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**STATEMENT OF BASIS
CHEVRON
UPDES PERMIT NUMBER: UT0000175
RENEWAL PERMIT
MAJOR INDUSTRIAL**

FACILITY CONTACTS

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2351 North 1100 West
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Facility Address: 2351 North 1100 West
Salt Lake City, Utah

DESCRIPTION OF FACILITY

Chevron is a petroleum refinery facility located at 2351 North 1100 West, Salt Lake City. It has a Standard Industrial Classification (SIC) code 2911, for petroleum refining.

The wastewater treatment system (WWTS) currently consists of a wastewater collection box, three surge tanks, two induced air flotation (IAF) units, two equalization tanks, ten submerged biological contactors (SBCs), eight rotating biological contactors (RBCs), two clarifiers, an aerobic sludge digester, auxiliary filters and an effluent weir box. The following are considered auxiliary equipment: two of the three surge tanks, one of the two equalization tanks, one of the two IAF units, one of the biological contactors in each stage, and one of the two clarifiers and the auxiliary filters. The auxiliary pieces of equipment may be offline at any given time or on stand-by if needed for surges in operation. Wastewater from the lime pond, which contains no petroleum or organic compounds, is routed directly to the final clarifiers.

All refinery wastewater is fed to the collection box at the beginning of the WWTS, with the exclusion of lime pond water. The water is then pumped to one of the three surge tanks. The process wastewater fluctuates on a normal basis; the surge tank controls the flow rates through the WWTS. Initial oil-water separation takes place in the surge tanks. The oil skimmed from the top of the surge tanks is sent to the recovered oil tank to be recycled through the refinery. Sludge, which is collected at the bottom of the surge tanks, is periodically removed. The sludge removed from the surge tanks is dewatered and shipped offsite for incineration or other allowed treatment. The sludge which is collected from the surge tank is an F037-listed hazardous waste.

The wastewater is then directed to the IAF for additional removal of oil. In the IAF a polymer is added to aid in the separation process by binding to the oil and helping to break emulsions. The polymer-oil floats to the top and is skimmed off and sent to a tank where it is recycled to the

coker. The units are in parallel, Chevron typically operates the IAF with only one in service at a time. This insures the WWTS does not have to shut down when one IAF is shut down due to maintenance.

After the IAF unit the wastewater flows to one of the two equalization tanks. The on-line tank is designed to allow the wastewater to mix and equalize water quality, thus lessening the impact of changing water quality on the downstream biological treatment units. Phosphoric acid is added to the wastewater stream as a nutrient to promote activity and growth in the biosystem downstream. These tanks also provide additional surge capacity for the WWTS and can be operated in series, parallel or individually.

The biological treatment portion of the WWTS consists of four stages of biological contactors. The first stage consists of six submerged biological contactors (SBCs) in parallel, and Stage Two consists of four SBC's in parallel. The SBCs are rotated by air blowers which provide oxygen to the microorganisms. The primary function of the SBCs is to remove carbonaceous biochemical oxygen demand (CBOD) from the wastewater. Stage Three consists of four rotating biological contactors (RBCs) in parallel, and Stage Four consists of four RBCs in parallel. These RBCs act to reduce the remaining hydrocarbon and due to low hydrocarbon levels, nitrifying bacteria remove ammonia from the wastewater, the remaining ammonia is reported on the discharge monitoring reports (DMRs). One SBC and RBC in each stage is considered auxiliary equipment.

After biological treatment, the wastewater is sent to a splitter box where the flow is divided and routed in equal portions to the two clarifiers which typically operate in parallel. Lime water, which comes from the alkylation east pit and includes alkylation plant storm water and lime sludge from the KOH regenerator, is added to the wastewater at this point. The lime pond water is fed to the clarifiers because these streams do not come into contact with oils or organics. Sending the lime pond water to the biological treatment stage of the WWTS would adversely affect the microorganisms and needlessly reduce residence time and treatment efficiency in upstream equipment. The clarifiers remove suspended solids, which consist primarily of microorganisms that fall off of the biological contactors. These solids sink to the bottom and are removed and sent to the sludge digester. Sludge from the digester is periodically removed and disposed of off site as a non-hazardous waste.

The wastewater leaving the clarifier goes through another splitter box that under normal conditions routes the wastewater to the outfall. If the wastewater requires any additional treatment, it may be routed through a gravity sand filter as an auxiliary treatment before going to the outfall so that permit conditions are met. When discharged to the outfall the wastewater passes through an effluent weir box which records the flow rate. The wastewater is discharged to the Northwest Oil Drain Canal.

Over the life of this permit the refinery will consider and may construct several units of equipment which will either replace or upgrade certain units of equipment. The replacement or upgrade of units of equipment is not expected to have a significant impact on either the volume or quality of the effluent. If Chevron plans to construct equipment which will significantly change the nature or increase the quantity of pollutants discharged, Chevron will provide the appropriate information to the Division of Water Quality.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

The effluent limits are based on categorical limits and secondary water quality standards. Due to recalculation of the production based limits, the limits have been recalculated to reflect the current production rates at the Chevron Refinery.

As part of the renewal process, Chevron has completed and submitted an Effluent Screening Report to determine if additional effluent limits are needed to protect the beneficial use of the receiving water. This document is included in Addendum 1. The report demonstrates that the effluent from this facility will not cause or contribute to a violation of water quality standards. Therefore, the effluent limits in the renewal permit are the same as in the previous permit. However, additional data is needed to address uncertainties associated with selenium and ammonia concentrations in the Northwest Oil Drain Canal and to further delineate the mercury and ammonia concentrations in the effluent. Therefore, the renewal permit contains a study requirement with a time table to collect flow, ammonia and selenium data in the Northwest Oil Drain Canal as well as a requirement for three times weekly ammonia monitoring of the effluent.

DESCRIPTION OF DISCHARGE

The WWTS treats all process water from the refinery and marketing operations. Also sent to the WWTS are the following: Storm water from the refinery and marketing areas, wastewater from groundwater remediation and monitoring wells, and Chevron pipeline pump station wastewater. In addition, the following waste streams may occasionally be treated by the WWTS: hydrostatic test and maintenance water from storage tanks and pipelines (onsite or offsite), well purge water from groundwater monitoring wells, Storm water from construction and run-off from BOC hydrogen plant on the Chevron property, water from cleaning of process unit equipment, and naturally occurring artesian spring water from the Bonneville Spring. Under normal conditions the Bonneville Spring water, which flows 30 to 50 gallons per minute, is pumped to a wetlands area on Chevron's property. If the pump malfunctions, spring water may enter the storm water system and get routed through the WWTS while the pump is being repaired.

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Located at latitude 40°49'29" and longitude 111°55'48". Consists of discharge from a biological/mechanical system. Discharges into the Northwest Oil Drain Canal at approximately 1 MGD.

RECEIVING WATERS AND STREAM CLASSIFICATION

The discharge flows into the Northwest Oil Drain Canal and eventually into the Great Salt Lake. The Northwest Oil Drain Canal is classified as 2B and 3E, and the Great Salt Lake is Class 5, according to *Utah Administrative Code (UAC) R317-2-13*, as follows:

- Class 2B Protected for infrequent primary and secondary contact recreation.
- Class 3E Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.
- Class 5 The Great Salt Lake. Protected for primary and secondary contact recreation, aquatic wildlife, and mineral extraction.

BASIS FOR EFFLUENT LIMITATIONS

The Chevron Facility meets the applicability of the Petroleum Refining, found in *40 CFR 419*. Chevron is categorized into the Subpart B-Cracking Subcategory. There are three categories of limitations promulgated: 1) Best Practicable Control Technology Currently Available (BPT); 2) Best Available Technology Economically Achievable (BAT); 3) and Best Conventional Pollutant Control Technology (BCT). Effluent mass limitations were calculated for each technology and the most stringent were selected.

The effluent concentration limits are based on current Utah Secondary Treatment requirements, *UAC R317-1-3.2*. Wasteload Analysis (see ADDENDUM) indicates that these limitations should be sufficiently protective of water quality, in order to meet State water quality standards in the receiving waters.

Based on effluent monitoring data and the existing treatment facility, the permittee is expected to be able to comply with the limitations.

Limitations for pH and the concentration limits for total suspended solids (TSS) and biochemical oxygen demand (BOD₅) are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. Mass limitations on BOD₅, TSS, oil and grease, COD, phenolic compounds, ammonia, sulfide, total and hexavalent chromium are based upon calculation found in *40 CFR 419* Petroleum Refining Point Source Category (see ADDENDUM). The permit effluent limitations are:

Effluent Mass and Concentration Limitations

Parameter	30 Day Average mg/L	7 Day Average mg/L	30 Day Average lbs/day	Daily Maximum lbs/day
BOD ₅	25	35	279	502
TSS	25	35	224	350
COD	N.A.	N.A.	1941	3757
Oil & Grease	N.A.	N.A.	81.6	154
Phenolic Compounds	N.A.	N.A.	1.82	3.74
Ammonia	N.A.	N.A.	133	293
Sulfide	N.A.	N.A.	1.29	2.89
Total Chromium	N.A.	N.A.	2.72	7.60
Hexavalent Chromium	N.A.	N.A.	0.24	0.53

N.A. – Not Applicable.

The pH of the discharge shall not be less than 6.5 nor greater than 9.0 standard units in any sample.

SELF-MONITORING AND REPORTING REQUIREMENTS

The following effluent self-monitoring and reporting requirements are the same as those in the previous permit. Reports shall be made on DMR forms and are due 28 days after the end of the month or quarter, as applicable. Lab sheets for biomonitoring must be attached to the biomonitoring DMR.

Self-Monitoring and Reporting Requirements

<u>Parameter</u>	<u>Frequency</u>	<u>Sample Type</u>	<u>Units</u>
Total Flow (a)	Continuous	Recorder	MGD
BOD ₅	Weekly	Grab	mg/L, lbs/day
TSS	Weekly	Grab	mg/L, lbs/day
Oil & Grease	Monthly	Grab	lbs/day
pH	Weekly	Grab	S.U.
COD	Weekly	Grab	lbs/day
Phenolic Compounds	Weekly	Grab	lbs/day
Ammonia	Weekly	Grab	lbs/day
Sulfide	Weekly	Grab	lbs/day
Total Chromium	(b)	Grab	lbs/day
Hexavalent Chromium	(b)	Grab	lbs/day

- (a) Flow measurements of effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.
- (b) Quarterly monitoring shall commence with the first quarter in which use of chromium is resumed.

SELENIUM, AMMONIA AND FLOW CHARACTERIZATION OF THE NORTHWEST OIL DRAIN CANAL COMPLIANCE SCHEDULE

The review completed for this permit renewal (see MEMORANDUM, attached) identified areas in which DWQ believes additional work is needed to fully address the uncertainties in the selenium and ammonia concentrations and flows of the Northwest Oil Drain Canal.

Therefore, the renewal permit contains a study requirement with a time table to allow Chevron time to develop and submit for DWQ's approval a work plan for the characterization of selenium and ammonia concentrations and in the Northwest Oil Drain Canal. Flow measurements in the Northwest Oil Drain Canal will need to be included in this plan to establish dilution criteria to potentially be used in future permits.

STORM WATER REQUIREMENTS

Chevron is currently required to discharge under the multi sector general permit for storm water discharges. Chevron has been issued a separate Storm water permit and will manage its Storm water in accordance with applicable requirements.

PRETREATMENT REQUIREMENTS

The permittee does not discharge to another wastewater treatment facility, but rather treats and discharges all of the facility's process wastewater. Any wastewaters discharged to the sanitary

sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of *The Water Quality Act of 1987*, the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters

In addition, in accordance with *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if they discharge any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

BIOMONITORING REQUIREMENTS

In Utah, the nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring)*. Authority to require effluent biomonitoring is provided in *Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3* and *Water Quality Standards, UAC R317-2-5* and *R317 -2-7.2*.

A limitation of no acute toxicity will be included in the permit since the permittee is a major discharger. Since the discharge is to a Class 3E stream, there will be no chronic testing or limits at this time. However, the permit will contain a toxicity limitation reopener provision.

PERMIT DURATION

It is recommended that this permit be effective for duration of five (5) years.

Drafted by Jennifer Robinson
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Utah Division of Water Quality
June 5, 2014