

## STATEMENT OF BASIS

APPLICANT NAME: Chemtrade Refinery Services, Inc

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

PERMIT NUMBER: WY-0034207

FACILITY LOCATION: 140 Goes In Lodge Road  
Riverton, WY 82501  
SW 1/4 Sec. 9, T. 1 S, R. 4 E, 1st Standard Parallel North, Wind  
River Meridian  
Fremont County, WY  
42<sup>0</sup> 59' 55" N, 108<sup>0</sup> 24' 57" W

FACILITY CONTACT: David Luzmoor, Plant manager (307-857-4645)  
Leon Pruett, ES&H Supervisor (307-857-4653)

**Receiving Waters:** The discharge from the wastewater treatment system goes to an unnamed ditch that flows to the southwest where it flows into a drainageway that flows into the Little Wind River near St. Stevens. That drainageway is unnamed on the USGS 7 ½ minute topographic map of that area, Arapahoe Quadrangle. The topographic map indicates that the drainageway is mostly 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 Wind River Environmental Quality Commission (WREQC), in a July 29, 2003 report, has referred to the drainageway as “West Side Irrigation Ditch”. 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.

**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. 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. EPA directly implements the Clean Water Act (CWA) NPDES program on Indian country lands within the State of Wyoming.

Koch Sulfur Products Company, LLC (KSPC) submitted a permit application to EPA Region 8 on August 23, 2001. In a letter of April 5, 2002, KSPC and Peak Sulfur, Inc. stated that ownership of the facility was to be transferred to Peak Sulfur, Inc on or about April 15, 2002 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.

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  $\text{SO}_2$ , and  $\text{SO}_2$  is converted to  $\text{SO}_3$ . The  $\text{SO}_3$  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  $\text{SO}_2$ .

The permit application, Form 2C Part IIB, gives the average flow at 0.237 mgd. The application includes the following average flows for the wastestreams 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
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

\*This is the same unit and wastewater referred to as "Scrubber 30% acid" in the statement of basis for the prior permit

In Part II.C of Form 2C that was submitted with the permit application (June 2008), hydrostatic testing wastewater was listed as variable, with a total volume of 425,000 gallons per day. However, in a March 31, 2003 telephone conversation with Dennis Slack, Peak Sulfur, EPA was told that they have conducted hydrostatic testing about once in the past 5 years and the water is released at a rate of about 1 to 10 gpm. In a January 27, 2009 conversation with Leon Pruett, Chemtrade, this procedure for hydrostatic testing was confirmed. The flow rate would not cause a surge through the wastewater treatment system.

**Treatment System:** According to Part IIB of Form 2C, 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. The lime system was added to the treatment train on July 11, 2007.

### **Effluent Limits:**

Effluent limitations for process water, except for the limitation on whole effluent toxicity, 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, WQ
Oil and Grease, mg/L <u>b/</u>	N/A	N/A	10	PP
There shall be no acute toxicity in the effluent ( $LC_{50} > 100\%$ effluent or $TU_a < 1.0$ ) discharged from Outfall 001.				CWA
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.				CWA
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.				CWA

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

b/ The concentration of oil and grease shall be determined using 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: BPJ is best professional judgment for technology based limitation. PP is for same limitation as in previous permit and is kept same based on anti-backsliding. WQ is consideration of downstream water quality. CWA is Clean Water Act.

Note: The Sulfuric Acid Production Subcategory (Subpart U) of the Inorganic Chemicals Manufacturing Point Source Category (40 CFR Part 415) is reserved. 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, 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) being 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 best professional judgment. The limited data on effluent concentrations on TSS indicate that there should not be a problem in meeting the limitations with proper operation and maintenance of the wastewater treatment system.

The daily maximum limitation of 5,000 mg/L on total dissolved solids (TDS) is the same as in the previous permit and were based on Chapter One of the Wyoming Water Quality Rules and Regulations. The limit has been retained based on the best judgment of the permit writer. The monthly average limitation of 3,940 mg/L was added in the 2007 permit modification when species for WET testing was changed from *Ceriodaphnia dubia* to *Daphnia magna*, the rationale for which is described further in the discussion of WET. 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. See Addendum A of this statement of basis for information on how the monthly average limitation was calculated.

The limitations on chemical oxygen demand (COD) have been removed from the permit. The justification for a COD limit in the previous permit was that "...the March 1974 Development Document for the Major Inorganic Products Segment of the Inorganic Chemicals Manufacturing Point Source Category (EPA-440/-74-007-a) contains data that indicates that some wastestreams at sulfuric acid manufacturing plants may have significant concentrations of COD. The effluent limitations on COD are being retained as a precautionary measure." Removal of COD was requested by the facility in the permit application based on the fact that surfactant manufacturing, the original reason for the COD limit, no longer occurs at the facility which constitutes a "material and substantial alteration" to the facility as per Clean Water Act (CWA) § 402(o)(2). Further, COD levels have been well below the permit limit. Using statistical methods for determining reasonable potential to violate water quality standards outlined in the *Technical Support Document for Water-Quality Based Toxics Control* (TSD), a theoretical maximum effluent value for COD was calculated as 69.4 mg/L using all DMR data from March 2004 through March 2008. This value is significantly below the monthly average effluent limit of 100 mg/L COD. Further, doing the same calculation using only data since the treatment system was modified in June 2007, the calculated maximum effluent concentration for COD is 44.1 mg/L. Based on the substantial change in operation (removal of surfactant manufacturing) and this analysis, EPA has determined that COD limits and monitoring should be removed from the permit.

The previous permit had a 0.5 mg/L limitation on total residual chlorine (TRC) because hypochlorite compounds were used in treating the water in the cooling tower systems. In the

reapplication, Chemtrade requested removal of the limit and monitoring requirement for TRC. The basis for this request is that Chemtrade replaced the sodium hypochlorite with a non chlorine-based biocide in 2005. This change constitutes a “material and substantial alteration” to the facility as per CWA § 402(o)(2). Using data since the treatment system was modified in June 2007 through March 2008, the TSD approach was used to calculate the theoretical maximum effluent concentration for TRC, 0.046 mg/L. (The highest actual TRC value during that time was 0.03 mg/L) The calculated maximum effluent concentration of TRC is significantly below the current permitted limit. Based on the substantial change in operation and low effluent values, EPA has determined that the TRC monitoring and limitation is no longer necessary and has removed it from the permit. However, the permit now prohibits use of chlorine based chemicals.

The effluent limitation on pH of 6.0 to 9.0 is the same as in the previous permit and is based on best professional judgment.

In an effort to try to improve water quality in the unnamed drainageway, the permittee agreed to meet an effluent limitation on dissolved oxygen at least 80% of saturation. 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 a program that the United States Geological Survey (USGS) has on the internet at <http://water.usgs.gov/cgi-bin/dotables>.<sup>1</sup> The table was calculated for a barometric pressure of 636 mm of mercury (5000 feet elevation) and temperature increments of 1<sup>o</sup> C from 0<sup>o</sup> C to 40<sup>o</sup> C. No correction was made for salinity of the discharge because the difference is insignificant for the expected range of TDS concentrations (i.e., 1000 to 3000 mg/L).

The permit has the requirement that there shall be no use of chemicals in the cooling tower system other than those chemicals identified in the December 20, 2002 modification of the permit application and a letter of September 19, 2003. The permit also includes a prohibition on using chlorine based chemicals as discussed above. The purpose of this requirement is to keep track of chemicals used in the cooling tower system and to avoid the discharge of pollutants in unacceptable concentrations.

When the previous permit was issued it had a requirement that no later than three years after the effective date of the permit there shall be no acute toxicity in the effluent discharged from Outfall 001. The acute toxicity determination was to be based on an acute 48-hour static toxicity test using *Ceriodaphnia dubia* and an acute (96 or 48 hours) static toxicity test using *Pimephales promelas* (fathead minnows). The permit contained a compliance schedule for achieving compliance with the acute toxicity requirements. As part of the compliance schedule the permittee was required to conduct a toxicity identification evaluation (TIE) and a toxicity reduction evaluation (TRE). The purpose of the TIE-TRE was to determine the cause of the toxicity, locate the source(s) of the toxicity, and identify possible means to eliminate the toxicity. The TIE-TRE conducted by the permittee showed that the acute toxicity to *Ceriodaphnia dubia* was due primarily to total dissolved solids (TDS) and the low hardness of the well water and wastewater made the wastewater more toxic. Studies involving the addition of lime showed that by adding lime there was an increase in the TDS concentration at which acute toxicity began

---

<sup>1</sup> To access original table, select “Dissolved oxygen saturation values to 0.01 mg/L”; then click “Display Table” button (last visited March 22, 2010).

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 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, EPA decided to modify the permit to replace *Ceriodaphnia dubia* with *Daphnia magna* as one of the specified test organisms in the acute toxicity test provided that the permit was also be modified to include a monthly average effluent limitation of 3940 mg/L on TDS and that the monitoring frequency for TDS be changed from monthly to weekly. Circumstances have not changed, and *Daphnia magna* is retained as the test species in this permit renewal.

**Self-Monitoring Requirements:** The self-monitoring requirements are given in Part 1.3.2 of the permit. There are some changes in monitoring requirements from the previous permit. Monitoring for COD and TRC has been eliminated as discussed in the Effluent Limitations section above. The WET monitoring and Toxicity Identification Evaluation/Toxicity Reduction Evaluation requirements have been clarified (see Parts 1.3.2.2 and 1.3.3). Monitoring for pH has been increased to five times per week.

Part 1.3.2.2 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., just in case there is a variation of the operation during the week that could result in a variation of the toxicity of the discharge.

Chemtrade requested in its application for permit renewal that the WET requirement for testing with *Pimephales promelas* be changed to the 48-hr static acute test instead of the 96-hr static acute test. This request was based on the fact that the July 2007 and January 2008 WET tests for *Pimephales promelas* exhibited less than 20% mortality compared to the controls. Two tests do not provide enough data to consider this request.

**Storm Water Requirements:** Several minor changes were made to the storm water requirements of the permit. The permittee is not required to resubmit the Storm Water Pollution Prevention Plan (SWPPP) to EPA. Part 5.1.10 Periodic Visual Inspections of a Facility, now allows for the comprehensive facility inspections to be substituted for two of the quarterly visual inspections. A redundant section on Operator Review/Change was removed.

**Endangered Species Act (ESA) Requirements:** Section 7(a) of the Endangered Species Act requires federal agencies to insure 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, endangered and candidate species and proposed and designated critical habitat found in Fremont County, Wyoming include:

Species/Critical Habitat	Scientific Name	Status	Habitat
Black-footed Ferret	<i>Mustela nigripes</i>	Endangered	Prairie dog towns
Blowout Penstemon	<i>Penstemon haydenii</i>	Endangered	Sand blowouts or dunes
Canada Lynx	<i>Lynx canadensis</i>	Threatened	Montane forests
Canada Lynx Proposed Critical Habitat	Proposed areas include boreal forest landscapes of Fremont, Lincoln, Park, Sublette, and Teton Counties of Wyoming (see 73 FR 10860)		
Colorado River Fish (Bonytail, Colorado Pikeminnow, Humpback Chub, Razorback Sucker)	<i>Gila elegans</i> <i>Ptychocheilus lucius</i> <i>Gila cypha</i> <i>Xyrauchen texanus</i>	Endangered Endangered Endangered Endangered	Downstream riverine habitat in the Yampa, Green, and Colorado River systems*
Colorado River Fish Critical Habitat	Designated for Colorado River Fish in Colorado and Utah in downstream riverine habitat in the Yampa, Green, and Colorado River systems*		
Desert Yellowhead	<i>Yermo xanthocephalus</i>	Threatened	Beaver Rim, Fremont County
Desert Yellowhead Critical Habitat	Designated for desert yellowhead in Fremont County, Wyoming and consists of 360 acres of Bureau of Land Management administered lands within portions of Township 31 North, Range 95 West, Sections 27 and 34		
Gray Wolf	<i>Canis lupus</i>	Experimenta l	Greater Yellowstone Ecosystem
Platte River Species (Interior Least Tern, Pallid Sturgeon, Piping Plover, Western Prairie Fringed Orchid, Whooping Crane)	<i>Sternula antillarum</i> <i>Scaphirhynchus albus</i> <i>Charadrius melodus</i> <i>Platanthera praeclara</i> <i>Grus americana</i>	Endangered Endangered Threatened Threatened Endangered	Downstream riverine habitat of the Platte River system*
Platte River Species Critical Habitat	Designated for whooping crane in Nebraska in riverine habitat of the Platte River system*		
Ute Ladies'-tresses	<i>Spiranthes diluvialis</i>	Threatened	Seasonally moist soils and wet meadows of drainages below 7,000 ft. elevation
Yellow-billed Cuckoo (Western)	<i>Coccyzus americanus</i>	Candidate	Riparian areas west of Continental Divide

EPA finds that this permit is Not Likely to Adversely Affect any of the species listed by the US



Fish and Wildlife Service under the Endangered Species Act. This facility discharges into the Little Wind River which then flows into the Bighorn River heading northward into Montana. There are no listed aquatic species for this drainage. Informal discussions with U.S. Fish and Wildlife Service Field Office in Cheyenne, Wyoming 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 Western Yellow-Billed Cuckoo, and this species does not depend on an 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. It is expected that any metals present as impurities in the elemental sulfur would be insignificant in quantity.

**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. 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. 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, EPA notified the Tribal Historic Preservation Offices (THPOs) of the Eastern Shoshone and Northern Arapaho Tribes of our planned issuance of this NPDES permit and requested their input on potential effects on historic properties and EPA's preliminary determination in this regard. No comment was received.

**Changes Made After Public Notice of the Permit:**

The provision for the discharge of groundwater from construction dewatering has been removed from the final permit at the request of the permittee. Should Chemtrade need to conduct construction dewatering with a discharge to surface water in the future, a separate permit action will be necessary.

The monitoring for pH has been increased to five times per week with the exception of holidays and is also required anytime the pH alarm at the outfall is triggered.

Minor clarifications were made to permit sections 2.4 and 4.14.

The statement of basis was modified to clarify the rationale for the TDS limits in the permit and document EPA's actions with respect to NHPA requirements.

Draft permit and statement of basis drafted by:  
Colleen Gillespie, EPA Region 8  
February 3, 2009

Reviewed by Bob Shankland, SEE, 8P-W-WW, on February 4, 2009

Final permit, response to comments, and statement of basis drafted by:  
Colleen Gillespie, EPA Region 8, March 26, 2010

## Response to Public Comments

### Summary of comments from the U.S. Fish and Wildlife Service's Ecological Services Division, Cheyenne, WY

The Service provided written comments that the reissuance of the Chemtrade permit is unlikely to adversely affect any threatened or endangered species. The Service comments also noted the presence of a genetically pure strain of sauger in Little Wind River, downstream of where Chemtrade's discharge enters via the unnamed drainageway. The Service has determined that the sauger population is of high conservation value. To better protect the sauger the Service recommended the use of rainbow trout for the whole effluent toxicity testing (WET) instead of fathead minnows. Rainbow trout are more sensitive to contaminants, particularly metals, than fathead minnow.

### *EPA Response*

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. It is expected that any metals present as impurities in the elemental sulfur would be insignificant in quantity. EPA calculated the 7Q10 low flow of the Wind River and, using average effluent flow from Chemtrade, has determined that the dilution of the effluent in the Little Wind River is approximately 100:1. Due to the high dilution, EPA believes that a change of species for the WET testing requirement is unnecessary to protect the sauger in the Little Wind.

Comments from the Wind River Environmental Quality Commission (WREQC), Ft Washakie, WY

1. “WREQC believes that any construction that daylight groundwater will likely daylight UMTRA site contaminants from the known contaminated shallow groundwater plume that exists in this area. The Tribes and the Department of Energy have delineated an institutional control boundary and also, have in place, through the Tribal Water Engineers office (TWE), a permitting system to insure that these shallow contaminated ground water contaminants are handled properly. WREQC would like a requirement added to the NPDES permit to have any groundwater that is exposed be tested for possible UMTRA site contaminants and for ChemTrade to contact and apply for any applicable ground water permits with the TWE. A list of the contaminants of potential concern (COPC's) that should be tested for is attached to this email. If the ground water is tested WREQC would also like to receive the results of the test(s).”

*EPA Response*

EPA has removed the construction dewatering provision from the permit at the request of the permittee. Should Chemtrade need to discharge groundwater from construction dewatering in the future a separate permit action will be necessary. The request for results of groundwater monitoring is not applicable at this time. However, any future permit will contain the same provisions for reporting sample results to WREQC as currently provided in all NPDES permits issued on the Wind River Indian Reservation.

An NPDES permit does not authorize any infringement of tribal law. (See Section 4.11 of the permit.) However, EPA lacks authority to require compliance in this permit with tribal requirements that are not part of a federally authorized program.

2. “WREQC acknowledges and congratulates ChemTrade on the improvements (such as the two oxygenation ponds that were built) it has made to its NPDES discharge and the improvements in water quality we have seen in West Side Creek. However, WREQC and the Department of Energy have on at least two separate occasions, discovered acute, short term pH's violations, where the pH's from the ChemTrade ditch into West Side Creek were very acidic - in the pH 4 range. (Dates and data will be available when Steve Babits returns to the office) These “accidents” are not acceptable because of the unique sauger and fatmucket clam populations found in a reach the Little Wind River, both upstream and downstream of the confluence of the creek and the river, less than 1/2 mile away. Even a single exceedance in pH as severe as those documented, could be lethal for these very unique, remnant populations. Some of the clams are as old as 40 years. WREQC recommends that some kind of early alarm system requirement for pH be added to the permit to ensure that these acute episodes in low pH do not occur again.”

*EPA Response*

Chemtrade has an existing alarm system for pH. EPA has increased the pH monitoring in the permit from twice weekly to five times per week. If these controls are not adequate to prevent pH violations, then this would be addressed if EPA takes enforcement action.

3. “WREQC has also documented low D.O. Values in West Side Creek. At this time we have not determined the cause of the low values that continue to persist at the highway, when the D.O values at the NPDES outfall are high. In any case, WREQC does recommend that the percentage of D.O. that is listed in the permit be changed to an actual value reading of equal to or greater than 4 mg/L. Percentages of D.O. do not protect aquatic life if the water is warm or hot as is the case with this discharge. (There is an inverse relationship between any dissolved gas in water and water temperature. As water temperature increases, the amount of gas (oxygen in this case) that the water can hold decreases. Therefore, a percent D.O. in warm water may appear sufficient, but in actuality have a mg/L value much less 4 mg/L which is not adequate to sustain aerobic aquatic organisms and also will violate the tribal water criteria and standards.)”

*EPA Response*

EPA acknowledges that aquatic life is affected by the concentration of dissolved oxygen (D.O.), not the percentage saturation. EPA notes that the requirement for 80% saturation based on temperature results in a required D.O. concentration higher than 4 mg/L except in extreme conditions. As can be seen in the chart in Addendum A of the permit, the concentration of D.O. required for 80% saturation at a water temperature as high as 40 °C (104 °F) is 4.22 mg/L. Further, the D.O. of streams will naturally decrease in hot summer weather as water temperature increases. The area experiences high summer temperatures sometimes above 32 °C (90 °F) in parts of July and August. (National Weather Service Climate Charts for Lander, WY, 2006-2009) Given these two facts, EPA finds that it is appropriate to remain with a D.O. concentration limit based on 80% saturation.

4. “WREQC requests that the WREQC office be notified of any future NPDES permit modifications, especially those that involve any changes in the amount or constituents of the discharge. WREQC would like a chance to review and comment on any construction and/or technology plans that are developed by ChemTrade to meet the consent decree. In addition, WREQC requests notification of when EPA personnel are in the area conducting any permit inspections of either the air permit or the water NPDES permit.”

*EPA Response*

EPA will continue to coordinate with WREQC on permit issues and inspections for Chemtrade and all facilities on the Wind River Reservation. To the extent that any consent decrees affect water quality and this NPDES permit, the Region 8 Wastewater Unit will notify WREQC and provide opportunity to comment as permitted by law.

Addendum A

Total Solids Data for January 3, 2005 to November 6, 2006  
 Calculation of monthly Average Effluent Limitation

CHEMTRADE - Riverton			Statistics for DMR TDS		Statistics for 4-Sample Moving Average	
DMR Date	DMR TDS (mg/L)	4-Sample Moving Average (mg/L)	Count	23	Count	20
			Average	3,312	Average	3327
1/3/2005	2680		Std. Dev.	517	Std. Dev.	351
2/1/2005	3460		CV	0.16	CV	0.11
3/2/2005	2580		95 <sup>th</sup> Percentile	4,159	Max.	3758
4/4/2005	3210	2983	Max.	4,330	Min.	2595
5/2/2005	1870	2780	Min.	1,870		
6/6/2005	2720	2595				
7/5/2005	3420	2805				
8/3/2005	3220	2808				
9/6/2005	3310	3168				
10/3/2005	4330	3570				
11/1/2005	3650	3628				
12/1/2005	3570	3715				
1/3/2006	3480	3758				
2/1/2006	3110	3453				
3/1/2006	3420	3395				
4/3/2006	4210	3555				
5/1/2006	3660	3600				
6/5/2006	3210	3625				
7/6/2006	3460	3635				
8/3/2006	3200	3383				
9/6/2006	3510	3345				
10/2/2006	3200	3343				
11/6/2006	3700	3403				

To determine a monthly average limitation, moving 4-sample averages were calculated using the self-monitoring results from January 3, 2005 to November 6, 2006. Assuming that the 4-sample averages values were normally distributed and using 19 degrees of freedom (20 - 1 = 19), the effluent limitation was calculated for 95% probability. The standard deviation of 351 for the 20 4-sample moving averages was multiplied by 1.729 and the resulting 607 value was added to the mean of 3327 to give 3934 mg/L. That value was rounded up to 3940 mg/L for 3 significant figures.

$$1.729 \times 351 = 607$$

$$3327 + 607 = 3934$$

Round up to 3940