential effects on any listed or eligible historic properties or cultural resources. The EPA does not anticipate any impacts on listed/eligible historic properties or cultural resources because this Permit is a renewal and will not be associated with any new ground disturbance or changes to the volume or point of discharge. During the public comment period, the EPA notified the Tribal Historic Preservation Officer (THPO) of the planned issuance of this NPDES Permit and request

their input on potential effects on historic properties and the EPA's preliminary determination in this regard.

Miscellaneous

The Permit will be issued for approximately five years, but not to exceed five years. The effective date and expiration date of the Permit will be determined at the time of permit issuance.

Draft permit and statement of basis drafted by:
Qian Zhang, EPA Region 8, 8WD-CWW, 303-312-6267
January 26, 2015

Reviewed by Wastewater Section staff, 8WD-CWW
December 9, 2019

Addendum to Statement of Basis

Response to Comments:

EPA public noticed the Chemtrade Refinery Services, Inc. permit on January 17, 2020 and the public notice period closed on February 18, 2020. EPA received two comments from Wyoming Department of Environmental Quality (WDEQ) during the public notice period.

1. Add a monthly average flow limit at the outfall, corresponding to historic flow rates for this facility (around 0.2 MGD, according to the statement of basis). Alternatively, a monthly load limit for total dissolved solids (TDS) would be adequate in capping this facility at its current output rate for salt.

Response: EPA reviewed the supplemental information provided by Chemtrade in addressing WDEQ's comment. EPA acknowledges this facility discharges about 0.24 mgd during the dry weather condition and 0.60 mgd during wet weather condition. The facility utilizes the operational flexibility provided by the various sumps and basins to retain wastewater during upsets, reprocess wastewater as necessary, and discharge at higher flowrates once upset conditions have been rectified. This operational practice results an average flowrate of total wastewater from the facility is approximately 0.24 mgd since 2008.

The facility experienced variability from seasonal precipitation events (i.e. rain and snow melt). Climate data from the National Oceanic and Atmospheric Administration (NOAA) for the site located at Riverton 1.0 SE, Wyoming (Station No. US1WYFM0067) details a maximum daily rainfall for the area equating to 0.94 inches/day from the most recent period of record (11/17/2018 – 05/02/2020). This rainfall data can be used to estimate the expected stormwater runoff volume given the drainage area and runoff coefficient. The composite runoff coefficient for the site was assumed to be 0.37 with 31.3 acres undeveloped ($C = 0.2$) and 7.0 acres industrial area/concrete ($C = 0.88$). Based on these assumptions, the maximum daily stormwater flow is estimated to be 0.361 mgd, with an average of 0.012 mgd (Stormwater flow has been estimated using the Rationale Method ($Q = CIA$), where Q = stormwater flowrate, C = runoff coefficient, I = average rainfall, and A = drainage area. In comparison, Outfall 001 discharges from January 2010 through March 2020. The average flowrate during this period is about 0.22 mgd which is consistent with wastewater flow estimates, however seasonal variability can be observed consistent with the stormwater estimates resulting in a maximum of 0.67 mgd.

Currently, there is no water quality standards for TDS, the current TDS limitations of 3,940 mg/L and 5,000 mg/L as a monthly average and daily maximum were retained in the Permit based on professional judgement to protect downstream water quality for irrigation uses. There is no fail ongoing WET testing at Outfall 001. It demonstrates the discharge is also protective of downstream water quality for aquatic life. Chemtrade has previously demonstrated that WET testing with *Daphnia magna* captures any toxicity concerns with their sulfate-dominated TDS effluent levels.

Any future operational changes or expansions would be subject to the permit requirements in section "4.1. Planned Changes. The Permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility..."

Based on the information above, EPA determines that the inclusion of a limitation for flow and/or loading limitation for TDS would not provide further protection for the designated use of the receiving stream.

No change has been made in response to this comment.

2. Add a sampling requirement for nutrients (nitrogen and phosphate-based), or have inspector sample for nutrients in the next scheduled inspection. WDEQ does not expect that the effluent from this particular facility would contain significant concentrations of nutrients. However, WDEQ is in the process of gathering nutrient data from all point source discharges in the Boysen basin, and data from this facility would assist in quantifying every known point source.

Response: EPA acknowledges that Wyoming's surface water quality standards currently only include narrative criteria to protect designated uses from nutrient pollution.

In 2016, WDEQ and the Wyoming Nutrient Work Group began developing the Wyoming Nutrient Strategy. The strategy consists of priority items and next steps to address nutrient pollution in Wyoming's surface waters from criteria development, control of point/nonpoint sources, and education and outreach.

In May 2017, the Boysen Reservoir watershed was selected as the priority for implementing proactive point and nonpoint source nutrient reductions. Boysen Reservoir was selected due to its importance for recreation, its use as a public water supply, and the risk posed to these uses by recurring cyanobacterial blooms in the reservoir. WDEQ has started incorporating nutrient monitoring requirements into Wyoming Pollutant Discharge Elimination System (WYPDES) permits in the Boysen Reservoir in an effort to help determine contributions of nutrients from points and inform nutrient reduction efforts.

In light of the Wyoming efforts, Chemtrade completed a proactive, internal review to identify potential sources of nitrate, nitrite, and phosphorus at the facility due to the nutrient conditions within the Boysen Reservoir. The internal review included source water characterization (i.e. supply wells), evaluation of water treatment additives, and effluent characterization.

Source water characterization:

Source water characterization was performed on a groundwater supply well to the facility in March 2020. Analytical results demonstrated the source water was below detection for nitrate, nitrite, and phosphorus at sufficiently sensitive levels using analytical methods specified in 40 CFR 136.

Water Treatment Additive Evaluation:

Chemtrade reviewed Safety Data Sheets (SDSs) for the water treatment additives currently in use at the facility as provided in the most recent permit application. The evaluation of water treatment additives identified one potential low-level source of phosphorus in the cooling tower blowdown: Performax 2021A. The evaluation found this chemical contained low levels of phosphate and prompted Chemtrade to investigate other non-phosphate-based alternatives.

Chemtrade with support from the site’s chemical vendor, Solenis, identified a suitable replacement product that does not contain orthophosphate. As a best management practice, Chemtrade elected to discontinue the use of the phosphate-based cooling tower treatment chemical (Performax 2021A) and has instituted replacement with an appropriate alternative (Performax MX2601). Chemtrade removed the phosphate based water treatment additive (Performax 2021A) from service on Wednesday, May 20, 2020. After discontinuing the chemical feed, Chemtrade cleaned and purged all chemical feed equipment and installed the new non-phosphate based chemical (Performax MX2601).

Nutrients Effluent Characterization:

To better understand the historical and current nutrient contributions from the facility, Chemtrade conducted analyses to characterize the Outfall 001 effluent prior to and following May 20, 2020. Effluent quality representative of conditions when the phosphate-based water treatment additive was in use have previously been submitted as part of the 2008 and 2014 NPDES Permit Renewal Application Form 2C. The applicable data from the Form 2C have been summarized in the table below for reference.

Date Sample	Nitrate-Nitrite (as N) (mg/L)	Nitrogen, Total Organic (as N) (mg/L)	Phosphorus (as P), total (mg/L)
June 18, 2008 (permit application)	0.14	0.51	0.14
September 30, 2014 (permit application with Performax 2021A)	<0.070	0.27	0.097
September 21, 2020 (post chemical change with Performax MX2601)	N/A	N/A	0.023

It appears that the facility does not contain significant concentrations of nutrients. However, the data still shows that there is a low concentration of total phosphorus (TP) after the changed of non-phosphate chemical. EPA modified the Permit to require Chemtrade to notify EPA if any phosphate based chemical is being used in the future. EPA will not require regular monitoring for nutrients (Total Nitrogen and TP). However, EPA will require Chemtrade to analyze for nutrients at least once prior to the next permit renewal application to verify the nutrients level for the discharge at Outfall 001.