State of Utah
SPENCER J. COX
Governor
DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality
Kimberly D. Shelley
Executive Director
DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN101190104

July 13, 2022

Serena Yau
Chevron Products Co - SL Refinery
685 South Chevron Way
North Salt Lake, UT 84054
RachelAgnew@chevron.com

Dear Serena Yau,

Re: Engineer Review:
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment
Project Number: N101190104

The DAQ requests a company representative (Title V Responsible Official for enhanced Approval Order application) review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Chevron Products Co - SL Refinery should complete this review within **10 business days** of receipt.

Chevron Products Co - SL Refinery should contact **Sarah Foran** at (385) 306-6724 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email sforan@utah.gov the signed cover letter to Sarah Foran. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an AO for signature by the DAQ Director.

If Chevron Products Co - SL Refinery does not respond to this letter within **10 business days,** the project will move forward without source concurrence. If Chevron Products Co - SL Refinery has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature Serena Yau 8/8/2022
(Signature & Date)

☐ By (Title V responsible official) initialing this box and signing this document, this document serves as an enhanced application and the public comment period will serve as the required comment period for Title V purposes.

The Title V responsible official certifies: based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N101190104
Owner Name	Chevron Products Co - SL Refinery
Mailing Address	685 South Chevron Way North Salt Lake, UT, 84054
Source Name	Chevron Products Co - Salt Lake Refinery
Source Location	2351 N 1100 W Salt Lake City, UT 84116
UTM Projection	422,066 m Easting, 4,519,991 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	2911 (Petroleum Refining)
Source Contact	Rachel Agnew
Phone Number	(801) 539-7264
Email	RachelAgnew@chevron.com
Project Engineer	Sarah Foran, Engineer
Phone Number	(385) 306-6724
Email	sforan@utah.gov
Notice of Intent (NOI) Submitted	November 2, 2021
Date of Accepted Application	January 27, 2022

SOURCE DESCRIPTION

General Description
This Approval Order covers a portion of the Chevron Refinery located in North Salt Lake, Utah. The source consists of storage tanks, pressurized storage vessels, wastewater treatment installations, loading operations, and a vapor combustion unit.

NSR Classification:
Minor Modification at Major Source

Source Classification
Located in , Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County SO_2 NAA,
Davis County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
NSPS (Part 60), GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006
NSPS (Part 60), GGGa: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
NSPS (Part 60), QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
NESHAP (Part 61), A: General Provisions
NESHAP (Part 61), FF: National Emission Standard for Benzene Waste Operations
MACT (Part 63), A: General Provisions
MACT (Part 63), CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
MACT (Part 63), EEEE: National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Title V (Part 70) Major Source

Project Proposal
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment

Project Description
Chevron requested a modification to update its existing wastewater treatment plant (WWTP). The update will include transitioning the existing induced air flotation (IAF) units to two (2) new dissolved nitrogen flotation (DNF) units. Additional changes include updated solid and contaminate treatment as well as, increase stormwater capacity. The existing RTO will control these processes. This change will result in a decrease in overall VOC emissions and no change in any other pollutant. Additionally, this project will include the replacement of the biological contactors (biodiscs). This modification will result in an increase in oil separation capacity.

EMISSION IMPACT ANALYSIS

The modification does not result in an increase in emissions. Therefore, the emission changes of this project are under the thresholds of R307-410-4 and R307-401-5. Modeling is not required for this project. [Last updated January 28, 2022]

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO_2 Equivalent	0	8552.20
Carbon Monoxide	0	6.40
Nitrogen Oxides	0	766.50
Particulate Matter - PM_{10}	0	261.48
Particulate Matter - $PM_{2.5}$	0	110.00
Sulfur Dioxide	0	383.30
Volatile Organic Compounds	-9.70	297.20

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Benzene (Including Benzene From Gasoline) (CAS #71432)	0	1320
Biphenyl (CAS #92524)	0	2620
Cresols/Cresylic Acid (Isomers And Mixture) (CAS #1319773)	0	1840
Cumene (CAS #98828)	0	2040
Ethyl Benzene (CAS #100414)	0	1800
Generic HAPs (CAS #GHAPS)	0	10
Hexane (CAS #110543)	0	1460
Naphthalene (CAS #91203)	0	2180
Phenol (CAS #108952)	0	1600
Styrene (CAS #100425)	0	1760
Toluene (CAS #108883)	0	1560
Xylenes (Isomers And Mixture) (CAS #1330207)	0	1800
	Change (TPY)	**Total (TPY)**
Total HAPs	0	10.00

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding WWTP**
The new WWTP updates result in a decrease in VOC emissions and therefore does not require a BACT analysis evaluation.

[Last updated July 13, 2022]

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-415-6b]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]

Commented [VWLE1]: In current AO, there is item I.8 - "The owner/operator shall submit documentation of the status of construction or modification of the new tank listed in … to the Director within 18. Months from the date of this AO…"

This AO doesn't have this requirement?

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.A **THE APPROVED EQUIPMENT**

II.A.1	**Tanks and WWTP**
II.A.2 NEW	**Wastewater Treatment Plant (WWTP)** Wastewater installations Two (2) dissolved nitrogen flotation units (NEW) Capacity: 3,000 gpm Each Collection box sump Drains (approximately 513) Junction boxes (approximately 88) Dewatering devices Control: Regenerative thermal oxidizer Rotating biological contactors Submerged biological contactors Carbon canister controls
II.A.3 NEW	**Tank D09312** Capacity: 750 bbl Type: vertical fixed roof Contents: oily sludge
II.A.4 NEW	**Tank D21016** Capacity: 50 bbl Type: horizontal Contents: chemical additive
II.A.5 NEW	**Tank D61011** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.6 NEW	**Tank D61012** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.7 NEW	**Tank D61013** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)

II.A.8 NEW	**Tank D61014** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive
II.A.9 NEW	**Tank D61045** Capacity: 300 bbl Type: internal floating roof Contents: chemical additive
II.A.10 NEW	**Tank T10085** Capacity: 10,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.11 NEW	**Tank T10086** Capacity: 10,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.12 NEW	**Tank T10094** Capacity: 10,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.13 NEW	**Tank T10095** Capacity: 10,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.14 NEW	**Tank T15088** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.15 NEW	**Tank T15090** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.16 NEW	**Tank T15093** Capacity: 15,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.17 NEW	**Tank T15098** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.18 NEW	**Tank T15099** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.19 NEW	**Tank T15103** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.20 NEW	**Tank T15104** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.21 NEW	**Tank T1511** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.22 NEW	**Tank T1512** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.23 NEW	**Tank T20015** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.24 NEW	**Tank T20016** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.25 NEW	**Tank T20017** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.26 NEW	**Tank T20018** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.27 NEW	**Tank T20019** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.28 NEW	**Tank T20030** Capacity; 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.29 NEW	**Tank T20031** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.30 NEW	**Tank T20032** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.31 NEW	**Tank T20033** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.32 NEW	**Tank T20040** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.33 NEW	**Tank T2111** Capacity: 2,300 bbl Type: external floating roof Contents: waste water/slop oil
II.A.34 NEW	**Tank T25108** Capacity: 25,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.35 NEW	**Tank T25109** Capacity: 25,000 bbl Type: external floating roof waste water/slop oil
II.A.36 NEW	**Tank T30020** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.37 NEW	**Tank T30021** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.38 NEW	**Tank T30022** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.39 NEW	**Tank T30023** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.40 NEW	**Tank T30024** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.41 NEW	**Tank T30041** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.42 NEW	**Tank T30042** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.43 NEW	**Tank T30043** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.44 NEW	**Tank T30069** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.45 NEW	**Tank T30074** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.46 NEW	**Tank T30080** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.47 NEW	**Tank T30081** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.48 NEW	**Tank T30082** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.49 NEW	**Tank T30091** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.50 NEW	**Tank T30092** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.51 NEW	**Tank T30096** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.52 NEW	**Tank T30097** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.53 NEW	**Tank T30107** Capacity: 30,000 bbl Type: external floating roof Contents: waste water
II.A.54 NEW	**Tank T3350** Capacity: 5,000 bbl Type: external floating roof Contents: oily sludge
II.A.55 NEW	**Tank T35110** Capacity: 35,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.56 NEW	**Tank T40050** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.57 NEW	**Tank T40051** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.58 NEW	**Tank T40052** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.59 NEW	**Tank T40070** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.60 NEW	**Tank T40071** Capacity: 40,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.61 NEW	**Tank T40072** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.62 NEW	**Tank T40073** Capacity: 40,000 bbl Type: external floating roof Contents: petroleum distillates/gasoline blend components storage
II.A.63 NEW	**Tank T40075** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.64 NEW	**Tank T40076** Capacity: 40,000 bbl Type: external floating roof Contents gasoline/blend components/feedstock storage
II.A.65 NEW	**Tank T40100** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.66 NEW	**Tank T40112** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.67 NEW	**Tank T50078** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.68 NEW	**Tank T50079** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.69 NEW	**Tank T50113** Capacity: 50,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.70 NEW	**Tank T5038** Capacity: 5,000 bbl g Type: external floating roof Contents: slop oil
II.A.71 NEW	**Tank T5083** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.72 NEW	**Tank T5084** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.73 NEW	**Tank T60059** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.74 NEW	**Tank T60060** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.75 NEW	**Tank T60061** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.76 NEW	**Tank T60062** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage tank
II.A.77 NEW	**Tank T60063** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage

II.A.78 NEW	**Tank T60077** Capacity: 60,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.79 NEW	**Tank T60114** Capacity: 60,000 bbl Type: vertical fixed (cone) roof Contents: petroleum distillates storage tank
II.A.80 NEW	**Tanks T60118** Capacity: 60,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.81 NEW	**Tank T90116** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.82 NEW	**Tank T90117** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.83 NEW	**Tank T7513** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage
II.A.84 NEW	**Tank T7514** Capacity: 7,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage tank (not currently in use)
II.A.85 NEW	**Tank T7539** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil
II.A.86 NEW	**Tank T80115** Capacity: 80,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.87 NEW	**Tank T934** Capacity: 900 bbl Type: vertical fixed roof Contents: caustic storage
II.A.88 NEW	**Tank V12684** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.89 NEW	**Tank V12685** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.90 NEW	**Tank V2567** Capacity: 2,500 bbl Type: pressurized sphere Contents: butane
II.A.91 NEW	**Tank V31159** Capacity: 150 bbl Type: horizontal Contents: chemical additive
II.A.92 NEW	**Tank V5064** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.93 NEW	**Tank V5065** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.94 NEW	**Tank V5066** Capacity: 5,000 bbl Type: pressurized sphere Contents: olefin
II.A.95 NEW	**Tank V76801** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.96 NEW	**Tank V76802** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane

II.A.97 NEW	**Tank V76803** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.98 NEW	**Loading Rack** Railcar loading/unloading rack Control: vapor combustor unit

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.B **REQUIREMENTS AND LIMITATIONS**

II.B.1 NEW	**Site-Wide Requirements**
II.B.1.a NEW	The owner/operator shall not exceed the following as listed under SIP Section IX.H.2.d, and Section IX.H.12.d: A. PM_{10} 0.715 tons per day (tpd) and B. $PM_{2.5}$ 0.305 tons per day (tpd) and ~~8~~ 110 tons per rolling 12-month period C. SO_2 1.05 tons per day (tpd) and 383.3 tons per rolling 12-month period D. NO_x 2.1 tons per day (tpd) and 766.5 tons per rolling 12-month period. [SIP Section IX.H.12, SIP Section IX.H.2]
II.B.1.a.1 NEW	Compliance shall be demonstrated as outlined in SIP Section IX.H.2.d and Section IX.H.12.d. [SIP Section IX.H.12, SIP Section IX.H.2]
II.B.2 NEW	**Conditions on Tanks and Wastewater Processes**
II.B.2.a NEW	The owner/operator shall operate the wastewater installation in accordance with the requirements of 40 CFR 61, Subpart FF. [40 CFR 61]
II.B.2.b NEW	The owner/operator shall not exceed a throughput feed rate of 3,000 gpm of process wastewater through the dissolved nitrogen flotation system. [R307-401-8]
II.B.2.b.1 NEW	Compliance shall be demonstrated through a flow meter and recorded in operator logs. [R307-401-8]

Commented [VWLE2]: No later than January 1, 2019, combined emissions of PM2.5 (filterable+condensable) shall not exceed 0.305 tons per day (tpd) and 110 tons per rolling 12-month period.

II.B.2.c NEW	The following storage vessels/tanks are subject to specific federal regulations, which are listed here for convenience. The source must comply with the latest version of the CFR and applicable subparts. Tanks subject to 40 CFR 63, Subparts A and CC: 7514, 10095, 15093, 20017, 20018, 20019, 30020, 30021, 30022, 30024, 30091, 30092, 30096, 30097, 35110, 40075, 40076, 40100, 50078, 50079, 60059, 60077, 80115, 90116, and 90117. Tanks subject to 40 CFR 60, Subparts A and Kb: 1512, 2111, 3350, 7513, 10094, 20017, 20018, 30024, 30092, 30096, 35110, 40100, 50078, 60077, 80115, 90116, 90117 and 7514 Tanks subject to 40 CFR 61, Subpart A and FF: 1511, 1512, 2111, 3350, 5038, 7513, 7514, 7539, 10094, 15103, 15104, 20015, 20016, 25108, 25109, and 30107. [40 CFR 60 Subpart CC, 40 CFR 61 Subpart FF, 40 CFR 63 Subpart Kb, R307-401]
II.B.3 NEW	**Requirements on the Loading Rack**
II.B.3.a NEW	The owner/operator shall operate the crude oil loading rack in accordance with the requirements of 40 CFR 63 Subpart EEEE. The owner/operator shall limit VOC emissions from the crude oil loading rack to 10 milligrams per liter of crude oil. [40 CFR 63 Subpart EEEE, R307-401-8]
II.B.3.a.1 NEW	Compliance with the VOC emission limit shall be demonstrated as outlined in 40 CFR §§ 63.2354 and 63.2362. [40 CFR 63 Subpart EEEE]
II.B.3.b NEW	The owner/operator shall not exceed 10,000 bbls/day of total material loading in the loading rack. Materials include crude oil, desulfurized gas oil (DGO), vacuum gas oil (VGO) or naphtha. [R307-401-8]
II.B.3.b.1 NEW	To demonstrate compliance with the daily limitation the owner/operator shall maintain a log of daily materials loaded. Records shall include the type and volume of material loaded. Records shall be kept for all periods when the plant is in operation. [R307-401-8]

PERMIT HISTORY

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	DAQE-AN101190103-21 dated September 23, 2021
Is Derived From	NOI dated November 2, 2021
Incorporates	Additional Information dated December 15, 2021
Incorporates	Additional information dated June 22, 2022

REVIEWER COMMENTS

1. **Comment regarding Emission Estimates:**
Emission estimates for VOC emissions from the new WWTP tanks were estimated using EPA Emission Estimation Protocol for Petroleum Refineries tables 7-9 and 7-10. The existing PTE, as calculated by the 2013 SIP analysis for the WWTP are 138.1 tpy. The change in equipment will result in a decrease in overall VOC emissions to 128.4 tpy of VOCs (a reduction of 9.7 tons per year). Each DNF will have a capacity of 3,000 gpm however, during normal operations, only one will operate at a time. The RTO is assumed to have a control efficiency of 95%. Benzene emissions were estimated using the average on-site measurement of 4.3 ppm. Emissions for the existing structure were used to determine the change in PTE with this modification. Conditions II.B.1.b and II.B.1.b.1 incorporate the proposed flow rate. [Last updated July 13, 2022]

2. **Comment regarding Condition Updates:**
Condition II.B.2.b incorrectly defined DGO as dissolved gas oil. This was corrected and updated to "desulfurized" gas oil.

Conditions II.B.1.a and II.B.1.a.1 were added to ensure conformity with the SIP emission requirements for the entire facility.

Multiple items within Section II.A and conditions under Section II.B were updated to reflect updated formatting practices. These items are marked as NEW in the left most column of the section. The changes within these conditions are not a change in the intent or limitation, but are highlighted due to the formatting changes.
[Last updated July 13, 2022]

3. **Comment regarding Site-Wide PTE:**
To eliminate any confusion, SIP determined emission caps for PM_{10}, $PM_{2.5}$, NO_x, and SO_2 were added both to the total PTE and under the "Site-Wide Conditions". This modification did not impact or increase emissions of the four SIP monitored pollutants.

[Last updated July 13, 2022]

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds

	Pre-WWTP upgrades	Post-WWTP upgrades	
	VOC (ton/yr)		Change
PTE comparison	138.1	128.4	(9.7)

Induced Air Flotation Replacement with Dissolved Nitrogen Flotation PTE Calculation

Legend:

gray = fixed

Gal/day WW flow	4,320,000			
Pollutant	Table 7-9 Mass concentration ratio pollutant to benzene	Table 7-10 EF (how much of what's in the water is emitted to atmosphere)	Mass flow of pollutant lb/day	Ave benzene ppm in collection box 2020 - present
VOC	81	0.6	12,439	4.3
Benzene	1	0.25	154	
Benzene Mass Flow lb/day (gal/day x benzene ppm x density of water/10^6)				153.57

Note: VOC are calculated using EPA's Protocol for Estimating Emissions from Petroleum Refineries, 2014

Table 7-9. Refinery Wastewater Contaminant Concentrations as a Ratio to Benzene

CAS No.	HAP	Mass Concentration Ratio of Compounds to the Concentration of Benzene	
		Inlet to Oil-Water Separator or DAF Unit	Inlet to Biological Treatment Unit (After Oil-Water Separator)
540841	2,2,4-Trimethylpentane	1.97	0.022
71432	Benzene	1.00	1.00
92524	Biphenyl	0.034	0.0005
1319773	Cresols	0.25	0.38
98828	Cumene	0.37	0.013
100414	Ethylbenzene	0.88	0.086
110543	Hexane	3.50	0.047

(continued)

Table 7-9. Refinery Wastewater Contaminant Concentrations as a Ratio to Benzene (continued)

CAS No.	HAP	Mass Concentration Ratio of Compounds to the Concentration of Benzene	
		Inlet to Oil-Water Separator or DAF Unit	Inlet to Biological Treatment Unit (After Oil-Water Separator)
1634044	Methyl tertiary-butyl ether	0.58	0.98
91203	Naphthalene	0.29	0.02
108952	Phenol	0.18	0.80
100425	Styrene	0.58	0.09
108883	Toluene	3.3	0.80
1330207	Xylene	3.6	0.33
106990	1,3-Butadiene	0.0006	0.0027
VOC	Total VOCs	81	17

Table 7-10. Default Mass Emission Factors for Refinery Wastewater Collection and Treatment Systems

		Mass Fraction of Compound Emitted from Wastewater Collection and Treatment System Based on Total Wastewater Loading

CAS No.	HAP	Open Wastewater Collection and Treatment System	BWON-Compliant Wastewater Collection and Treatment System
106990	1,3-Butadiene	0.91	0.75
540841	2,2,4-Trimethylpentane	0.95	0.55
71432	Benzene	0.65	0.25
92524	Biphenyl	0.34	0.031
1319773	Cresols	0.002	0.000
98828	Cumene	0.68	0.24
100414	Ethylbenzene	0.66	0.22
110543	Hexane	0.97	0.55
1634044	Methyl tertiary-butyl ether	0.45	0.091
91203	Naphthalene	0.41	0.098
108952	Phenol	0.000	0.000
100425	Styrene	0.81	0.64
108883	Toluene	0.66	0.19
1330207	Xylene	0.64	0.21
VOC	Total VOCs (using butane)	0.94	0.60

	RTO efficiency accounting for
	90.6%
tpy uncontrolled	tpy controlled
1,362	**128.4**
7	**0.7**

DNF Throughput

"Design"	3,000	gal/min
conversion	4,320,000	gal/day
conversion	1,576,800,000	gal/year

Historical RTO efficiencies

2019	2020	2018
91%	95%	93%
		93%

The FEED package process design basis is shown in Table 2-1.

Table 2-1. FEED Package Process Design Basis – DNF Influent

Item	Units	Low	Normal	Max	Peak	Design
Flow	gpm	600	1,020	1,370	1,595	3,000
Temperature	deg F	-[a]	55	-[a]	90	120
Total Suspended Solids	mg/L	-[a]	300	-[a]	-[a]	500
Total Dissolved Solids	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]
Oil and Grease	mg/L	-[a]	300	-[a]	-[a]	300
pH	--	-[a]	-[a]	-[a]	-[a]	-[a]
Chloride	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]

a. Value will be established from results of current sampling study



Sarah Foran <sforan@utah.gov>

PTE evaluation issue

Vander Werff, Lauren E <LVanderWerff@chevron.com> Wed, Jun 22, 2022 at 8:00 AM
To: Sarah Foran <sforan@utah.gov>
Cc: Jon Black <jlblack@utah.gov>, John Jenks <jjenks@utah.gov>, "Agnew, Rachel" <RachelAgnew@chevron.com>, "Yau, Serena" <Serena.Yau@chevron.com>

Hi Sarah,

Thanks for bringing up the SIP cap and PTE issue to us.

From my interpretation of the SIP language, the SIP is fairly prescriptive on how to calculate emissions for comparison to the caps. For example, for the SOx cap the SIP states:

"B. Compliance with the source-wide SO2 Cap shall be determined for each day as follows:

Total daily SO2 emissions shall be calculated by adding the daily SO2 emissions for natural gas and plant fuel gas combustion, to those from the FCC and SRU stacks.

Daily natural gas and plant gas consumption shall be determined through the use of flow meters..."

I read that as the following formula: RFG SOx + NG SOx + FCCU SOx + SRU SOx

Our true source-wide PTE would also include emissions from other sources like engines and releases. All this to say, even though the difference isn’t large, the facility PTE should be able to be higher than the SIP cap and comparing the two isn't an apples-to-apples exercise.

As we discussed on the phone, we could add the SIP cap limits as part of the AO. We agree with that.

Is there a memo or citation or an example from another state or company that you're looking at as the basis for this exercise?

Thanks,

Lauren

[Quoted text hidden]

State of Utah
SPENCER J. COX
Governor
DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality
Kimberly D. Shelley
Executive Director
DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN101190104

July 13, 2022

Serena Yau
Chevron Products Co - SL Refinery
685 South Chevron Way
North Salt Lake, UT 84054
RachelAgnew@chevron.com

Dear Serena Yau,

Re: Engineer Review:
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment
Project Number: N101190104

The DAQ requests a company representative (Title V Responsible Official for enhanced Approval Order application) review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Chevron Products Co - SL Refinery should complete this review within **10 business days** of receipt.

Chevron Products Co - SL Refinery should contact **Sarah Foran** at (385) 306-6724 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email sforan@utah.gov the signed cover letter to Sarah Foran. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an AO for signature by the DAQ Director.

If Chevron Products Co - SL Refinery does not respond to this letter within **10 business days,** the project will move forward without source concurrence. If Chevron Products Co - SL Refinery has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature _____
(Signature & Date)

☐ By (Title V responsible official) initialing this box and signing this document, this document serves as an enhanced application and the public comment period will serve as the required comment period for Title V purposes.

The Title V responsible official certifies: based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N101190104
Owner Name	Chevron Products Co - SL Refinery
Mailing Address	685 South Chevron Way North Salt Lake, UT, 84054
Source Name	Chevron Products Co - Salt Lake Refinery
Source Location	2351 N 1100 W Salt Lake City, UT 84116
UTM Projection	422,066 m Easting, 4,519,991 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	2911 (Petroleum Refining)
Source Contact	Rachel Agnew
Phone Number	(801) 539-7264
Email	RachelAgnew@chevron.com
Project Engineer	Sarah Foran, Engineer
Phone Number	(385) 306-6724
Email	sforan@utah.gov
Notice of Intent (NOI) Submitted	November 2, 2021
Date of Accepted Application	January 27, 2022

SOURCE DESCRIPTION

General Description
This Approval Order covers a portion of the Chevron Refinery located in North Salt Lake, Utah. The source consists of storage tanks, pressurized storage vessels, wastewater treatment installations, loading operations, and a vapor combustion unit.

NSR Classification:
Minor Modification at Major Source

Source Classification
Located in , Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County SO_2 NAA,
Davis County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
NSPS (Part 60), GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006
NSPS (Part 60), GGGa: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
NSPS (Part 60), QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
NESHAP (Part 61), A: General Provisions
NESHAP (Part 61), FF: National Emission Standard for Benzene Waste Operations
MACT (Part 63), A: General Provisions
MACT (Part 63), CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
MACT (Part 63), EEEE: National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Title V (Part 70) Major Source

Project Proposal
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment

Project Description
Chevron requested a modification to update its existing wastewater treatment plant (WWTP). The update will include transitioning the existing induced air flotation (IAF) units to two (2) new dissolved nitrogen flotation (DNF) units. Additional changes include updated solid and contaminate treatment as well as, increase stormwater capacity. The existing RTO will control these processes. This change will result in a decrease in overall VOC emissions and no change in any other pollutant. Additionally, this project will include the replacement of the biological contactors (biodiscs). This modification will result in an increase in oil separation capacity.

EMISSION IMPACT ANALYSIS

The modification does not result in an increase in emissions. Therefore, the emission changes of this project are under the thresholds of R307-410-4 and R307-401-5. Modeling is not required for this project. [Last updated January 28, 2022]

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO_2 Equivalent	0	8552.20
Carbon Monoxide	0	6.40
Nitrogen Oxides	0	766.50
Particulate Matter - PM_{10}	0	261.48
Particulate Matter - $PM_{2.5}$	0	110.00
Sulfur Dioxide	0	383.30
Volatile Organic Compounds	-9.70	297.20

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Benzene (Including Benzene From Gasoline) (CAS #71432)	0	1320
Biphenyl (CAS #92524)	0	2620
Cresols/Cresylic Acid (Isomers And Mixture) (CAS #1319773)	0	1840
Cumene (CAS #98828)	0	2040
Ethyl Benzene (CAS #100414)	0	1800
Generic HAPs (CAS #GHAPS)	0	10
Hexane (CAS #110543)	0	1460
Naphthalene (CAS #91203)	0	2180
Phenol (CAS #108952)	0	1600
Styrene (CAS #100425)	0	1760
Toluene (CAS #108883)	0	1560
Xylenes (Isomers And Mixture) (CAS #1330207)	0	1800
	Change (TPY)	**Total (TPY)**
Total HAPs	0	10.00

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding WWTP**
The new WWTP updates result in a decrease in VOC emissions and therefore does not require a BACT analysis evaluation.

[Last updated July 13, 2022]

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-415-6b]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]
I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]

Commented [VWLE1]: In current AO, there is item I.8 - "The owner/operator shall submit documentation of the status of construction or modification of the new tank listed in … to the Director within 18. Months from the date of this AO…"

This AO doesn't have this requirement?

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.A **THE APPROVED EQUIPMENT**

II.A.1	**Tanks and WWTP**
II.A.2 NEW	**Wastewater Treatment Plant (WWTP)** Wastewater installations Two (2) dissolved nitrogen flotation units (NEW) Capacity: 3,000 gpm Each Collection box sump Drains (approximately 513) Junction boxes (approximately 88) Dewatering devices Control: Regenerative thermal oxidizer Rotating biological contactors Submerged biological contactors Carbon canister controls
II.A.3 NEW	**Tank D09312** Capacity: 750 bbl Type: vertical fixed roof Contents: oily sludge
II.A.4 NEW	**Tank D21016** Capacity: 50 bbl Type: horizontal Contents: chemical additive
II.A.5 NEW	**Tank D61011** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.6 NEW	**Tank D61012** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.7 NEW	**Tank D61013** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)

II.A.8 NEW	**Tank D61014** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive
II.A.9 NEW	**Tank D61045** Capacity: 300 bbl Type: internal floating roof Contents: chemical additive
II.A.10 NEW	**Tank T10085** Capacity: 10,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.11 NEW	**Tank T10086** Capacity: 10,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.12 NEW	**Tank T10094** Capacity: 10,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.13 NEW	**Tank T10095** Capacity: 10,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.14 NEW	**Tank T15088** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.15 NEW	**Tank T15090** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.16 NEW	**Tank T15093** Capacity: 15,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.17 NEW	**Tank T15098** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.18 NEW	**Tank T15099** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.19 NEW	**Tank T15103** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.20 NEW	**Tank T15104** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.21 NEW	**Tank T1511** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.22 NEW	**Tank T1512** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.23 NEW	**Tank T20015** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.24 NEW	**Tank T20016** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.25 NEW	**Tank T20017** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.26 NEW	**Tank T20018** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.27 NEW	**Tank T20019** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.28 NEW	**Tank T20030** Capacity; 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.29 NEW	**Tank T20031** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.30 NEW	**Tank T20032** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.31 NEW	**Tank T20033** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.32 NEW	**Tank T20040** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.33 NEW	**Tank T2111** Capacity: 2,300 bbl Type: external floating roof Contents: waste water/slop oil
II.A.34 NEW	**Tank T25108** Capacity: 25,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.35 NEW	**Tank T25109** Capacity: 25,000 bbl Type: external floating roof waste water/slop oil
II.A.36 NEW	**Tank T30020** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.37 NEW	**Tank T30021** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.38 NEW	**Tank T30022** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.39 NEW	**Tank T30023** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.40 NEW	**Tank T30024** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.41 NEW	**Tank T30041** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.42 NEW	**Tank T30042** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.43 NEW	**Tank T30043** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.44 NEW	**Tank T30069** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.45 NEW	**Tank T30074** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.46 NEW	**Tank T30080** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.47 NEW	**Tank T30081** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.48 NEW	**Tank T30082** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.49 NEW	**Tank T30091** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.50 NEW	**Tank T30092** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.51 NEW	**Tank T30096** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.52 NEW	**Tank T30097** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.53 NEW	**Tank T30107** Capacity: 30,000 bbl Type: external floating roof Contents: waste water
II.A.54 NEW	**Tank T3350** Capacity: 5,000 bbl Type: external floating roof Contents: oily sludge
II.A.55 NEW	**Tank T35110** Capacity: 35,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.56 NEW	**Tank T40050** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.57 NEW	**Tank T40051** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.58 NEW	**Tank T40052** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.59 NEW	**Tank T40070** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.60 NEW	**Tank T40071** Capacity: 40,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.61 NEW	**Tank T40072** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.62 NEW	**Tank T40073** Capacity: 40,000 bbl Type: external floating roof Contents: petroleum distillates/gasoline blend components storage
II.A.63 NEW	**Tank T40075** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.64 NEW	**Tank T40076** Capacity: 40,000 bbl Type: external floating roof Contents gasoline/blend components/feedstock storage
II.A.65 NEW	**Tank T40100** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.66 NEW	**Tank T40112** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.67 NEW	**Tank T50078** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.68 NEW	**Tank T50079** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.69 NEW	**Tank T50113** Capacity: 50,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.70 NEW	**Tank T5038** Capacity: 5,000 bbl g Type: external floating roof Contents: slop oil
II.A.71 NEW	**Tank T5083** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.72 NEW	**Tank T5084** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.73 NEW	**Tank T60059** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.74 NEW	**Tank T60060** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.75 NEW	**Tank T60061** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.76 NEW	**Tank T60062** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage tank
II.A.77 NEW	**Tank T60063** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage

II.A.78 NEW	**Tank T60077** Capacity: 60,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.79 NEW	**Tank T60114** Capacity: 60,000 bbl Type: vertical fixed (cone) roof Contents: petroleum distillates storage tank
II.A.80 NEW	**Tanks T60118** Capacity: 60,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.81 NEW	**Tank T90116** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.82 NEW	**Tank T90117** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.83 NEW	**Tank T7513** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage
II.A.84 NEW	**Tank T7514** Capacity: 7,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage tank (not currently in use)
II.A.85 NEW	**Tank T7539** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil
II.A.86 NEW	**Tank T80115** Capacity: 80,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.87 NEW	**Tank T934** Capacity: 900 bbl Type: vertical fixed roof Contents: caustic storage
II.A.88 NEW	**Tank V12684** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.89 NEW	**Tank V12685** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.90 NEW	**Tank V2567** Capacity: 2,500 bbl Type: pressurized sphere Contents: butane
II.A.91 NEW	**Tank V31159** Capacity: 150 bbl Type: horizontal Contents: chemical additive
II.A.92 NEW	**Tank V5064** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.93 NEW	**Tank V5065** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.94 NEW	**Tank V5066** Capacity: 5,000 bbl Type: pressurized sphere Contents: olefin
II.A.95 NEW	**Tank V76801** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.96 NEW	**Tank V76802** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane

II.A.97 NEW	**Tank V76803** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.98 NEW	**Loading Rack** Railcar loading/unloading rack Control: vapor combustor unit

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.B REQUIREMENTS AND LIMITATIONS

II.B.1 NEW	**Site-Wide Requirements**
II.B.1.a NEW	The owner/operator shall not exceed the following as listed under SIP Section IX.H.2.d, and Section IX.H.12.d: A. PM_{10} 0.715 tons per day (tpd) and B. $PM_{2.5}$ 0.305 tons per day (tpd) and~~&~~ 110 tons per rolling 12-month period C. SO_2 1.05 tons per day (tpd) and 383.3 tons per rolling 12-month period D. NO_x 2.1 tons per day (tpd) and 766.5 tons per rolling 12-month period. [SIP Section IX.H.12, SIP Section IX.H.2]
II.B.1.a.1 NEW	Compliance shall be demonstrated as outlined in SIP Section IX.H.2.d and Section IX.H.12.d. [SIP Section IX.H.12, SIP Section IX.H.2]
II.B.2 NEW	**Conditions on Tanks and Wastewater Processes**
II.B.2.a NEW	The owner/operator shall operate the wastewater installation in accordance with the requirements of 40 CFR 61, Subpart FF. [40 CFR 61]
II.B.2.b NEW	The owner/operator shall not exceed a throughput feed rate of 3,000 gpm of process wastewater through the dissolved nitrogen flotation system. [R307-401-8]
II.B.2.b.1 NEW	Compliance shall be demonstrated through a flow meter and recorded in operator logs. [R307-401-8]

Commented [VWLE2]: No later than January 1, 2019, combined emissions of PM2.5 (filterable+condensable) shall not exceed 0.305 tons per day (tpd) and 110 tons per rolling 12-month period.

II.B.2.c NEW	The following storage vessels/tanks are subject to specific federal regulations, which are listed here for convenience. The source must comply with the latest version of the CFR and applicable subparts. Tanks subject to 40 CFR 63, Subparts A and CC: 7514, 10095, 15093, 20017, 20018, 20019, 30020, 30021, 30022, 30024, 30091, 30092, 30096, 30097, 35110, 40075, 40076, 40100, 50078, 50079, 60059, 60077, 80115, 90116, and 90117. Tanks subject to 40 CFR 60, Subparts A and Kb: 1512, 2111, 3350, 7513, 10094, 20017, 20018, 30024, 30092, 30096, 35110, 40100, 50078, 60077, 80115, 90116, 90117 and 7514 Tanks subject to 40 CFR 61, Subpart A and FF: 1511, 1512, 2111, 3350, 5038, 7513, 7514, 7539, 10094, 15103, 15104, 20015, 20016, 25108, 25109, and 30107. [40 CFR 60 Subpart CC, 40 CFR 61 Subpart FF, 40 CFR 63 Subpart Kb, R307-401]
II.B.3 NEW	**Requirements on the Loading Rack**
II.B.3.a NEW	The owner/operator shall operate the crude oil loading rack in accordance with the requirements of 40 CFR 63 Subpart EEEE. The owner/operator shall limit VOC emissions from the crude oil loading rack to 10 milligrams per liter of crude oil. [40 CFR 63 Subpart EEEE, R307-401-8]
II.B.3.a.1 NEW	Compliance with the VOC emission limit shall be demonstrated as outlined in 40 CFR §§ 63.2354 and 63.2362. [40 CFR 63 Subpart EEEE]
II.B.3.b NEW	The owner/operator shall not exceed 10,000 bbls/day of total material loading in the loading rack. Materials include crude oil, desulfurized gas oil (DGO), vacuum gas oil (VGO) or naphtha. [R307-401-8]
II.B.3.b.1 NEW	To demonstrate compliance with the daily limitation the owner/operator shall maintain a log of daily materials loaded. Records shall include the type and volume of material loaded. Records shall be kept for all periods when the plant is in operation. [R307-401-8]

PERMIT HISTORY

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	DAQE-AN101190103-21 dated September 23, 2021
Is Derived From	NOI dated November 2, 2021
Incorporates	Additional Information dated December 15, 2021
Incorporates	Additional information dated June 22, 2022

REVIEWER COMMENTS

1. **Comment regarding Emission Estimates:**
Emission estimates for VOC emissions from the new WWTP tanks were estimated using EPA Emission Estimation Protocol for Petroleum Refineries tables 7-9 and 7-10. The existing PTE, as calculated by the 2013 SIP analysis for the WWTP are 138.1 tpy. The change in equipment will result in a decrease in overall VOC emissions to 128.4 tpy of VOCs (a reduction of 9.7 tons per year). Each DNF will have a capacity of 3,000 gpm however, during normal operations, only one will operate at a time. The RTO is assumed to have a control efficiency of 95%. Benzene emissions were estimated using the average on-site measurement of 4.3 ppm. Emissions for the existing structure were used to determine the change in PTE with this modification. Conditions II.B.1.b and II.B.1.b.1 incorporate the proposed flow rate. [Last updated July 13, 2022]

2. **Comment regarding Condition Updates:**
Condition II.B.2.b incorrectly defined DGO as dissolved gas oil. This was corrected and updated to "desulfurized" gas oil.

Conditions II.B.1.a and II.B.1.a.1 were added to ensure conformity with the SIP emission requirements for the entire facility.

Multiple items within Section II.A and conditions under Section II.B were updated to reflect updated formatting practices. These items are marked as NEW in the left most column of the section. The changes within these conditions are not a change in the intent or limitation, but are highlighted due to the formatting changes.
[Last updated July 13, 2022]

3. **Comment regarding Site-Wide PTE:**
To eliminate any confusion, SIP determined emission caps for PM_{10}, $PM_{2.5}$, NO_x, and SO_2 were added both to the total PTE and under the "Site-Wide Conditions". This modification did not impact or increase emissions of the four SIP monitored pollutants.

[Last updated July 13, 2022]

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds

State of Utah
SPENCER J. COX
Governor
DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality
Kimberly D. Shelley
Executive Director
DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN101190104

March 29, 2022

Serena Yau
Chevron Products Co - SL Refinery
685 South Chevron Way
North Salt Lake, UT 84054
RachelAgnew@chevron.com

Dear Serena Yau,

Re: Engineer Review:
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment
Project Number: N101190104

The DAQ requests a company representative (Title V Responsible Official for enhanced Approval Order application) review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Chevron Products Co - SL Refinery should complete this review within **10 business days** of receipt.

Chevron Products Co - SL Refinery should contact **Sarah Foran** at (385) 306-6724 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email sforan@utah.gov the signed cover letter to Sarah Foran. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an AO for signature by the DAQ Director.

If Chevron Products Co - SL Refinery does not respond to this letter within **10 business days,** the project will move forward without source concurrence. If Chevron Products Co - SL Refinery has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature Serena Yau _____4/4/2022_____
(Signature & Date)

☐ By (Title V responsible official) initialing this box and signing this document, this document serves as an enhanced application and the public comment period will serve as the required comment period for Title V purposes.

The Title V responsible official certifies: based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N101190104
Owner Name	Chevron Products Co - SL Refinery
Mailing Address	685 South Chevron Way North Salt Lake, UT, 84054
Source Name	Chevron Products Co - Salt Lake Refinery
Source Location	2351 N 1100 W Salt Lake City, UT 84116
UTM Projection	422,066 m Easting, 4,519,991 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	2911 (Petroleum Refining)
Source Contact	Rachel Agnew
Phone Number	(801) 539-7264
Email	RachelAgnew@chevron.com
Project Engineer	Sarah Foran, Engineer
Phone Number	(385) 306-6724
Email	sforan@utah.gov
Notice of Intent (NOI) Submitted	November 2, 2021
Date of Accepted Application	January 27, 2022

SOURCE DESCRIPTION

General Description
This Approval Order covers a portion of the Chevron Refinery located in North Salt Lake, Utah. The source consists of storage tanks, pressurized storage vessels, wastewater treatment installations, loading operations, and a vapor combustion unit.

NSR Classification:
Minor Modification at Major Source

Source Classification
Located in Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County SO_2 NAA,
Davis County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
NSPS (Part 60), GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006
NSPS (Part 60), GGGa: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
NSPS (Part 60), QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
NESHAP (Part 61), A: General Provisions
NESHAP (Part 61), FF: National Emission Standard for Benzene Waste Operations
MACT (Part 63), A: General Provisions
MACT (Part 63), CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
MACT (Part 63), EEEE: National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Title V (Part 70) Major Source

Project Proposal
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment

Project Description
Chevron requested a modification to update its existing wastewater treatment plant (WWTP). The update will include transitioning the existing induced air flotation (IAF) units to two (2) new dissolved nitrogen flotation (DNF) units. Additional changes include updated solid and contaminate treatment as well as, increase stormwater capacity. The existing RTO will control these processes. This change will result in a decrease in overall emissions. Additionally, this project will include the replacement of the biological contactors (biodiscs). This modification will result in an increase in oil separation capacity.

Chevron has also requested to update Tank 7514. The existing tank's internal floating roof was damaged beyond repair. Chevron has proposed to bring the tank online as a "slop oil" storage tank with an external floating roof.

EMISSION IMPACT ANALYSIS

The modification does not result in an increase in emissions. Therefore, the emission changes of this project are under the thresholds of R307-410-4 and R307-401-5. Modeling is not required for this project. [Last updated January 28, 2022]

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO_2 Equivalent	0	8552.20
Carbon Monoxide	0	6.40
Nitrogen Oxides	0	2.60
Particulate Matter - PM_{10}	0	0.50
Particulate Matter - $PM_{2.5}$	0	0.50
Sulfur Dioxide	0	1.40
Volatile Organic Compounds	-9.19	297.71

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Benzene (Including Benzene From Gasoline) (CAS #71432)	0	1320
Biphenyl (CAS #92524)	0	2620
Cresols/Cresylic Acid (Isomers And Mixture) (CAS #1319773)	0	1840
Cumene (CAS #98828)	0	2040
Ethyl Benzene (CAS #100414)	0	1800
Hexane (CAS #110543)	0	1460
Naphthalene (CAS #91203)	0	2180
Phenol (CAS #108952)	0	1600
Styrene (CAS #100425)	0	1760
Toluene (CAS #108883)	0	1560
Total HAPs (CAS #THAPS)	0	10
Xylenes (Isomers And Mixture) (CAS #1330207)	0	1800
	Change (TPY)	**Total (TPY)**
Total HAPs	0	10.00

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding WWTP and Storage Tank**

The new WWTP updates result in a decrease in VOC emissions and therefore does not require a BACT analysis evaluation.

VOC emissions from Tank 7514 will increase 0.51 tons per year as a result of the updated material and floating roof change. The existing internal floating roof damaged and unusable. Possible controls for this tank include an internal floating roof (70%), and a flare (95%). The total emissions from the proposed tank are 0.719 tpy. Therefore, additional controls for this tank are cost prohibitive. This tank will be subject to New Source Performance Standards (NSPS) Kb and will adhere to the external floating roof emissions control requirements. The tank will also be subject to the Benzene Waste Operations NESHAP (BWON) requirements which point to the NSPS Kb emissions control requirements. This is BACT for the proposed tank.
[Last updated March 29, 2022]

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-415-6b]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]

I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]
I.8	The owner/operator shall submit documentation of the status of construction or modification of the new tank listed in II.A. 80 to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18]

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.A THE APPROVED EQUIPMENT

II.A.1	**Tanks and WWTP**
II.A.2	**Wastewater Treatment Plant (WWTP)** Wastewater installations Two dissolved nitrogen flotation units (NEW) Capacity: 3,000 gpm (each) Collection box sump Drains (approximately 513) Junction boxes (approximately 88) Dewatering devices Control: Regenerative thermal oxidizer Rotating biological contactors Submerged biological contactors Carbon canister controls
II.A.3	**Tank D09312** Capacity: 750 bbl Type vertical fixed roof Contents: oily sludge
II.A.4	**Tank D21016** Capacity: 50 bbl Type: horizontal Contents: chemical additive

II.A.5	**Tank D61011** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.6	**Tank D61012** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.7	**Tank D61013** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.8	**Tank D61014** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive
II.A.9	**Tank D61045** Capacity: 300 bbl Type: internal floating roof Contents: chemical additive
II.A.10	**Tank T10085** Capacity: 10,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.11	**Tank T10086** Capacity: 10,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.12	**Tank T10094** Capacity: 10,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.13	**Tank T10095** Capacity: 10,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.14	**Tank T15088** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.15	**Tank T15090** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.16	**Tank T15093** Capacity: 15,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.17	**Tank T15098** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.18	**Tank T15099** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.19	**Tank T15103** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.20	**Tank T15104** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.21	**Tank T1511** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.22	**Tank T1512** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.23	**Tank T20015** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil

II.A.24	**Tank T20016** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.25	**Tank T20017** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.26	**Tank T20018** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.27	**Tank T20019** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.28	**Tank T20030** Capacity; 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.29	**Tank T20031** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.30	**Tank T20032** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.31	**Tank T20033** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.32	**Tank T20040** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.33	**Tank T2111** Capacity: 2,300 bbl Type: external floating roof Contents: waste water/slop oil

II.A.34	**Tank T25108** Capacity: 25,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.35	**Tank T25109** Capacity: 25,000 bbl Type: external floating roof waste water/slop oil
II.A.36	**Tank T30020** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.37	**Tank T30021** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.38	**Tank T30022** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.39	**Tank T30023** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.40	**Tank T30024** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.41	**Tank T30041** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.42	**Tank T30042** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.43	**Tank T30043** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.44	**Tank T30069** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.45	**Tank T30074** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.46	**Tank T30080** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.47	**Tank T30081** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.48	**Tank T30082** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.49	**Tank T30091** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.50	**Tank T30092** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.51	**Tank T30096** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.52	**Tank T30097** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.53	**Tank T30107** Capacity: 30,000 bbl Type: external floating roof Contents: waste water

II.A.54	**Tank T3350** Capacity: 5,000 bbl Type: external floating roof Contents: oily sludge
II.A.55	**Tank T35110** Capacity: 35,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.56	**Tank T40050** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.57	**Tank T40051** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.58	**Tank T40052** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.59	**Tank T40070** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.60	**Tank T40071** Capacity: 40,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.61	**Tank T40072** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.62	**Tank T40073** Capacity: 40,000 bbl Type: external floating roof Contents: petroleum distillates/gasoline blend components storage
II.A.63	**Tank T40075** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.64	**Tank T40076** Capacity: 40,000 bbl Type: external floating roof Contents gasoline/blend components/feedstock storage
II.A.65	**Tank T40100** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.66	**Tank T40112** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.67	**Tank T50078** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.68	**Tank T50079** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.69	**Tank T50113** Capacity: 50,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.70	**Tank T5038** Capacity: 5,000 bbl g Type: external floating roof Contents: slop oil
II.A.71	**Tank T5083** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.72	**Tank T5084** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.73	**Tank T60059** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage

II.A.74	**Tank T60060** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.75	**Tank T60061** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.76	**Tank T60062** Capacity: 60,000 bbl Type: external floating roof crude oil storage tank
II.A.77	**Tank T60063** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.78	**Tank T60077** Capacity: 60,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.79	**Tank T60114** Capacity: 60,000 bbl Type: vertical fixed (cone) roof petroleum distillates storage tank
II.A.80	**Tanks T60118** Capacity: 60,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.81	**Tank T90116** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.82	**Tank T90117** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.83	**Tank T7513** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage

II.A.84	**Tank T7514 (NEW)** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage
II.A.85	**Tank T7539** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil
II.A.86	**Tank T80115** Capacity: 80,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.87	**Tank T934** Capacity: 900 bbl Type: vertical fixed roof Contents: caustic storage
II.A.88	**Tank V12684** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.89	**Tank V12685** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.90	**Tank V2567** Capacity: 2,500 bbl Type: pressurized sphere Contents: butane
II.A.91	**Tank V31159** Capacity: 150 bbl Type: horizontal Contents: chemical additive
II.A.92	**Tank V5064** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.93	**Tank V5065** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane

II.A.94	**Tank V5066** Capacity: 5,000 bbl Type: pressurized sphere Contents: olefin
II.A.95	**Tank V76801** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.96	**Tank V76802** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.97	**Tank V76803** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.98	**Loading Rack** Railcar loading/unloading rack Control: vapor combustor unit

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	**Conditions on Tanks and Wastewater Processes**
II.B.1.a	The owner/operator shall operate the wastewater installation in accordance with the requirements of 40 CFR 61, Subpart FF. [40 CFR 61]
II.B.1.b NEW	The owner/operator shall not exceed a throughput feed rate of 3,000 gpm of process wastewater through the dissolved nitrogen flotation system. [R307-401-8]
II.B.1.b.1 NEW	Compliance shall be demonstrated through a flow meter and recorded in operator logs. [R307-401-8]

II.B.1.c NEW	The following storage vessels/tanks are subject to specific federal regulations, which are listed here for convenience. The source must comply with the latest version of the CFR and applicable subparts. Tanks subject to 40 CFR 63, Subparts A and CC: 10095, 15093, 20017, 20018, 20019, 30020, 30021, 30022, 30024, 30091, 30092, 30096, 30097, 35110, 40075, 40076, 40100, 50078, 50079, 60059, 60077, 80115, 90116, and 90117. Tanks subject to 40 CFR 60, Subparts A and Kb: 1512, 2111, 3350, 7513, 7514, 10094, 20017, 20018, 30024, 30092, 30096, 35110, 40100, 50078, 60077, 80115, 90116, 90117 and 7514 Tanks subject to 40 CFR 61, Subpart A and FF: 1511, 1512, 2111, 3350, 5038, 7513, 7514, 7539, 10094, 15103, 15104, 20015, 20016, 25108, 25109, and 30107. [R307-401-8]
II.B.2	**Requirements on the Loading Rack**
II.B.2.a	The owner/operator shall operate the crude oil loading rack in accordance with the requirements of 40 CFR 63 Subpart EEEE. The owner/operator shall limit VOC emissions from the crude oil loading rack to 10 milligrams per liter of crude oil. [40 CFR 63 Subpart EEEE, R307-401-8]
II.B.2.a.1	Compliance with the VOC emission limit shall be demonstrated as outlined in 40 CFR §§ 63.2354 and 63.2362. [40 CFR 63 Subpart EEEE]
II.B.2.b NEW	The owner/operator shall not exceed 10,000 bbls/day of total material loading in the loading rack. Materials include crude oil, desulfurized gas oil (DGO), vacuum gas oil (VGO) or naphtha. [R307-401-8]
II.B.2.b.1	To demonstrate compliance with the daily limitation the owner/operator shall maintain a log of daily materials loaded. Records shall include the type and volume of material loaded. Records shall be kept for all periods when the plant is in operation. [R307-401-8]

PERMIT HISTORY

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	DAQE-AN101190103-21 dated September 23, 2021
Is Derived From	NOI dated November 2, 2021
Incorporates	Additional Information dated December 15, 2021

REVIEWER COMMENTS

1. **Comment regarding Emission Estimates:**
Emission estimates for VOC emissions from the new WWTP tanks were estimated using EPA Emission Estimation Protocol for Petroleum Refineries tables 7-9 and 7-10. The existing PTE, as calculated by the 2013 SIP analysis for the WWTP are 138.1 tpy. The change in equipment will result in a decrease in overall VOC emissions to 128.4 tpy of VOCs. The design throughput of 3,000 gallons per minute (gpm). Each DNF will have a capacity of 3,000 gpm however, during normal operations, only one will operate at a time. The RTO is assumed to have a control efficiency of 95%. Benzene emissions were estimated using the average on-site measurement of 4.3 ppm. Emissions for the existing structure were used to determine the change in PTE with this modification. . Conditions II.B.1.b and II.B.1.b.1 incorporate the proposed flow rate. [Last updated March 29, 2022]

2. **Comment regarding Condition Updates:**
Condition II.B.2.b incorrectly defined DGO as dissolved gas oil. This was corrected and updated to "desulfurized" gas oil.
[Last updated February 28, 2022]

3. **Comment regarding NSPS Applicability:**
Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Tank 7514 is subject to the requirements of NSPS Subpart Kb. [Last updated January 28, 2022]

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds

State of Utah
SPENCER J. COX
Governor
DEIDRE HENDERSON
Lieutenant Governor

Department of
Environmental Quality
Kimberly D. Shelley
Executive Director
DIVISION OF AIR QUALITY
Bryce C. Bird
Director

RN101190104

March 29, 2022

Serena Yau
Chevron Products Co - SL Refinery
685 South Chevron Way
North Salt Lake, UT 84054
RachelAgnew@chevron.com

Dear Serena Yau,

Re: Engineer Review:
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment
Project Number: N101190104

The DAQ requests a company representative (Title V Responsible Official for enhanced Approval Order application) review and sign the attached Engineer Review (ER). This ER identifies all applicable elements of the New Source Review permitting program. Chevron Products Co - SL Refinery should complete this review within **10 business days** of receipt.

Chevron Products Co - SL Refinery should contact **Sarah Foran** at (385) 306-6724 if there are questions or concerns with the review of the draft permit conditions. Upon resolution of your concerns, please email sforan@utah.gov the signed cover letter to Sarah Foran. Upon receipt of the signed cover letter, the DAQ will prepare an ITA for a 30-day public comment period. At the completion of the comment period, the DAQ will address any comments and will prepare an AO for signature by the DAQ Director.

If Chevron Products Co - SL Refinery does not respond to this letter within **10 business days,** the project will move forward without source concurrence. If Chevron Products Co - SL Refinery has concerns that cannot be resolved and the project becomes stagnant, the DAQ Director may issue an Order prohibiting construction.

Approval Signature _____
(Signature & Date)

☐ By (Title V responsible official) initialing this box and signing this document, this document serves as an enhanced application and the public comment period will serve as the required comment period for Title V purposes.

The Title V responsible official certifies: based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

UTAH DIVISION OF AIR QUALITY
ENGINEER REVIEW

SOURCE INFORMATION

Project Number	N101190104
Owner Name	Chevron Products Co - SL Refinery
Mailing Address	685 South Chevron Way North Salt Lake, UT, 84054
Source Name	Chevron Products Co - Salt Lake Refinery
Source Location	2351 N 1100 W Salt Lake City, UT 84116
UTM Projection	422,066 m Easting, 4,519,991 m Northing
UTM Datum	NAD83
UTM Zone	UTM Zone 12
SIC Code	2911 (Petroleum Refining)
Source Contact	Rachel Agnew
Phone Number	(801) 539-7264
Email	RachelAgnew@chevron.com
Project Engineer	Sarah Foran, Engineer
Phone Number	(385) 306-6724
Email	sforan@utah.gov
Notice of Intent (NOI) Submitted	November 2, 2021
Date of Accepted Application	January 27, 2022

SOURCE DESCRIPTION

General Description
This Approval Order covers a portion of the Chevron Refinery located in North Salt Lake, Utah. The source consists of storage tanks, pressurized storage vessels, wastewater treatment installations, loading operations, and a vapor combustion unit.

NSR Classification:
Minor Modification at Major Source

Source Classification
Located in Northern Wasatch Front O3 NAA, Salt Lake City UT $PM_{2.5}$ NAA, Salt Lake County SO_2 NAA,
Davis County
Airs Source Size: A

Applicable Federal Standards
NSPS (Part 60), A: General Provisions
NSPS (Part 60), Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984
NSPS (Part 60), GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006
NSPS (Part 60), GGGa: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006
NSPS (Part 60), QQQ: Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems
NESHAP (Part 61), A: General Provisions
NESHAP (Part 61), FF: National Emission Standard for Benzene Waste Operations
MACT (Part 63), A: General Provisions
MACT (Part 63), CC: National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries
MACT (Part 63), EEEE: National Emission Standards for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline)
Title V (Part 70) Major Source

Project Proposal
Modification to DAQE-AN101190103-21 dated September 23, 2021 Tanks AO to Update Equipment

Project Description
Chevron requested a modification to update its existing wastewater treatment plant (WWTP). The update will include transitioning the existing induced air flotation (IAF) units to two (2) new dissolved nitrogen flotation (DNF) units. Additional changes include updated solid and contaminate treatment as well as, increase stormwater capacity. The existing RTO will control these processes. This change will result in a decrease in overall emissions. Additionally, this project will include the replacement of the biological contactors (biodiscs). This modification will result in an increase in oil separation capacity.

Chevron has also requested to update Tank 7514. The existing tank's internal floating roof was damaged beyond repair. Chevron has proposed to bring the tank online as a "slop oil" storage tank with an external floating roof.

EMISSION IMPACT ANALYSIS

The modification does not result in an increase in emissions. Therefore, the emission changes of this project are under the thresholds of R307-410-4 and R307-401-5. Modeling is not required for this project. [Last updated January 28, 2022]

SUMMARY OF EMISSIONS

The emissions listed below are an estimate of the total potential emissions from the source. Some rounding of emissions is possible.

Criteria Pollutant	Change (TPY)	Total (TPY)
CO_2 Equivalent	0	8552.20
Carbon Monoxide	0	6.40
Nitrogen Oxides	0	2.60
Particulate Matter - PM_{10}	0	0.50
Particulate Matter - $PM_{2.5}$	0	0.50
Sulfur Dioxide	0	1.40
Volatile Organic Compounds	-9.19	297.71

Hazardous Air Pollutant	Change (lbs/yr)	Total (lbs/yr)
Benzene (Including Benzene From Gasoline) (CAS #71432)	0	1320
Biphenyl (CAS #92524)	0	2620
Cresols/Cresylic Acid (Isomers And Mixture) (CAS #1319773)	0	1840
Cumene (CAS #98828)	0	2040
Ethyl Benzene (CAS #100414)	0	1800
Hexane (CAS #110543)	0	1460
Naphthalene (CAS #91203)	0	2180
Phenol (CAS #108952)	0	1600
Styrene (CAS #100425)	0	1760
Toluene (CAS #108883)	0	1560
Total HAPs (CAS #THAPS)	0	10
Xylenes (Isomers And Mixture) (CAS #1330207)	0	1800
	Change (TPY)	**Total (TPY)**
Total HAPs	0	10.00

Note: Change in emissions indicates the difference between previous AO and proposed modification.

Review of BACT for New/Modified Emission Units

1. **BACT review regarding WWTP and Storage Tank**

The new WWTP updates result in a decrease in VOC emissions and therefore does not require a BACT analysis evaluation.

VOC emissions from Tank 7514 will increase 0.51 tons per year as a result of the updated material and floating roof change. The existing internal floating roof damaged and unusable. Possible controls for this tank include an internal floating roof (70%), and a flare (95%). The total emissions from the proposed tank are 0.719 tpy. Therefore, additional controls for this tank are cost prohibitive. This tank will be subject to New Source Performance Standards (NSPS) Kb and will adhere to the external floating roof emissions control requirements. The tank will also be subject to the Benzene Waste Operations NESHAP (BWON) requirements which point to the NSPS Kb emissions control requirements. This is BACT for the proposed tank.
[Last updated March 29, 2022]

SECTION I: GENERAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

I.1	All definitions, terms, abbreviations, and references used in this AO conform to those used in the UAC R307 and 40 CFR. Unless noted otherwise, references cited in these AO conditions refer to those rules. [R307-101]
I.2	The limits set forth in this AO shall not be exceeded without prior approval. [R307-401]
I.3	Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be reviewed and approved. [R307-401-1]
I.4	All records referenced in this AO or in other applicable rules, which are required to be kept by the owner/operator, shall be made available to the Director or Director's representative upon request, and the records shall include the two-year period prior to the date of the request. Unless otherwise specified in this AO or in other applicable state and federal rules, records shall be kept for a minimum of five (5) years. [R307-415-6b]
I.5	At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this AO, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Director which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded. [R307-401-4]

I.6	The owner/operator shall comply with UAC R307-107. General Requirements: Breakdowns. [R307-107]
I.7	The owner/operator shall comply with UAC R307-150 Series. Emission Inventories. [R307-150]
I.8	The owner/operator shall submit documentation of the status of construction or modification of the new tank listed in II.A. 80 to the Director within 18 months from the date of this AO. This AO may become invalid if construction is not commenced within 18 months from the date of this AO or if construction is discontinued for 18 months or more. To ensure proper credit when notifying the Director, send the documentation to the Director, attn.: NSR Section. [R307-401-18]

SECTION II: PERMITTED EQUIPMENT

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.A THE APPROVED EQUIPMENT

II.A.1	**Tanks and WWTP**
II.A.2	**Wastewater Treatment Plant (WWTP)** Wastewater installations Two dissolved nitrogen flotation units (NEW) Capacity: 3,000 gpm (each) Collection box sump Drains (approximately 513) Junction boxes (approximately 88) Dewatering devices Control: Regenerative thermal oxidizer Rotating biological contactors Submerged biological contactors Carbon canister controls
II.A.3	**Tank D09312** Capacity: 750 bbl Type vertical fixed roof Contents: oily sludge
II.A.4	**Tank D21016** Capacity: 50 bbl Type: horizontal Contents: chemical additive

II.A.5	**Tank D61011** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.6	**Tank D61012** Capacity: 50 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.7	**Tank D61013** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive tank (not currently in use)
II.A.8	**Tank D61014** Capacity: 500 bbl Type: vertical fixed roof Contents: chemical additive
II.A.9	**Tank D61045** Capacity: 300 bbl Type: internal floating roof Contents: chemical additive
II.A.10	**Tank T10085** Capacity: 10,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.11	**Tank T10086** Capacity: 10,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.12	**Tank T10094** Capacity: 10,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.13	**Tank T10095** Capacity: 10,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.14	**Tank T15088** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.15	**Tank T15090** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.16	**Tank T15093** Capacity: 15,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.17	**Tank T15098** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.18	**Tank T15099** Capacity: 15,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.19	**Tank T15103** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.20	**Tank T15104** Capacity: 15,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.21	**Tank T1511** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.22	**Tank T1512** Capacity: 1,500 bbl Type: external floating roof Contents: caustic storage
II.A.23	**Tank T20015** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil

II.A.24	**Tank T20016** Capacity: 20,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.25	**Tank T20017** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.26	**Tank T20018** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.27	**Tank T20019** Capacity: 20,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.28	**Tank T20030** Capacity; 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.29	**Tank T20031** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.30	**Tank T20032** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.31	**Tank T20033** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.32	**Tank T20040** Capacity: 20,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.33	**Tank T2111** Capacity: 2,300 bbl Type: external floating roof Contents: waste water/slop oil

II.A.34	**Tank T25108** Capacity: 25,000 bbl Type: external floating roof Contents: waste water/slop oil
II.A.35	**Tank T25109** Capacity: 25,000 bbl Type: external floating roof waste water/slop oil
II.A.36	**Tank T30020** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.37	**Tank T30021** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.38	**Tank T30022** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.39	**Tank T30023** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.40	**Tank T30024** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.41	**Tank T30041** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.42	**Tank T30042** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.43	**Tank T30043** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates

II.A.44	**Tank T30069** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.45	**Tank T30074** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.46	**Tank T30080** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.47	**Tank T30081** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.48	**Tank T30082** Capacity: 30,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.49	**Tank T30091** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.50	**Tank T30092** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.51	**Tank T30096** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.52	**Tank T30097** Capacity: 30,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.53	**Tank T30107** Capacity: 30,000 bbl Type: external floating roof Contents: waste water

II.A.54	**Tank T3350** Capacity: 5,000 bbl Type: external floating roof Contents: oily sludge
II.A.55	**Tank T35110** Capacity: 35,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.56	**Tank T40050** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.57	**Tank T40051** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.58	**Tank T40052** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.59	**Tank T40070** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.60	**Tank T40071** Capacity: 40,000 bbl Type: vertical fixed roof petroleum Contents: distillates
II.A.61	**Tank T40072** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.62	**Tank T40073** Capacity: 40,000 bbl Type: external floating roof Contents: petroleum distillates/gasoline blend components storage
II.A.63	**Tank T40075** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage

II.A.64	**Tank T40076** Capacity: 40,000 bbl Type: external floating roof Contents gasoline/blend components/feedstock storage
II.A.65	**Tank T40100** Capacity: 40,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.66	**Tank T40112** Capacity: 40,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.67	**Tank T50078** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.68	**Tank T50079** Capacity: 50,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.69	**Tank T50113** Capacity: 50,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.70	**Tank T5038** Capacity: 5,000 bbl g Type: external floating roof Contents: slop oil
II.A.71	**Tank T5083** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.72	**Tank T5084** Capacity: 5,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.73	**Tank T60059** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage

II.A.74	**Tank T60060** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.75	**Tank T60061** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.76	**Tank T60062** Capacity: 60,000 bbl Type: external floating roof crude oil storage tank
II.A.77	**Tank T60063** Capacity: 60,000 bbl Type: external floating roof Contents: crude oil storage
II.A.78	**Tank T60077** Capacity: 60,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.79	**Tank T60114** Capacity: 60,000 bbl Type: vertical fixed (cone) roof petroleum distillates storage tank
II.A.80	**Tanks T60118** Capacity: 60,000 bbl Type: vertical fixed roof Contents: petroleum distillates
II.A.81	**Tank T90116** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.82	**Tank T90117** Capacity: 90,000 bbl Type: external floating roof Contents: crude oil storage
II.A.83	**Tank T7513** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage

II.A.84	**Tank T7514 (NEW)** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil service storage
II.A.85	**Tank T7539** Capacity: 7,000 bbl Type: external floating roof Contents: slop oil
II.A.86	**Tank T80115** Capacity: 80,000 bbl Type: external floating roof Contents: gasoline/blend components/feedstock storage
II.A.87	**Tank T934** Capacity: 900 bbl Type: vertical fixed roof Contents: caustic storage
II.A.88	**Tank V12684** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.89	**Tank V12685** Capacity: 1,300 bbl Type: horizontal pressure vessel Contents: propane
II.A.90	**Tank V2567** Capacity: 2,500 bbl Type: pressurized sphere Contents: butane
II.A.91	**Tank V31159** Capacity: 150 bbl Type: horizontal Contents: chemical additive
II.A.92	**Tank V5064** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane
II.A.93	**Tank V5065** Capacity: 5,000 bbl Type: pressurized sphere Contents: butane

II.A.94	**Tank V5066** Capacity: 5,000 bbl Type: pressurized sphere Contents: olefin
II.A.95	**Tank V76801** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.96	**Tank V76802** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.97	**Tank V76803** Capacity: 650 bbl Type: horizontal pressure vessel Contents: propane
II.A.98	**Loading Rack** Railcar loading/unloading rack Control: vapor combustor unit

SECTION II: SPECIAL PROVISIONS

The intent is to issue an air quality AO authorizing the project with the following recommended conditions and that failure to comply with any of the conditions may constitute a violation of the AO. **(New or Modified conditions are indicated as "New" in the Outline Label):**

II.B REQUIREMENTS AND LIMITATIONS

II.B.1	**Conditions on Tanks and Wastewater Processes**
II.B.1.a	The owner/operator shall operate the wastewater installation in accordance with the requirements of 40 CFR 61, Subpart FF. [40 CFR 61]
II.B.1.b NEW	The owner/operator shall not exceed a throughput feed rate of 3,000 gpm of process wastewater through the dissolved nitrogen flotation system. [R307-401-8]
II.B.1.b.1 NEW	Compliance shall be demonstrated through a flow meter and recorded in operator logs. [R307-401-8]

II.B.1.c NEW	The following storage vessels/tanks are subject to specific federal regulations, which are listed here for convenience. The source must comply with the latest version of the CFR and applicable subparts. Tanks subject to 40 CFR 63, Subparts A and CC: 10095, 15093, 20017, 20018, 20019, 30020, 30021, 30022, 30024, 30091, 30092, 30096, 30097, 35110, 40075, 40076, 40100, 50078, 50079, 60059, 60077, 80115, 90116, and 90117. Tanks subject to 40 CFR 60, Subparts A and Kb: 1512, 2111, 3350, 7513, 7514, 10094, 20017, 20018, 30024, 30092, 30096, 35110, 40100, 50078, 60077, 80115, 90116, 90117 and 7514 Tanks subject to 40 CFR 61, Subpart A and FF: 1511, 1512, 2111, 3350, 5038, 7513, 7514, 7539, 10094, 15103, 15104, 20015, 20016, 25108, 25109, and 30107. [R307-401-8]
II.B.2	**Requirements on the Loading Rack**
II.B.2.a	The owner/operator shall operate the crude oil loading rack in accordance with the requirements of 40 CFR 63 Subpart EEEE. The owner/operator shall limit VOC emissions from the crude oil loading rack to 10 milligrams per liter of crude oil. [40 CFR 63 Subpart EEEE, R307-401-8]
II.B.2.a.1	Compliance with the VOC emission limit shall be demonstrated as outlined in 40 CFR §§ 63.2354 and 63.2362. [40 CFR 63 Subpart EEEE]
II.B.2.b NEW	The owner/operator shall not exceed 10,000 bbls/day of total material loading in the loading rack. Materials include crude oil, desulfurized gas oil (DGO), vacuum gas oil (VGO) or naphtha. [R307-401-8]
II.B.2.b.1	To demonstrate compliance with the daily limitation the owner/operator shall maintain a log of daily materials loaded. Records shall include the type and volume of material loaded. Records shall be kept for all periods when the plant is in operation. [R307-401-8]

PERMIT HISTORY

When issued, the approval order shall supersede (if a modification) or will be based on the following documents:

Supersedes	DAQE-AN101190103-21 dated September 23, 2021
Is Derived From	NOI dated November 2, 2021
Incorporates	Additional Information dated December 15, 2021

REVIEWER COMMENTS

1. **Comment regarding Emission Estimates:**
Emission estimates for VOC emissions from the new WWTP tanks were estimated using EPA Emission Estimation Protocol for Petroleum Refineries tables 7-9 and 7-10. The existing PTE, as calculated by the 2013 SIP analysis for the WWTP are 138.1 tpy. The change in equipment will result in a decrease in overall VOC emissions to 128.4 tpy of VOCs. The design throughput of 3,000 gallons per minute (gpm). Each DNF will have a capacity of 3,000 gpm however, during normal operations, only one will operate at a time. The RTO is assumed to have a control efficiency of 95%. Benzene emissions were estimated using the average on-site measurement of 4.3 ppm. Emissions for the existing structure were used to determine the change in PTE with this modification. . Conditions II.B.1.b and II.B.1.b.1 incorporate the proposed flow rate. [Last updated March 29, 2022]

2. **Comment regarding Condition Updates:**
Condition II.B.2.b incorrectly defined DGO as dissolved gas oil. This was corrected and updated to "desulfurized" gas oil.
[Last updated February 28, 2022]

3. **Comment regarding NSPS Applicability:**
Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Tank 7514 is subject to the requirements of NSPS Subpart Kb. [Last updated January 28, 2022]

ACRONYMS

The following lists commonly used acronyms and associated translations as they apply to this document:

40 CFR	Title 40 of the Code of Federal Regulations
AO	Approval Order
BACT	Best Available Control Technology
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CDS	Classification Data System (used by EPA to classify sources by size/type)
CEM	Continuous emissions monitor
CEMS	Continuous emissions monitoring system
CFR	Code of Federal Regulations
CMS	Continuous monitoring system
CO	Carbon monoxide
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide Equivalent - 40 CFR Part 98, Subpart A, Table A-1
COM	Continuous opacity monitor
DAQ/UDAQ	Division of Air Quality
DAQE	This is a document tracking code for internal UDAQ use
EPA	Environmental Protection Agency
FDCP	Fugitive dust control plan
GHG	Greenhouse Gas(es) - 40 CFR 52.21 (b)(49)(i)
GWP	Global Warming Potential - 40 CFR Part 86.1818-12(a)
HAP or HAPs	Hazardous air pollutant(s)
ITA	Intent to Approve
LB/HR	Pounds per hour
LB/YR	Pounds per year
MACT	Maximum Achievable Control Technology
MMBTU	Million British Thermal Units
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOI	Notice of Intent
NO_x	Oxides of nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
PM_{10}	Particulate matter less than 10 microns in size
$PM_{2.5}$	Particulate matter less than 2.5 microns in size
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
R307	Rules Series 307
R307-401	Rules Series 307 - Section 401
SO_2	Sulfur dioxide
Title IV	Title IV of the Clean Air Act
Title V	Title V of the Clean Air Act
TPY	Tons per year
UAC	Utah Administrative Code
VOC	Volatile organic compounds

Chevron Products Company
Salt Lake Refinery

Notice of Intent Amendment for Tank 7514

December 15, 2021

Submitted to:

Utah Division of Air Quality
195 North 1950 West
Salt Lake City, Utah

Introduction and Overview

This Notification of Intent ("NOI") amendment is for bringing Tank 7514 back into service. The tank was taken out of service in 2015. The tank used to store aviation gasoline ("avgas"), but Chevron Salt Lake Refinery stopped making avgas around 2014. Chevron plans to bring the tank back into service in late 2022 to store slop oil.

This NOI amends the NOI Chevron submitted November 2, 2021, which was for wastewater treatment plant (WWTP) upgrades. Both the WWTP and storage tanks are under one Approval Order: DAQE-AN101190100-21. Chevron submitted the $2,700 permit fee for the WWTP upgrades and this NOI amendment on December 7, 2021.

Source Identification Information

The Salt Lake Refinery is a major source for Prevention of Significant Deterioration (PSD) purposes. The area is designation non-attainment for 8-hour ozone, SO2 (1971), and PM2.5 (2006), but a redesignation to attainment for PM2.5 is in progress. The refinery does not yet have a Title V permit.

Detailed Description of Project

I.1 Project Description, fuels, raw materials, equipment, and operating rates

Tank 7514 is already listed in the Refinery's Approval Order in section II.A as a "gasoline/blend components/feedstock storage tank." It was originally constructed in 1950 as an external floating roof tank (double deck). It is a 7,000-barrel (bbl) tank. The tank was converted to an internal floating roof (IFR) in 2005. When the tank was taken out of service in 2015, we found that the internal floating roof was jammed inside the tank shell and work was paused for safety reasons. Chevron then removed the cone roof in order to safely float the roof and lower it to the bottom of the tank. This is how the tank remains today (i.e. there is no cone top).

The purpose of this NOI is to put the tank back into service as an external floating roof tank, used to store slop oil. We expect the throughput to be similar to existing tank 7513, which is identical in size and also stores slop oil.

I.2 Site Plan

A Site Plan is included in this amendment. Tank 7514 is circled in red.

Emissions Related Information

The pollutant of concern from Tank 7514 is volatile organic compounds (VOC). Since tank 7514 was always capable of storing slop oil, the PTE change is determined by comparing emissions from an IFR to an EFR. The result is an increase in PTE of **1,017 pounds, or 0.51 tons VOC per year**. A spreadsheet including the PTE calculations was provided to UDAQ electronically as part of this NOI amendment.

Table 1: Tank 7514 VOC PTE Summary

	External Floating Roof Storing Slop Oil[2]	Internal Floating Roof Storing Slop Oil[3]	PTE Change
Year[4]	VOC (lb)	VOC (lb)	VOC (lb)
2020	1438	421	**1017**
2019	1063	407	656

Notes:

1. Tanks 7513 and 7514 are identical in size.

2. The External Floating Roof calculations are based on actual Tank 7513 (an external floating roof tank storing slop oil) emissions from 2019 and 2020.

3. The Internal Floating Roof calculations are calculated using TankESP assuming Tank 7513 was converted to an internal floating roof tank.

4. Only emissions from 2019 and 2020 were considered because we calculated VOC emissions differently in 2018 and prior years; so using those years would not be an apples-to-apples comparison.

BACT Analysis

This tank will be subject to New Source Performance Standards (NSPS) Kb and will therefore adhere to the external floating roof emissions control requirements. The tank will also be subject to the Benzene Waste Operations NESHAP (BWON) requirements which point to the NSPS Kb emissions control requirements. Compliance with these federal rulemakings constitutes BACT. Chevron searched EPA's RACT/BACT/LAER Clearinghouse on December 14, 2021 and found several instances where an external floating roof tank, or specifically an EFR meeting NSPS Kb, was found to be BACT.

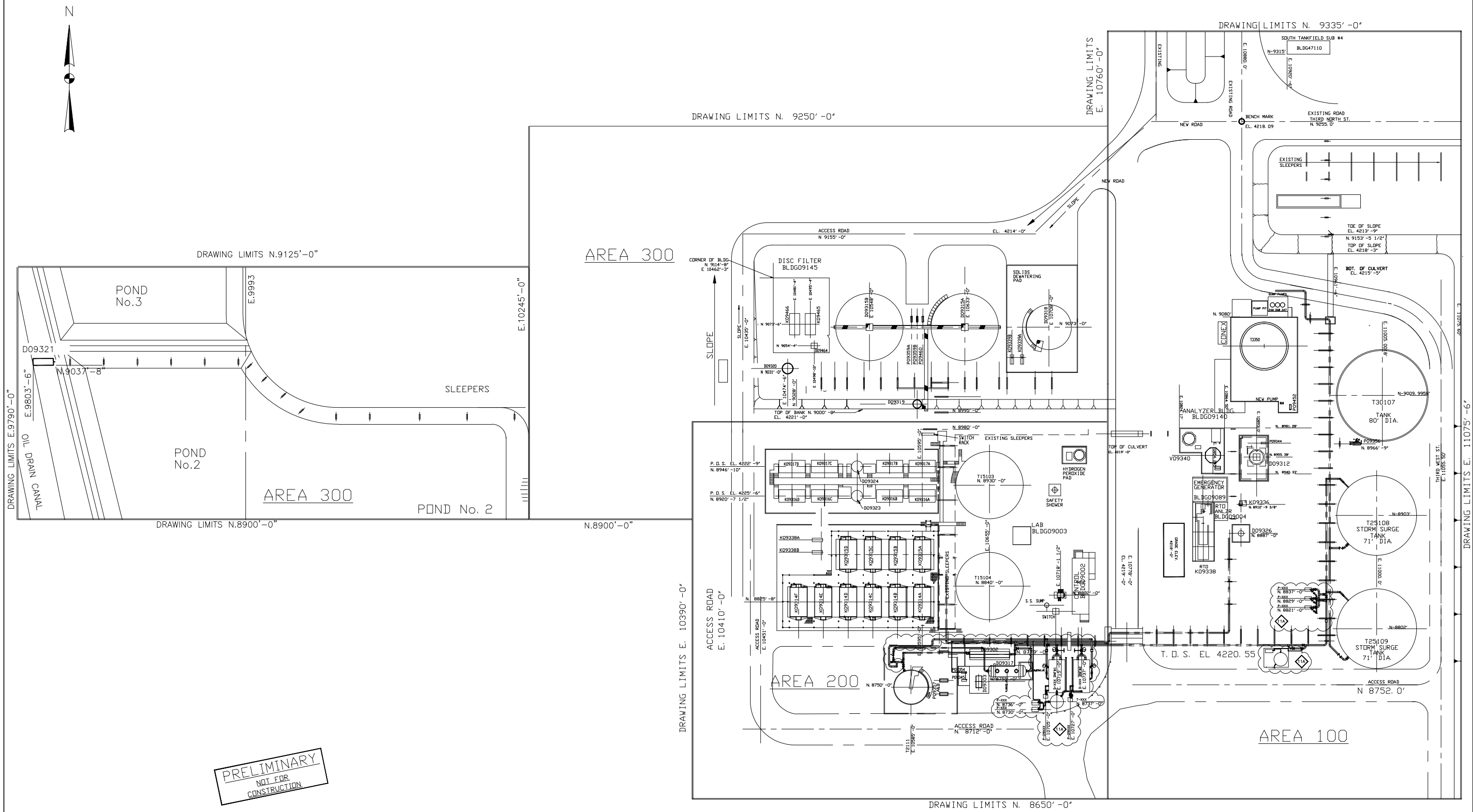
Emissions Impact Analysis

In accordance with Utah rule R307-410-5(1)(a)(i), documentation of ambient air impacts is not required because the tank is subject to a NESHAP rule: BWON.

Red-line Markup of Approval Order

Chevron suggests the following modifications to our Approval Order.

II.A.84 **T7514**
7,000 bbl ~~internal~~ external floating roof ~~gasoline/blend components/feedstock~~ slop oil service storage tank



PRELIMINARY
NOT FOR CONSTRUCTION

N:\2245001\2450001

REFERENCE DRAWINGS			
PLOT PLAN AREA 100	SD-09-20009		
PLOT PLAN AREA 200	SD-09-24862		
PLOT PLAN AREA 300	SD-09-24863		

REVISIONS									
12	ISSUED FOR REVIEW AND COMMENT IAF REPLACEMENT PROJECT FEED PACKAGE 04/XX/20	KS		XX	10	ADDED DISK FILTER BUILDING WITH DISK FILTER UNITS MOC#20155477 10/31/16	ERBR		STFA
		JA					DIAR		
09	ADDED HYDROGEN PAD & SAFETY SHOWER PER D. SEQUEIRA SLR 29143 08/07/12	RLT		SKB	11	ADDED CONEX BOX AND BUILDING PER FIELD WALK 3/22/18	EGJU		KHBQ
		DS							

Brown and Caldwell
HOUSTON, TEXAS

Chevron Products Company
Salt Lake City Refinery

SCALE 1"=40' DATE 3\08\94
DR. MDA CH. _____ DR. APP. _____ ENGR. _____
OPR'G DEPT. _____ ENG. DEPT. _____
APPROVED

SALT LAKE REFINERY
PLOT PLAN
WASTE WATER TREATMENT
PLANT-09

A | C. C. _____ | S. D. _____ | SD-09-24861-11A

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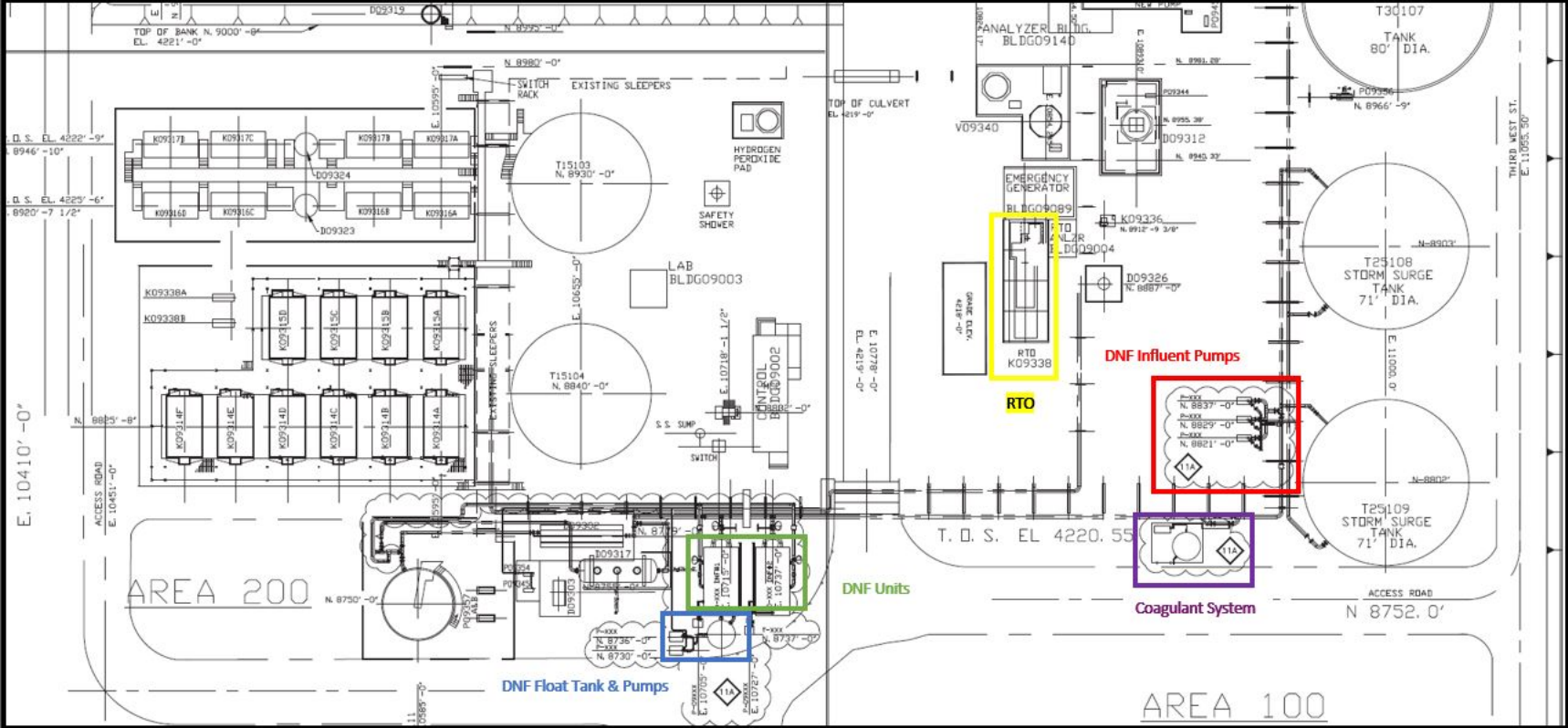

DNF Influent Pumps
RTO
DNF Units
Coagulant System
DNF Float Tank & Pumps
AREA 200
AREA 100
T. O. S. EL 4220. 55
N 8752. 0'
ACCESS ROAD
E. 10410' -0"
EXISTING SLEEPERS
SWITCH RACK
HYDROGEN PEROXIDE PAD
SAFETY SHOWER
LAB BLDG09003
CONTROL BLDG09002
ANALYZER BLDG. BLDG09140
EMERGENCY GENERATOR BLDG09089
RTO K09338
T30107 TANK 80' DIA.
T25108 STORM SURGE TANK 71' DIA.
T25109 STORM SURGE TANK 71' DIA.
T15103 N. 8930' -0"
T15104 N. 8840' -0"
V09340
D09312
D09326
D09324
D09323
D09317
D09303
K09338A
K09338B
K09315D
K09315C
K09315B
K09315A
K09314F
K09314E
K09314D
K09314C
K09314B
K09314A
K09317D
K09317C
K09317B
K09317A
K09316D
K09316C
K09316B
K09316A
TOP OF BANK N. 9000' -8"
EL. 4221' -0"
TOP OF CULVERT
EL. 4219' -0"
THIRD WEST ST.
E. 11055. 50'
E. 11000. 0'
E. 10778' -0"
EL. 4219' -0"
E. 10655' -0"
E. 10595' -0"
E. 10718' -1 1/2"
E. 10737' -0"
E. 10727' -0"
E. 10705' -0"
E. 10451' -0"
N. 8995' -0"
N. 8980' -0"
N. 8966' -9"
N. 8903'
N. 8802'
N. 8825' -8"
N. 8750' -0"
N. 8837' -0"
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N. 8821' -0"
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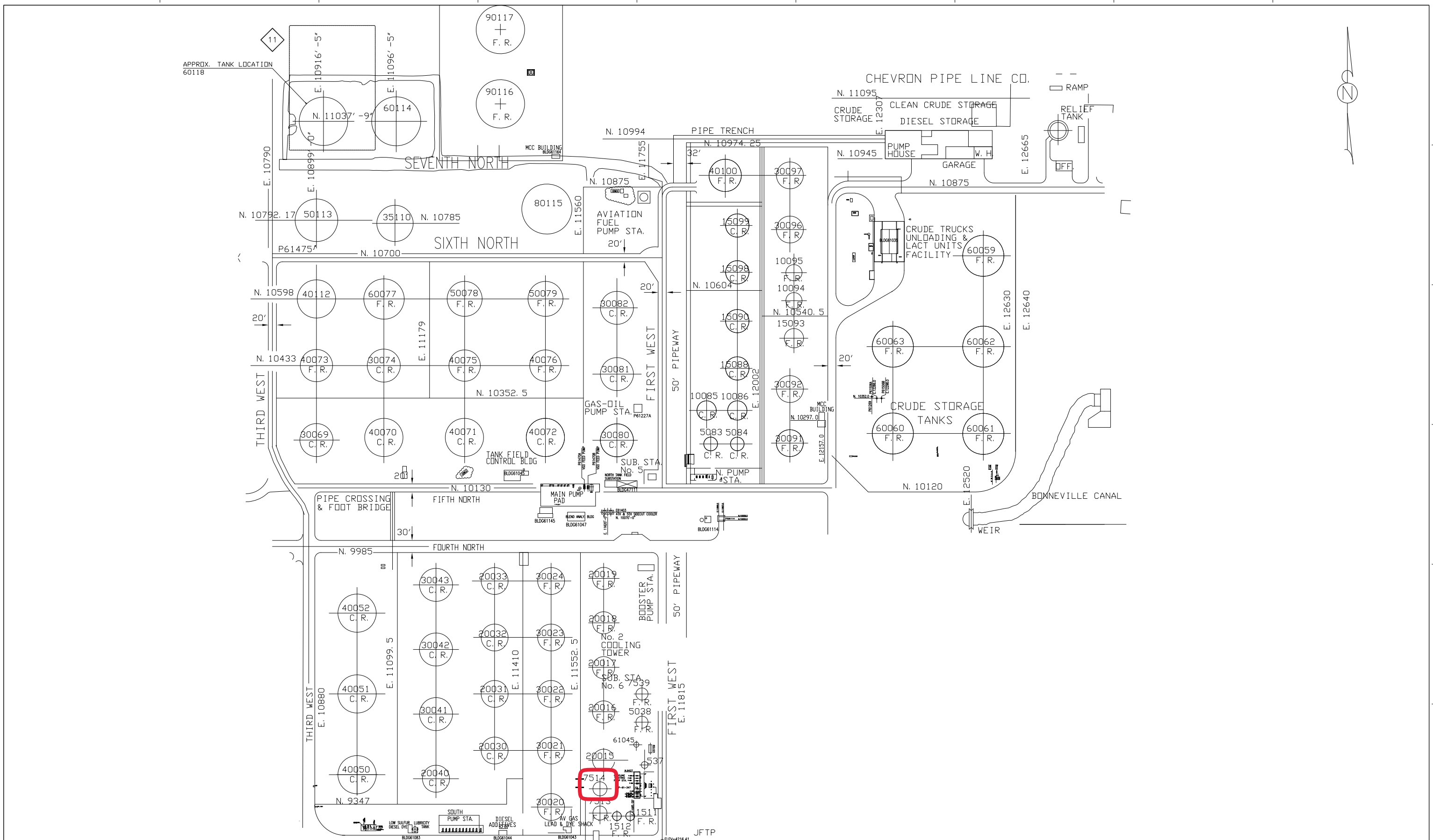
N. 8730' -0"
N. 8737' -0"



REFERENCE DRAWINGS			
REF			

REVISIONS

Chevron Products Company
Salt Lake Refinery

SCALE AS NOTED DATE 1-20-20 APPROVED
DR. KPCD CH. DR. APP. ENGR. FYLE
OPR'G DEPT. ENG. DEPT.

PROPOSAL TANK LOCATION PLAN
T60118
SALT LAKE REFINERY
PLANT NO, 61 TANK FIELD

A C. C. DWO

SK-61813

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Form 2
Company Information/Notice of Intent (NOI)

Date November 2, 2021

Utah Division of Air Quality
New Source Review Section

Application for: ☐ **Initial Approval Order** ☑ **Approval Order Modification**

General Owner and Source Information

1. Company name and mailing address:
Chevron Salt Lake Refinery
685 S Chevron Way
North Salt Lake, UT 84043
Phone No.: (801) 539-7200
Fax No.: ( )

2. Company** contact for environmental matters:
Serena Yau
Phone no.: (801) 539-7238
Email: serena.yau@chevron.com
*** Company contact only; consultant or independent contractor contact information can be provided in a cover letter*

3. Source name and physical address (if different from above):
2351 N 1100 W
Salt Lake City UT 84116
Phone no.: ( )
Fax no.: ( )

4. Source Property Universal Transverse Mercator coordinates (UTM), including System and Datum:
UTM:
X: 422,270
Y: 4,519,770

5. The Source is located in: Davis County

6. Standard Industrial Classification Code (SIC)
2911

7. If request for modification, AO# to be modified: DAQE # AN101190103-21 DATED: 09 / 23 / 2021

8. Brief (50 words or less) description of process.
Chevron submits this NOI to upgrade portions of the wastewater treatment plant located at the Chevron Salt Lake Refinery, including replacing the induced air flotation units with dissolved nitrogren flotation units. Chevron plans to start construction third quarter 2022.

Electronic NOI

9. A complete and accurate electronic NOI submitted to DAQ Permitting Mangers Jon Black (*jlblack@utah.gov*) or Alan Humpherys (ahumpherys@utah.gov) can expedite review process. Please mark application type.

Hard Copy Submittal ☐ Electronic Copy Submittal ☑ Both ☐

Authorization/Singnature

I hereby certify that the information and data submitted in and with this application is completely true, accurate and complete, based on reasonable inquiry made by me and to the best of my knowledge and belief.

Signature: Serena Yau Title: Environmental Team Lead

Serena Yau Name (Type or print)	Telephone Number: (801) 539-7238 Email: serena.yau@chevron.com	Date: 11/2/2021

Document Date: 02/28/2018
DAQ-2018-002272

Form 2
Company Information/Notice of Intent (NOI)

Date November 2, 2021

Utah Division of Air Quality
New Source Review Section

Application for: ☐ **Initial Approval Order** ☑ **Approval Order Modification**

General Owner and Source Information

1. Company name and mailing address:
Chevron Salt Lake Refinery
685 S Chevron Way
North Salt Lake, UT 84043
Phone No.: (801) 539-7200
Fax No.: ( )

2. Company** contact for environmental matters:
Serena Yau
Phone no.: (801) 539-7238
Email: serena.yau@chevron.com
*** Company contact only; consultant or independent contractor contact information can be provided in a cover letter*

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2351 N 1100 W
Salt Lake City UT 84116
Phone no.: ( )
Fax no.: ( )

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Hard Copy Submittal ☐ Electronic Copy Submittal ☑ Both ☐

Authorization/Singnature

I hereby certify that the information and data submitted in and with this application is completely true, accurate and complete, based on reasonable inquiry made by me and to the best of my knowledge and belief.

Signature: Serena Yau Title: Environmental Team Lead

Serena Yau Name (Type or print)	Telephone Number: (801) 539-7238 Email: serena.yau@chevron.com	Date: 11/2/2021

Document Date: 02/28/2018
DAQ-2018-002272

IAF Replacement Basis of Design Report

Prepared for
Chevron Salt Lake City Refinery
Salt Lake City, UT
April 28, 2020

154576
Issued for Approval

Brown AND Caldwell
6975 Union Park Center, Suite 490
Midvale, UT 84047

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List of Abbreviations

AACE	Association for Advancement of Cost Engineers International
ACH	aluminum chloride hydroxide
BC	Brown and Caldwell
BEP	best efficiency point
BODR	basis of design report
CES	Chevron Engineering Specifications
COSC	crude oil supply chain
DGF	dissolved gas flotation
DNF	dissolved nitrogen flotation
DWD	dewatering device
FEED	Front-End Engineering Design
ft	feet
gal	gallon
gph	gallons per hour
gpm	gallons per minute
HDPE	high density polyethylene
HP	horsepower
HRT	hydraulic retention time
IAF	induced air flotation
lb/d	pounds per day
max	maximum
mg/L	milligrams per liter
P&ID	piping and instrumentation diagram
PFD	process flow diagram
ppmv	part per million by volume
psig	pounds per square inch gauge
RTO	regenerative thermal oxidizer
scfm	standard cubic feet per minute
SLR	Chevron Salt Lake Refinery
TDH	total dynamic head
TSS	total suspended solids
WWTS	wastewater treatment system

Executive Summary

Chevron U.S.A. Inc. (Chevron) owns and operates an oil refinery in Salt Lake City, Utah (SLR). The process wastewater and stormwater generated from the refinery is sent to a wastewater treatment system (WWTS) for treatment prior to being discharged to Northwest Oil Drain Canal at Outfall 001 under the Utah Pollutant Discharge Elimination System Permit (UPDES) UT0000175. The WWTS consists of two induced air flow units (IAF) to remove solids and free oil followed by a series of Biodiscs that biologically remove dissolved organic pollutants and ammonia. Chevron wants to replace the existing IAF units with dissolved nitrogen flotation (DNF) units to improve the WWTS operation in capacity in several ways. First, the new DNF units provide more capacity than the current IAF system that will accommodate future increases in refinery process wastewater and stormwater. Full utilization of this capacity is contingent upon reducing constraints on the biological section of the WWTS, particularly the equalization tanks and Biodiscs. Second, the replacement DNF units are intended to produce a better effluent quality compared to the IAF units, which will decrease solids and oil load to the Biodiscs. Currently, fouling of the Biodiscs by excessive oil and solids is an operating concern. Lastly, the water surface elevation of the new DNF units would be designed so that the operating level of the Surge Tanks, which will feed into the DNF units, is less restricted by hydraulic limitations.

For this IAF replacement project, the initial engineering task is a front-end engineering design (FEED) package. The FEED package is delivered as a Basis of Design Report (BODR) with individual FEED package deliverables as individual attachments to the report.

This BODR and attached engineering deliverables presents the front-end engineering design package for the IAF replacement project. The major components of the project are:

- **DNF Influent Pumps.** Centrifugal pumps will be installed at finished grade on the discharge piping of the Surge Tanks. The influent pumps will provide pumped feed to the new DNF units. This will allow the new DNF units to receive feed regardless of the water level in the Surge Tanks.
- **DNF Units.** Two new DNF units will be installed to replace the existing IAF units. The capacity of each DNF unit will be 3,000 gpm. One DNF unit will be online at a time, with the other serving as a backup unit. The DNF units will remove free oil and suspended solids from the process wastewater prior to discharge to the Biodiscs.
- **DNF Float Tank and Pumps.** Floating sludge and settled solids from the DNF will drain to a new DNF float tank. The tank provides a volume for float pumps to remove the float to the crude oil supply chain (COSC) tank.
- **Chemical Storage and Feed System.** New aluminum chloride hydroxide (ACH) coagulant chemical storage tank and injection system will be installed for coagulation of wastewater prior to entering the DNF. The new chemical storage and feed systems will be located downstream of the DNF influent pumps and upstream of the existing flocculant injection system.

The estimated total installed cost estimate is $6.7 million with an expected accuracy range of -20/+30-percent.

Section 1

Project Objective, Description, and Scope of Work

Chevron Salt Lake City Refinery (SLR) intends to replace its existing induced air flotation (IAF) units to achieve better removal of suspended solids and oil and grease. Currently, the levels of these parameters in the IAF effluent, which feeds the biological section of the Wastewater Treatment System (WWTS), are excessive. The IAF replacement project will also increase the hydraulic capacity of the oil separation section of the WWTS compared to the current IAF system. This document is the basis of design report (BODR) for the project's Front-End Engineering Design (FEED) package.

1.1 Project Objective

The objective of the project is to prepare a FEED package that includes preliminary design information for replacement of the IAF equipment with dissolved nitrogen flotation (DNF) equipment and replacement of the coagulant feed system. Other objectives include determining the hydraulic profile with DNF feed pumps and providing construction cost estimates. The new system will receive flow with up to 500 milligrams per liter (mg/L) of total suspended solids (TSS) from a combination of refinery process wastewater and storm water, producing a DNF effluent concentration of 50 mg/L or less on average. The system must also accommodate a loading of up to 300 mg/L of oil and grease and produce an effluent of 25 mg/L or less on average. The feed rate from the surge tanks to the DNF system will range from 600 gallons per minute (gpm) up to 3,000 gpm to a single DNF unit.

1.2 Project Description

The IAF replacement project entails replacement of existing IAF equipment with new DNF units to remove oil and suspended solids from process wastewater and storm water. The three existing surge tanks will provide process wastewater and stormwater to the new system. New DNF influent pumps will be installed to convey influent from the surge tanks to the new DNF units. The new DNF influent pumps will be installed along the existing piping connecting between the surge tanks and the IAF units. Changing from gravity flow to pumped flow for the DNF influent will eliminate the need to maintain a minimum water level in the surge tanks, which is reportedly 17 feet. This will increase the useable storage volume by approximately 500,000 gallons in any surge tank that is operating.

Coagulant will continue to be added to the DNF influent but at a new location further downstream of the current injection location to accommodate the new DNF influent pumps. New coagulant metering equipment and a bulk coagulant storage tank will provide dosing capacity for increased flow to the DNF units and allow for increasing the dose if needed. The existing flocculant delivery system will be used to provide diluted flocculant upstream of the DNF at the current location.

Ultimately, two DNF units will be installed, either in a single project or in a phased approach. When both units are installed, one will provide redundancy for the other. If only one DNF is installed initially, one of the existing IAF units can provide redundancy. For this FEED package, two DNF units are assumed to be installed in a single phase, although an alternative is presented for the phased approach. The new DNF units will be supplied with covers where off-gas is vented to the existing regenerative thermal oxidizer (RTO). The float and bottom solids from the new DNF units will

discharge to a new common sludge float tank. A pair of progressive cavity sludge pumps will transfer sludge from the new tank to the existing COSC tank. Effluent from the DNF units will discharge to the existing IAF Effluent Tanks, which feed the Equalization Tanks.

1.3 Scope of Work Summary

The equipment included in Brown and Caldwell's (BC's) scope of work is described in this section. It is noted that materials of construction are assumed as BC did not have access to the Chevron Engineering Specifications (CES). Materials of construction will be determined during subsequent design based on applicable CES.

1.3.1 Equipment Scope

The following pieces of equipment will be installed in this project.

- **DNF influent pumps.** Three new 1,500-gpm variable speed centrifugal pumps (P009XXXA/B/C) will transfer wastewater from the surge tanks to the DNF units. The full design flow of 3,000 gpm will require three installed pumps with two operating and one standby and piping configured to allow any influent pump to feed either DNF unit. Pumps will be 15 horsepower (hp) each. Pump bodies will be carbon steel with 316SS impeller and liner with Buna Wet End O-Rings. Service is for wastewater from the surge tanks which is comprised of refinery process wastewater and storm water. Pumps will be installed outdoors with a horizontal orientation. Each pump will be supplied with variable speed drive motor control.
- **DNF units.** Two new DNF units (T09XXX/XXX). DNF vendor will supply tank, float scraper (K09XXX/XXX) and sludge thickeners (K09XXXA/B), blanketing covers, and blanketing safety equipment. Owner will also provide access ladders and/or stairs and platforms, nitrogen control panel, and monitoring and control devices. The tanks will be constructed using 316SS. Stainless steel is the standard material of construction for refinery applications and the only material used by Suez-Poseidon DNF units. Suez-Poseidon has recommended a rectangular tank model instead of a circular tank model, due to it being more appropriate for high TSS loading, which is possible due to the absence of an API separator at the WWTS.
- **DNF recirculation pumps.** Two new constant speed recirculation water pumps (P09XXX/XXX) will recirculate water from the DNF effluent back to the DNF saturation pipe as the supply to the "whitewater system." One pump will run to service each DNF (one pump running per DNF unit running). The pumps will be centrifugal pumps with 316SS impellers and casing. The discharge pressure for the recirculation pumps will be 70 pounds per square inch gauge (psig), matching the nitrogen gas supply pressure. Recirculation pump rates vary by vendor and a recirculation rate of approximately 15 percent of DNF effluent flow is expected. The resulting pump service would be 518 gpm with a 75 hp motor.
- **DNF float tank.** A new DNF float tank (T09XXX) will hold DNF float and bottom solids prior to transfer to the COSC tank. The tank will be 12 feet in diameter and 6 feet tall with a flat bottom. The total tank volume is a nominal 4,230 gallons.
- **DNF float pumps.** Two new 150-gpm DNF float pumps (P09XXXA/B) will pump from the DNF float tank to the COSC tank. One pump will be duty service; the other will be an installed backup. The pumps are 20 hp progressing cavity pumps.
- **Coagulant injection metering pumps.** Coagulant will be injected using two new duty-spare motor driven coagulant diaphragm metering pumps (P09XXA/B). Pumps and associated appurtenances (pressure gauge, pressure relief valves, etc.) will be supplied by vendor on full-rim drip containment skid.

- **Coagulant storage.** Coagulant will be stored in a new cross-linked high-density polyethylene (HDPE) coagulant storage tank (T09XXX) with a nominal liquid volume of 6,400 gallons. The tank dimensions will be 12 feet in diameter and 10 feet in total height with a 7.5-foot maximum (max) liquid level. Tank geometry will be upright cylinder.

Section 2
Process Design Basis

The basis of design was established during the January 31, 2020 project kickoff meeting discussion as well as during review of drawings, process data and other information provided by Chevron. The FEED package basis of design is presented in this section, which includes all major equipment.

2.1 DNF Influent

The FEED package basis of design is presented in Table 2-1. Low, Normal, Max, Peak, and Design values are defined as:

- Low – 5th percentile value
- Normal – average value (50th percentile)
- Max – 95th percentile value
- Peak – maximum daily value
- Design – Value selected for design and sizing based on process knowledge or facility production plans.

The design basis for wastewater flow was determined from two years of refinery operating data (1/1/2018 to 12/31/2019). The design flow was selected in consultation with Chevron. There is a potential for a future project to mitigate constraints at the WWTS Bio System, resulting in more flow through the DNF units.

The FEED package process design basis is shown in Table 2-1.

Table 2-1. FEED Package Process Design Basis – DNF Influent

Item	Units	Low	Normal	Max	Peak	Design
Flow	gpm	600	1,020	1,370	1,595	3,000
Temperature	deg F	-[a]	55	-[a]	90	120
Total Suspended Solids	mg/L	-[a]	300	-[a]	-[a]	500
Total Dissolved Solids	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]
Oil and Grease	mg/L	-[a]	300	-[a]	-[a]	300
pH	--	-[a]	-[a]	-[a]	-[a]	-[a]
Chloride	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]

a. Value will be established from results of current sampling study

Chevron is currently conducting a sampling study to further characterize the IAF influent. The results of the study will allow for a full accounting of the parameters listed in Table 2-1. The design basis for these parameters will be updated during the next phase of engineering.

2.2 DNF Influent Pump

Three surge tanks provide feed to the existing IAF units. The surge tanks are operated by level control by adjusting the flow rate from the tanks to maintain the normal operating level of 20 to

25 feet. The surge tanks currently discharge feed to the IAF units by gravity at a rate of no more than 2,000 gpm which is the design capacity of the WWTS Bio System.

Because the surge tanks feed the IAF units by gravity, a minimum surge tank liquid level (reportedly 17 feet) is maintained to provide enough driving head to maintain gravity flow to the IAFs. Chevron is evaluating switching from the current gravity feed option to a pumped feed for the new DNF units. Therefore, as part of the IAF replacement project, BC has included the design of three (2 duty + 1 standby) new DNF influent pumps.

The new DNF influent pumps will transfer wastewater from the surge tanks to the DNF units. The rated capacity of each DNF influent pump at the best efficiency point (BEP) is 1,500 gpm at 25.0 feet of total dynamic head (TDH). Pumps will be 15 hp. This configuration provides enough design DNF flow capacity with two pumps in operation while the third serves as an installed backup. Horizontal, centrifugal pumps have been selected, which are equipped with a horizontal end suction orientation. The pumps will have low shear screw impellers to mitigate the emulsion of oil as it is pumped from the surge tanks to the DNF inlet. Variable speed motor control will allow flow control to the DNF units. The design basis for the DNF influent pumps is shown in Table 2-2.

Table 2-2. DNF Influent Pump Design Basis

Parameter	Units	Design Value
Quantity of Installed Pumps (Duty + Standby)	--	3 (2+1)
Pump Type	--	Centrifugal
Pump Orientation	--	Horizonal End Suction
Pump Impeller Type	--	Low Shear Screw
Pump Minimum Flow Rate, each	gpm	600
Pump Maximum Flow Rate, each	gpm	1,500
Pump Head	ft	25.0[a]
Pump Motor Power, each	hp	15
Pump Impeller and Casing	--	316 Stainless Steel

a. At 1,500 gpm.

The tie-in points for both the suction and discharge for the DNF influent pumps are just downstream of the combined surge tank effluent piping, prior to the coagulant injection point.

2.3 Chemical Addition

The existing IAF system utilizes coagulant and flocculant feed systems managed by a chemical vendor (Nalco). The coagulant and flocculant are added upstream of the existing IAF units, which improves removal of suspended solids and oil and grease at the IAFs. As part of the IAF replacement project, both the coagulant and flocculant dosing locations will remain the same. The existing flocculant system will be used for the new DNFs and the coagulant system will be upgraded with larger coagulant feed pumps and a new coagulant bulk storage tank that provide enough capacity and storage to meet projected increased wastewater flows and provide more flexibility in dose.

2.3.1 Coagulant Dosing Rate

The current chemical program uses Nalco 8186, an aluminum chloride hydroxide (ACH) solution, as coagulant. The current target dose is 20 to 25 parts per million by volume (ppmv), which is 1.7 mg/L

as Al. The coagulant is injected approximately 250 feet upstream of the IAF units, which allows time for turbulent mixing in the IAF feed piping.

The project entails upgrades to the coagulant system, which are required to provide an increased coagulant dose at projected increased wastewater flows. After the installation of the DNFs, testing will be conducted to determine the optimal coagulant dose.

In order to size the new coagulant metering pumps, BC assumed that the dose could be increased to 10 mg/L as Al, which is approximately 6 times as high as the current dose. The increased design dose improves process flexibility. The calculated feed rates at the two doses of 1.7 mg/L and 10 mg/L as Al for respective flow rates of 600 gpm and 3,000 gpm, respectively are presented in Table 2-3.

Table 2-3. Process Calculation for Coagulant Dosing Rate

Parameter	Units	Design Values	
Al:Al(OH)$_2$Cl Molar Mass Ratio	mass ratio	0.28:1	
Bulk Liquid Solution Strength	%	20	
Specific Gravity of 20% ACH	--	1.20[a]	
		Low	High
DNF Feed Flow Rate	gpm	600[b]	3,000[c]
ACH Dose (as Al)	mg/L	1.7[d]	10.0
20% Al(OH)$_2$Cl solution feed rate	gph	0.91	26.8
Storage Time (6,400-gallon tank)[e]	days	293	10

a. *At 25 degrees Celsius*
b. *Minimum flow rate from the surge tanks based on operating data and FEED package*
c. *Design flow rate to the DNF*
d. *Approximate current dose based on a 25 ppmv of Nalco 8186*
e. *Coagulant storage tank = 12' D x 10' H. 7.5' liquid level when full. 6,400 gallons of liquid storage.*

The calculation for the bulk ACH solution flow rate for a target aluminum dose, percent ACH solution strength or DNF feed flow rate is indicated below in Equation 1. Example values are presented to illustrate how the calculation is carried out depending on what variable (i.e., chemical use, chemical strength) is desired.

$$ACH\ Coagulant\ Use = \frac{\left(Al\ Target\ * Flow\ Rate * 0.012 * \frac{1}{\rho ACH}\right)}{(Solution\ Strength * MM\ Ratio) * 24\ hours} \quad (1)$$

where:

ACH Use = consumption rate of ACH coagulant solution, gallons per hour (gph)
Al Target = target dose rate, as Al, mg/L
Flow rate = influent flow rate to the DNF, gpm
ρ_{ACH} = Density of 20 percent ACH solution = 9.5 lb/gal
MM Ratio = Ratio of aluminum molar mass to ACH molar mass, mass Al/mass ACH
= 26.98 grams/mol / 96.43 g/mol = 0.28

Solution Strength = mass percent strength of ferric chloride solution = 0.2

The ACH solution consumption rate for the low target dose case shown in Table 2-2 is shown in Equation 2

$$\mathbf{0.91\ gph} = \frac{(1.7\ mg/L\ * 600\ gpm * 0.012\ MGD * \frac{1}{9.5\ lb/gal})}{[0.2 * (0.28) * 24\ hours]} \quad (2)$$

The tank for coagulant storage will be sized to allow for a full tanker delivery (approximately 4,800 gallons) at a time when the tank is 25 percent full. Additionally, the tank will maintain 2.5 feet of freeboard when full. The resulting tank size will be 12 feet in diameter and 10 feet tall. The liquid level when full will be 7.5 feet.

This tank sizing provides a minimum storage time of 10 days at the design flow rate (3,000 gpm). A storage time of 293 days is provided at the minimum flow rate (600 gpm).

2.3.2 Flocculant Dosing Rate

Flocculant is added upstream of the IAF to aid in oil-water separation. The flocculant metering and injection system is maintained by Nalco and the current chemical product used is Nalco 1404. Flocculant is injected 30 feet upstream of the IAF inlet nozzle. The current flocculant target dose is 2 to 3 ppmv. For the IAF replacement project BC assumes that the current flocculant target dose and equipment are sufficient to maintain current oil and solids removal.

The flocculant design basis for the current target dose range and FEED package design flow rates is presented in Table 2-4.

Table 2-4. Process Calculation for Flocculant Dosing Rate

Parameter	Units	Design Values	
		Low Target Dose	High Target Dose
Flocculent Dose (as neat flocculent)	ppmv	2	3
DNF Influent Flow Rate	gpm	600[a]	3,000[b]
Flocculant Use Rate (as neat flocculant)	gpd	1.7	13.0
Flocculant Solution Target Strength	%	0.5	
Flocculant Solution Flow Rate	gph	14.4	108
Utility Water Requirement for Dilution	gpm	0.24	1.8

a. *Minimum flow rate from the surge tanks based on operating data and FEED package*

b. *Design flow rate to the DNF*

The calculation of the flocculant consumption rate for a target flocculant dose, percent flocculant solution strength or DNF influent flow rate is shown below in Equation 3. Example values are presented to illustrate how the calculation is carried out depending on what variable (i.e., flocculant use, flocculant strength) is desired.

$$Flocculant\ Use = \left[\left(\frac{Flocculent\ Target\ Dose}{10^6}\right) * Flow\ Rate\right] * 60\ minutes \quad (3)$$

where:

Flocculant Use= consumption rate of neat flocculant solution, gph

Solution Strength = percent strength of flocculant solution

Flocculant Target Dose = target dose rate, as flocculant solution (ppmv)

Flow rate = Influent flow rate to the DNF, gpm

The flocculant consumption rate for the low target dose case shown in Table 2-4 is:

$$\mathbf{0.072\ gph} = \left[\left(\frac{2\ ppmv}{10^6}\right) * 600gpm\right] * 60\ minutes$$

Current flocculant storage is provided by a 275-gallon tote, which is housed in an enclosed shed along with the flocculant metering pumps. In order to utilize existing equipment and minimize capital cost, it is assumed that totes will continue to be used. The current tote storage will provide 160 days of storage for the low case and 21 days of storage for the high case.

The dilution water requirement is determined by the desired flocculant solution (diluted) target strength and the DNF influent flow rate. The dilution water requirement is calculated by Equation 4.

$$Dilution\ Water\ Demand\ (gpm) = \frac{Flocculant\ Flow\ Rate\ (gph)}{60\ min} * \frac{100}{Solution\ Strength\ Target\ (\%)} \quad (4)$$

where:

The flocculant dilution water demand for the high target dose case shown in Table 2-4 is shown in Equation 5.

$$\mathbf{1.8\ gpm} = \frac{0.54\ gph}{60\ min} * \frac{100}{0.5} \quad (5)$$

2.4 DNF Unit Design Basis

2.4.1 DNF Unit Sizing

The design basis for two new DNF units is based on the design flow of 3,000 gpm described previously (Sections 2.1 and 2.2). BC obtained a budget proposal that summarizes design criteria and equipment cost for a Suez-Poseidon PPM700E DNF unit. This unit was previously considered for a separate SLR IAF replacement study. Each PPM700E DNF unit provides a surface area of 350 ft^2, or 700 ft^2 total for two DNF units. Each DNF unit is also equipped with one blanketing cover that includes flanges to accommodate venting to the existing RTO.

Each DNF unit is rated at 3,000 gpm at 500 mg/L influent TSS. The resulting effluent TSS expected is <50 mg/L. Also, each unit is rated for 300 mg/L of oil and grease with an effluent design concentration of <25 mg/L. The effluent concentrations for TSS and oil and grease depend upon a proper chemical program (see section 2.3). The DNF design basis is presented in Table 2-5.

Table 2-5. DNF Unit Design Basis		
Parameter	Units	Design Value
DNF Dimensions[a]	ft	36.96 L x 18.83 W x 13.42 H
Total DNF Nominal Volume	gal	23,500
DNF Surface Area	ft^2	350
DNF Hydraulic Retention Time (HRT)	minutes	7.8[b]

a. Dimensions reflect extents of piping nozzles, not strictly DNF tank dimensions.

b. Based on design flow of 3,000 gpm

The effluent TSS and oil and grease design basis for the DNF is based on the experience of Suez-Poseidon and its understanding of effluent quality under different conditions. For TSS and O&G loadings above the design basis (greater than 500 mg/L TSS and 300 mg/L oil and grease), the effluent quality will depend on several factors including DNF flow rates, chemical program effectiveness, and oil emulsification. Regardless of these factors, the DNF unit recommendation (Suez-Poseidon PPM700E) would be no different for higher TSS and oil and grease loadings within reason, because DNF unit sizing is based on expected flow rates, not expected solids and oil loading.

2.4.2 DNF Oily Solids Removal Efficiency and Effluent Quality

The design values for DNF influent TSS and oil and grease were given to Suez-Poseidon along with sizing requirements for the DNF unit. The effluent quality specified by Suez-Poseidon is valid for the design flow rate of 3,000 gpm assuming typical operation of the DNF and a properly maintained chemical program consisting of coagulant and flocculant addition.

The DNF sludge float composition is estimated to be 2.8 percent (28,000 mg/L) solids based on prior experience on similar applications. Of the 2.8 percent solids, 1.5 percent are suspended solids and 1.3 percent is oil and grease. The estimated DNF influent constituents, DNF float solids, DNF bottom solids and DNF effluent constituents are presented in Table 2-6.

2.4.3 DNF Recirculation Pump and Nitrogen Usage

Each DNF unit utilizes a dedicated recirculation pump which recirculates DNF effluent through the dissolved nitrogen system and back to the DNF tank. The recirculation pumps for this design are Poseipump™, which the DNF vendor has specified as having a 75 hp motor. The design basis for the DNF recirculation pump based on the design flow rate is 518 gpm (approx. 15% of DNF effluent) is presented in Table 2-7. DNF nitrogen usage is also shown.

2.4.4 DNF Float Tank

The DNF float tank receives float and bottoms solids from the DNF units. Float is generated continuously during DNF operation as it is scraped from the DNF water surface. The float will flow by gravity to the DNF float tank. Bottom solids are discharged at predetermined intervals when valves open at the bottom of the DNF tank allowing bottom solids to be flushed over a period of several seconds.

Table 2-6. Process Calculation for DNF Solids			
Parameter	Units	Normal Value	Design Value
DNF Feed Rate	gpm	1,020	3,000
DNF Feed TSS Concentration	mg/L	300	500
DNF Feed TSS Loading	lb/d	3,675	18,000
DNF Effluent TSS	mg/L	25[a]	25[a]
DNF Effluent TSS	lb/d	300[b]	870[c]
DNF TSS Removal	percent	92	95
DNF Feed oil and grease Concentration	mg/L	300	300
DNF Feed oil and grease Loading	lb/d	3,675	10,810
DNF Effluent oil and grease	mg/L	25[a]	25[a]
DNF Effluent oil and grease	lb/d	300[b]	880[c]
DNF oil and grease Removal	percent	92	92
DNF Bottoms Solids Drain Rate (max)	gpm	2,200	2,200
DNF Bottoms Solids Drain Frequency	minutes	180	180
DNF Bottoms Averaged Flow Rate	gpm	5[d]	5[d]
DNF Float	gpm	19	100[e]

a. *Effluent value chosen based on feedback from Suez and conservative approach to predict upper range of possible float production.*

b. *Calculation made using normal DNF effluent flow rate of 996 gpm (mass balance).*

c. *Calculation made using design DNF effluent flow rate of 2,897 gpm (mass balance).*

d. *Given by Suez. 2,200 gpm bottom flush rate generating 950 gallons every 3 hours (per DNF). Total gallons of DNF bottoms drained per day averaged over entire day = 5 gpm.*

e. *100 gpm is the rate of float production when DNF feed flow is 3,000 gpm, regardless of having one or both DNF units in operation.*

Table 2-7. DNF Dissolved Air Makeup System Design Basis		
Parameter	Units	Design Value
Quantity of DNF Recirculation Pumps	--	2
DNF Recirculation Pump Flow Rate, each	gpm	518
DNF Recirculation Pump Motor Power, each	HP	75
Nitrogen Gas Flow	scfm	7[a]
Nitrogen Gas Pressure	psig	70[b]

a. *Nitrogen supply requirement per DNF unit. 14 standard cubic feet per minute (scfm) required when both DNF units operating.*

b. *Minimum pressure requirement.*

The design of the DNF float tank is based on two criteria. First, the tank must provide enough volume to receive the periodic DNF bottoms solids flushes. Second, the tank must equalize the flow and provide suction to the fixed-speed DNF float pumps, which will operate intermittently during normal conditions based on a level control signal from the tank. Some storage displacement by accumulated solids over time is assumed and built into the design of the tank. The design basis for the DNF float tank is presented in Table 2-8.

Table 2-8. DNF Float Tank Design Basis		
Parameter	Units	Design Value
DNF Float Tank Dimensions	ft	12 D x 6 H
Total DNF Float Tank Nominal Volume	gal	4,230[a]
DNF Float Tank Fill Time (Normal Conditions)	minutes	55[b, c]
DNF Float Tank Fill Time (Design Conditions)	minutes	180[c, d]

[a] *Assumes entire tank volume is available for float storage.*

[b] *Normal conditions assumes DNF float production of 19 gpm. Bottom solids of 950 gpm every 3 hours.*

[c] *Fill time is without any pump service out of the DNF float tank.*

[d] *Design conditions assumes DNF float production of 100 gpm. Bottom solids of 950 gpm every 3 hours.*

2.4.5 DNF Float Pumps

The DNF float pumps will convey DNF float and bottom solids from the DNF float tank to the COSC tanks. The pumps will operate based on level control to maintain a setpoint liquid level in the DNF float tank. The design basis for the DNF float pumps was determined such that the DNF float tank can operate with one pump running during design conditions. Two pumps will be installed, one duty and one spare. The pumps will be progressive cavity type each with a 150 gpm flow capacity and 100 psig discharge pressure. The design basis for the DNF float pumps is given in Table 2-9.

Table 2-9. DNF Float Pump Design Basis		
Parameter	Units	Design Value
Quantity of Pumps (Duty + Standby)	--	2 (1+1)
Pump Type	--	Progressive Cavity
Pump Flow Rate, each	gpm	150
Pump Head	psig	100
Pump Motor Power, each	HP	20
Pump Body Casing	--	Cast Iron

Based on the rate at which DNF float and bottoms solids are produced, the sludge pump will cycle on/off between eight times per day (normal conditions) and sixteen times per day (design conditions).

2.4.6 Production Rate of DNF Float and Bottom Solids

Currently, float and settled solids from the IAF units are pumped to the COSC tanks following separation in the dewatering device (DWD). From there it is pumped to the delayed coking unit.

After the IAF units are replaced, the quantity of float and settled solids being sent to the COSC tanks is expected to change due to performance differences between the IAF units and the new DNFs.

The current amount of COSC sludge used in the delayed coking unit is 2,000 gallons per day. IAF float in excess of 2,000 gallons in a day is dewatered in GeoTubes and shipped off-site for disposal.

BC calculated a mass balance for all streams related to the IAF replacement. The values for DNF float and bottom solids are presented in Table 2-10.

Table 2-10. DNF Float and Bottom Solids Design Basis			
Parameter	Units	Normal Value	Design Value
DNF Feed	gpm	1,020	3,000
DNF Float	gpm	19	100
DNF Bottom Solids	gpm	5	5
Combined DNF Solids	gpm	24	105
Combined DNF Solids to COSC Tank	gpd	34,560	151,200
Coker Sludge Capacity	gpd	2,000[a]	--
Current IAF Float Production	gpm	45[b]	--
Current IAF Float to COSC Tank	gpd	[c]	

a. *Current IAF solids feed to coker is 40 gpm for 50 minutes each day as allowed by quench cycle. Coker capacity to accept IAF sludge dependent upon water content of solids.*

b. Normal value from Chevron Mass Stream Property Table (Stream 5).

c. Current daily discharge of IAF solids to COSC tank is unknown. Excess COSC sludge sent to GeoTubes is unknown.

2.4.7 Production Rate of Off-Gas Load to Regenerative Thermal Oxidizer

Off-gas from the IAF is vented to the off-gas collection system and transferred to the RTO. The RTO treats off-gas from the collection box, IAF, DWD, SBCs, RBCs and RBC flow splitters. The WWTP stream property tables shows that the maximum allowed gas flow rate to the RTO is 4,000 scfm.

BC understands that most of the flow to the RTO is generated at the SBCs and RBCs. Gas stream flow information listed in the WWTP stream property tables shows a design combined off-gas flow of 3,500 gpm to the RTO. Of this, only 100 to 200 scfm are shown as coming from the IAF off gas. Therefore, it is reasonable to view the IAF as currently contributing no more than 3 to 5 percent of the total off-gas loading to the RTO.

After IAF replacement by the DNF units, the off-gas loading from the new DNF units will be driven by the nitrogen gas injection into the recirculation loop. The nitrogen demand for each DNF unit will be 7 scfm. Therefore, BC would forecast that replacement of the IAF units will result in a net decrease in off-gas to the RTO. The contribution of off-gas to the RTO from the DNF should remain less than 5 percent of the total load.

There will be a small decrease in oxygen, since the DNF units will use nitrogen rather than air, but this change will not have an impact on RTO performance. The RTO will draw in air as needed to provide sufficient oxygen for combustion.

2.4.8 PFD and P&IDs

The revised process flow diagram (PFD) with stream tables that incorporates the new influent DNF pumps, new DNFs, new coagulant system improvements as well as revised piping and instrumentation diagrams (P&IDs) that reflect these improvements are provided in Appendix A.

Section 3
Process Description

This section provides a description of the new DNF Treatment System process. The boundaries of this description are from the new tie-in downstream of the existing surge tanks to the inlet connection to the IAF effluent tanks, the existing sludge line to the COSC tanks, and the existing vapor line to the RTO.

The description in Section 3.1 is based on installing two DNF units and new DNF influent pumps. An alternative description of a gravity fed process is given in Section 3.2. Another alternative, described in Section 3.3, consists of installing the DNF units sequentially.

As an overview, combined process wastewater and storm water from the surge tanks will be pumped by the new DNF influent feed pumps to the new DNF units for solids and oil removal. Between the new influent pumps and DNF units, coagulant and flocculant will be added for better oil and solids separation at the DNF. Coagulant injection will be provided by new metering pumps and coagulant storage tank. Flocculant will be diluted and metered into the DNF influent by the existing equipment. The DNF will inject nitrogen-saturated into the flocculated wastewater stream, causing microbubbles to form and attach to the oil and solids. The oil and solids will rise to the surface of the DNF where they will be removed by a scraper mechanism. This DNF float will flow by gravity to a new DNF float tank. A small portion of the solids will sink and collect in the bottom of the DNF. A timer will open a drain valve periodically to allow these bottom solids to flow to the DNF float tank. A pair of new DNF float pumps will transfer the float and bottoms solids from to the COSC tank. Effluent from the DNF will flow to the existing IAF Effluent Tanks, which feed the Equalization Tanks. The head space of each covered DNF unit and the DNF float tank will vent to the RTO feed header.

3.1 Detailed Process Description

The following is a description of the base case – two DNF units and the DNF influent pumps installed concurrently.

3.1.1 Surge Tank Effluent Tie-In

Surge tank effluent currently flows by gravity through a 16” carbon steel pipe to the IAF units. Upon completion of the IAF replacement project surge tank effluent will be pumped to the new DNF units through the existing 16” carbon steel pipe. A tie-in for the suction of the new DNF influent pumps will be made just downstream of the surge tanks. To minimize the length of the suction piping, the existing magnetic flow meter and coagulant injection point will be relocated further downstream so that both are on the discharge side of the new pumps.

The ability to use the existing flow meter must be considered as construction staging is developed during the next phase of engineering. A new flow meter may be needed instead.

3.1.2 DNF Influent

The DNF influent pumps will convey water from the surge tanks to the new DNF units. The pumps will be variable speed so flow to the DNF units can be controlled. If both DNF units are on-line, the inlet valve to one DNF unit will be 100 percent open and the other will be slightly throttled so the effluent flow from the two units match. It will not be a requirement that the flow be split evenly to the two DNF units, but an approximate 50/50 flow split is desirable. The DNF influent pumps will convey

wastewater through the existing 16" carbon steel pipes to the new DNF units. Each DNF unit has a 16" flanged piping connection. A new section of 16" carbon steel pipe will bring influent from the existing 16" IAF feed piping to the new DNF piping connection. The DNF influent will enter the DNF through the submerged 16" wall penetration.

3.1.3 Dissolved Nitrogen Flotation

The DNF units will remove oil, oily solids and emulsions by flotation. At the top of the DNF unit, a sludge scraping system will provide constant removal of the floating oily solids layer to a float outlet hopper. The float will flow by gravity to the new DNF float tank. Heavier solids may fall out by sedimentation. Bottoms sludge cones are provided on the floor of the DNF tank to collect deposited bottoms solids. Drain valves are included in the bottom sludge cones that will open automatically at predetermined intervals to allow bottom solids to drain by gravity to the DNF float tank.

A portion of each DNF unit effluent will be recycled with the recirculation pumps. Nitrogen will be introduced into the recirculation stream and allowed to dissolve in the DNF recycle in a saturation tube. The pressurized recycle is then combined with DNF feed in the DNF unit to provide flotation. The nitrogen operating pressure will be a minimum of 70 psig at 7 scfm. When the pressurized recirculation stream (also called "whitewater") contacts the wastewater near atmospheric pressure in the DNF tank, the excess nitrogen gas will come out of solution in effervescent bubbles. The bubbles will collect the flocculated sludge and float to the top of the DNF.

Provisions for nitrogen blanketing of the DNF head space will be provided, including a flanged stainless steel cover for each unit. Vent gas from the DNFs will be routed to the existing RTO. DNF Float Tank

Float and bottom sludge from the two DNF units will gravity-flow to a new common tank called the DNF float tank. Float discharges to the new tank continuously and the bottom solids discharge to the tank in regular intervals lasting approximately 10 seconds every three hours.

3.1.4 DNF Float Transfer Pumps

Combined float and bottom sludge in the DNF float tank will be pumped by two new 150-gpm fixed speed pumps on level control to the existing COSC tanks. The tank will be nitrogen blanketed with the vent gas routed to the RTO.

3.1.5 DNF Hydraulic Profile

A hydraulic analysis by BC that reflects the DNF influent pumps was completed. A summary of the hydraulic model output as well as the revised hydraulic profile is presented in Appendix B.

3.1.6 DNF Specification

A preliminary DNF specification with required performance criteria that will be used to solicit formal bids from manufacturers is provided in Appendix C.

3.2 Alternative - Gravity Feed to DNF Units

An alternative to the above process following the IAF replacement involves forgoing the installation of new DNF influent pumps and feeding the new DNF units by gravity, in the same way that surge tank effluent currently fed to the IAF units. If the new process were implemented in this way, new DNF influent pumps would not be installed and flow control to the new DNF units would be achieved by the existing flow control valve and flow meter (FE-104).

A hydraulic analysis was performed by BC to determine the constraints placed on surge tank operating level given after the installation of the new DNF units. The surge tank furthest from the new DNF units (T30107) was used to determine the allowable operating level in the surge tanks.

This analysis determined that to achieve the design flow condition of 3,000 gpm the minimum water elevation in surge tank T30107 is 18.38 feet of operating height. At the minimum low condition of 600 gpm the operating height required is 12.81 feet.

Costs were not developed for this alternative in Section 5.

3.3 Alternative - Single DNF Unit Installation

An alternative to the base case involves installing only one DNF unit initially with the option to install a second DNF unit later. In this alternative, there would be no flow splitting between two DNF units, as all surge tank effluent would be fed to the single installed DNF unit. The new coagulant metering and storage equipment is included for this alternative as well as the two-DNF alternative. In both cases, the existing flocculant system would also remain.

In this alternative a single new tie-in point on the existing 16-inch IAF influent piping would be made to bring influent to a single new DNF unit. Tees would be installed as needed for future installation of a second DNF unit.

Section 4
Project Site Location

Most of the new equipment for the IAF replacement project will be located immediately east of the existing IAF units. This section discusses the siting and orientation of new equipment and implications for underground infrastructure and future demolition of replaced equipment.

4.1 New Equipment Layout

The existing IAF units are located on the southern boundary of the Area 200 battery limits just south of the IAF Effluent Tanks (T15103/15104). The area directly east of the existing IAF units is open and has been identified as the preferred location for the new DNF units. The open location is bordered by an existing pipe rack to the north, an access road to the east and south and the IAF units to the west. Figure 4-1 Is an aerial view of the preferred site location.

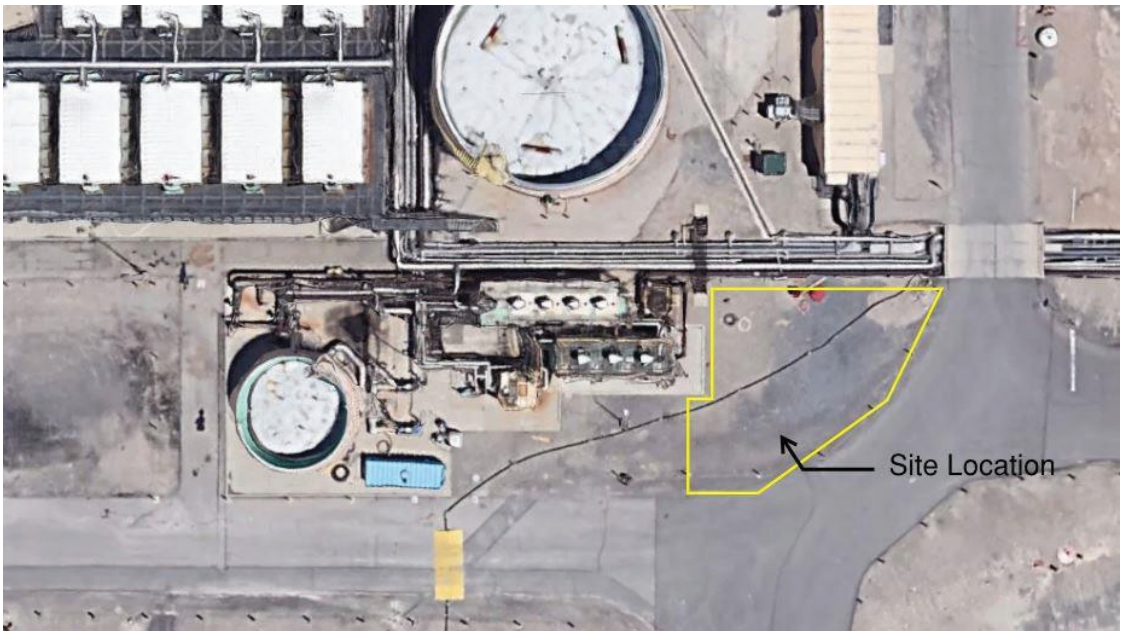


Figure 4-1. Preferred site location for new DNF units

The new equipment was arranged on a plot map of the preferred area, and an equipment orientation that fit the new equipment into the area was selected. A site plan that shows the proposed locations of new DNF equipment, new coagulant facilities and associated improvements is provided in Appendix A. It is noted that re-alignment of the road may need to be revised based on proximity to other existing road features

4.1.1 Buried Infrastructure

There are three underground utility pipelines that run underneath the preferred site location. Figure 4-2 shows the approximate location of the buried utilities under the preferred site.

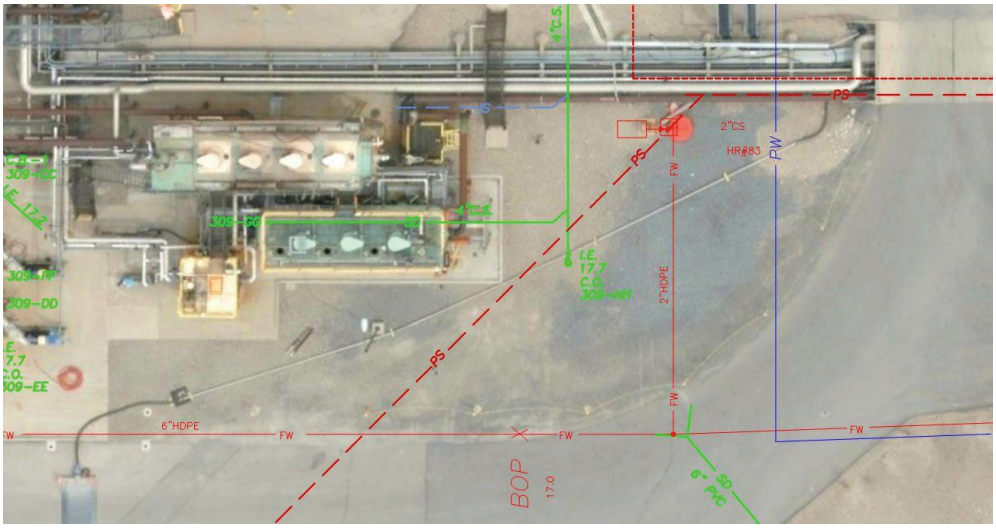


Figure 4-2. Buried utility piping under preferred project location

The 2-inch HDPE firewater piping and the potable water pipe (shown in solid red in Figure 4-2) will be the least disruptive to relocate based on the type of service.

The potable water line (shown in solid blue in Figure 4-2; unknown pipe diameter and pipe material) is located at the eastern extent of the planned project area.

The 4-inch carbon steel process sewer piping (shown in dashed red in Figure 4-2) may be more complicated to relocate, if needed, due to hydraulic considerations and environmental implications.

Chevron Products Company
Salt Lake Refinery

Notice of Intent for Wastewater Treatment Plant Upgrades

November 2, 2021

Submitted to:

Utah Division of Air Quality
195 North 1950 West
Salt Lake City, Utah

Introduction and Overview

This Notification of Intent ("NOI") is submitted because the Chevron Salt Lake refinery plans make upgrades to its existing wastewater treatment plant (WWTP). The upgrades will occur over a multi-year timeframe. The first step in the project is replacing two existing induced air flotation (IAF) units with two dissolved nitrogen flotation (DNF) units. Since the IAFs are considered an "installation" in the current Approval Order (installation is defined in R307-101-2), their replacement with DNF requires an NOI. Additionally, the WWTP will undergo other upgrades intended to improve reliability of the WWTP, improve the treatment of solids and contaminants, and allow for processing more storm water. Later phases of the project include replacing the regenerative thermal oxidizer (RTO) and replacing the biological contactors, also known as biodiscs.

Source Identification Information

The Salt Lake Refinery is a major source for Prevention of Significant Deterioration (PSD) purposes. The area is designation non-attainment for 8-hour ozone, SO2 (1971), and PM2.5 (2006), but a redesignation to attainment is in progress. The refinery's WWTP is subject to Title 40 Part 61 Subpart FF: benzene waste operations NESHAP (BWON). The refinery does not yet have a Title V permit.

Detailed Description of Project

I.1 Project Description, fuels, raw materials, equipment, and operating rates

Chevron Salt Lake City Refinery (SLR) operates an existing wastewater treatment plant, which treats process water and storm water. The wastewater treatment plant is listed in the Refinery's Approval Order, along with several installations that make up the plant. Two IAFs, a regenerative thermal oxidizer (RTO), and biological contactors, also known as biodiscs, are installations listed in the AO. Chevron intends to replace its existing IAF, RTO, and biodiscs units over multiple years to achieve better removal of suspended solids and oil and grease. These projects are reliability improvements that will increase capacity and reduce compliance risk of solids and contaminants for biotreatment at the Refinery.

Replacement of IAFs with DNFs is the first stage of long-term plan. The IAF replacement project will increase the hydraulic capacity of the oil separation section of the WWTP compared to the current IAF system. New DNF units will provide more capacity than the current IAF system to accommodate future increases in refinery process wastewater and stormwater. Full use of this capacity is contingent upon reducing constraints on the biological section of the effluent treatment process, particularly the biodiscs. The replacement DNF units are intended to produce a better effluent quality compared to the IAF units, which will decrease solids and oil load to the

biodiscs. The RTO and COSC (oily sludge) lines will be properly sized and upgraded to handle new equipment. Biodiscs will be upgraded and replaced as the final step; this equipment is end-of-life and replacement parts are difficult to find.

The RTO is expected to be replaced in 2024 at the earliest. Therefore, the emissions calculations (potential to emit) are based on current RTO operation. The new RTO will have the same or better VOC destruction efficiency. Emissions calculations are based on a "design" throughput of 3,000 gallons per minute (gpm). It is important to note this is well above *expected* throughput, which is approximately 1,020 gpm. Chevron plans to start construction on replacing the IAF the **third quarter 2022**.

The IAF Replacement Basis of Design Report (April 2020) is included in this NOI submittal.

I.2 Site Plan

The Site Plan is shown in Appendix A of this NOI. The new DNFs are shown in a colored box. A plot plan is also provided in Appendix A.

Emissions Related Information

The pollutant of concern from the WWTP is volatile organic compounds (VOC). The table below shows the VOC potential to emit (PTE) pre-project (i.e., current operation) and post-project. The pre-project PTE, 138.1 tons per year, was determined as part of the Reasonable Available Control Technology (RACT) analysis conducted during the PM2.5 SIP process (March 2013). The post-project mission calculations are based on the WWTP throughput we expect once all the replacements have been made and the project is complete.

PTE was calculated using EPA's Emissions Estimation Protocol for Petroleum Refineries document tables 7-9 and 7-10 (April 2015). The post-project PTE assumes the following:

- WWTP "design" throughput of 3,000 gallons per minute
- RTO efficiency of 95%
- Benzene concentration of 4.3 ppm at the collection box (the average from 2020 to present)
- Lowest (i.e., worst-case) RTO uptime that occurred in the previous three-year period (2018-2020).

Table 1: VOC PTE Summary

	Pre-WWTP upgrades	Post-WWTP upgrades	
	VOC (ton/yr)		Change
Potential to Emit (PTE) comparison	138.1	128.4	-9.7

A spreadsheet including the PTE calculations was provided to UDAQ electronically as part of this NOI.

BACT Analysis

A BACT analysis is not applicable for this project because there is a decrease in PTE as a result of this project.

Emissions Impact Analysis

In accordance with Utah rule R307-410-5(1)(a)(i), documentation of ambient air impacts is not required because the WWTP and IAF installations are subject to a NESHAP: BWON.

Red-line Markup of Approval Order

Chevron suggests the following modifications to our Approval Order. Please add the highlighted text and remove the red struck-out text. The change in II.B.2.b is requested because Chevron made a typo in the previous AO modification.

II.A.2 **Wastewater Installations**
Wastewater installations, which include:
Collection box sump
Drains (approximately 513)
Junction boxes (approximately 88)
Two (2) ~~induced~~ dissolved ~~air~~ nitrogen flo~~a~~tation units
Dewatering devices
Rotating biological contactors
Submerged biological contactors
Regenerative thermal oxidizer
Carbon canister controls

…

II.B.2.b The owner/operator shall not exceed 10,000 bbls/day of total material loading in the loading rack. Materials include crude oil, ~~dissolved~~ desulfurized gas oil (DGO), vacuum gas oil (VGO) or naphtha.
[R307-401-8]

Serena Yau
Environmental Team Lead

Chevron Products Company
Salt Lake Refinery
685 South Chevron Way
North Salt Lake, UT 84054
Tel 801 539 7200
Fax 801 539 7130

November 2, 2021

Mr. Bryce Bird, Division Director
Utah Division of Air Quality
P.O. Box 144820
195 North 1950 West
Salt Lake City, UT 84114-4820
Attention: Sarah Foran, sforan@utah.gov
Cc: Jon Black: jlblack@utah.gov

Notice of Intent for Chevron Salt Lake Refinery – Wastewater Treatment Plant Upgrades

Dear Mr. Bird,

Please see the Notice of Intent for the Chevron Salt Lake Refinery. If you have any questions, please contact Rachel Agnew at 801-539-7264 or RachelAgnew@chevron.com.

Sincerely,

Serena Yau

Serena Yau



Sarah Foran <sforan@utah.gov>

NOI for Chevron Refinery - WWTP upgrades

Agnew, Rachel <RachelAgnew@chevron.com> Tue, Nov 2, 2021 at 5:16 PM
To: Sarah Foran <sforan@utah.gov>, Jon Black <jlblack@utah.gov>, "bbird@utah.gov" <bbird@utah.gov>
Cc: "Yau, Serena" <Serena.Yau@chevron.com>

Hi Sarah,

Attached is a final copy of the wastewater treatment plant upgrades NOI we've been talking about. Let me know if you have questions. I apologize for many attachments. One is the PTE calculations in excel so you can see how the calculations were completed. The plot plan is a jpeg. And it appears I no longer have the Adobe version that allows me to combine pdfs.

Thanks!

Rachel Agnew (she/her)

HES Specialist

Chevron Salt Lake Refinery

685 South Chevron Way

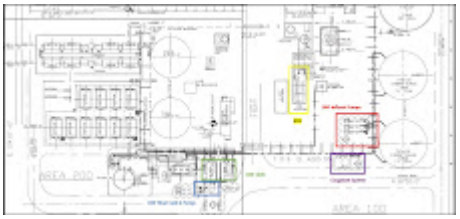
North Salt Lake, UT 84054

Office: 801-539-7264

Cell: 801-935-1916

RachelAgnew@chevron.com

7 attachments



AppA_MarkedUp-WWTP-PlotPlan.JPG
156K

UDAQ Form 2v2.pdf
101K

2021_11_02_NOI Cover Letter.pdf
91K

2021_11_02 Chevron NOI WWTP Upgrades.pdf
672K

AppA_NEW_Plot Plan 09-24861-10.pdf
223K

DNF PTE calculationsv5.xlsx
216K

WWTP_DNF_Project details.pdf
552K

	Pre-WWTP upgrades	Post-WWTP upgrades	
	VOC (ton/yr)		Change
PTE comparison	138.1	128.4	(9.7)

Induced Air Flotation Replacement with Dissolved Nitrogen Flotation PTE Calculation

Legend:

gray = fixed

Gal/day WW flow	4,320,000			
Pollutant	Table 7-9 Mass concentration ratio pollutant to benzene	Table 7-10 EF (how much of what's in the water is emitted to atmosphere)	Mass flow of pollutant lb/day	Ave benzene ppm in collection box 2020 - present
VOC	81	0.6	12,439	4.3
Benzene	1	0.25	154	
Benzene Mass Flow lb/day (gal/day x benzene ppm x density of water/10^6)				153.57

Note: VOC are calculated using EPA's Protocol for Estimating Emissions from Petroleum Refineries, 2014

Table 7-9. Refinery Wastewater Contaminant Concentrations as a Ratio to Benzene

CAS No.	HAP	Mass Concentration Ratio of Compounds to the Concentration of Benzene	
		Inlet to Oil-Water Separator or DAF Unit	Inlet to Biological Treatment Unit (After Oil-Water Separator)
540841	2,2,4-Trimethylpentane	1.97	0.022
71432	Benzene	1.00	1.00
92524	Biphenyl	0.034	0.0005
1319773	Cresols	0.25	0.38
98828	Cumene	0.37	0.013
100414	Ethylbenzene	0.88	0.086
110543	Hexane	3.50	0.047

(continued)

Table 7-9. Refinery Wastewater Contaminant Concentrations as a Ratio to Benzene (continued)

CAS No.	HAP	Mass Concentration Ratio of Compounds to the Concentration of Benzene	
		Inlet to Oil-Water Separator or DAF Unit	Inlet to Biological Treatment Unit (After Oil-Water Separator)
1634044	Methyl tertiary-butyl ether	0.58	0.98
91203	Naphthalene	0.29	0.02
108952	Phenol	0.18	0.80
100425	Styrene	0.58	0.09
108883	Toluene	3.3	0.80
1330207	Xylene	3.6	0.33
106990	1,3-Butadiene	0.0006	0.0027
VOC	Total VOCs	81	17

Table 7-10. Default Mass Emission Factors for Refinery Wastewater Collection and Treatment Systems

		Mass Fraction of Compound Emitted from Wastewater Collection and Treatment System Based on Total Wastewater Loading

CAS No.	HAP	Open Wastewater Collection and Treatment System	BWON-Compliant Wastewater Collection and Treatment System
106990	1,3-Butadiene	0.91	0.75
540841	2,2,4-Trimethylpentane	0.95	0.55
71432	Benzene	0.65	0.25
92524	Biphenyl	0.34	0.031
1319773	Cresols	0.002	0.000
98828	Cumene	0.68	0.24
100414	Ethylbenzene	0.66	0.22
110543	Hexane	0.97	0.55
1634044	Methyl tertiary-butyl ether	0.45	0.091
91203	Naphthalene	0.41	0.098
108952	Phenol	0.000	0.000
100425	Styrene	0.81	0.64
108883	Toluene	0.66	0.19
1330207	Xylene	0.64	0.21
VOC	Total VOCs (using butane)	0.94	0.60

	RTO efficiency accounting for
	90.6%
tpy uncontrolled	tpy controlled
1,362	**128.4**
7	**0.7**

DNF Throughput

"Design"	3,000	gal/min
conversion	4,320,000	gal/day
conversion	1,576,800,000	gal/year

Historical RTO efficiencies

2019	2020	2018
91%	95%	93%
		93%

The FEED package process design basis is shown in Table 2-1.

Table 2-1. FEED Package Process Design Basis – DNF Influent

Item	Units	Low	Normal	Max	Peak	Design
Flow	gpm	600	1,020	1,370	1,595	3,000
Temperature	deg F	-[a]	55	-[a]	90	120
Total Suspended Solids	mg/L	-[a]	300	-[a]	-[a]	500
Total Dissolved Solids	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]
Oil and Grease	mg/L	-[a]	300	-[a]	-[a]	300
pH	--	-[a]	-[a]	-[a]	-[a]	-[a]
Chloride	mg/L	-[a]	-[a]	-[a]	-[a]	-[a]

a. Value will be established from results of current sampling study



Sarah Foran <sforan@utah.gov>

NOI Amendment Chevron Salt Lake Refinery (Tank 7514)

Agnew, Rachel <RachelAgnew@chevron.com> Wed, Dec 15, 2021 at 3:47 PM
To: Sarah Foran <sforan@utah.gov>, "bbird@utah.gov" <bbird@utah.gov>, Jon Black <jlblack@utah.gov>

Hi Sarah,

Per our conversation, we are electing to amend the NOI submitted November 2, 2021. We have added one “project” to the NOI, which is bringing storage tank 7514 back into service to store slop oil (previously it stored aviation gasoline). Please see attachments and let me know if you have questions.

Thanks!

Rachel Agnew (she/her)

HES Specialist

Chevron Salt Lake Refinery

685 South Chevron Way

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Cell: 801-935-1916

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4 attachments

Tank Location.pdf
195K

NOI Amendment Tank 7514.docx
31K

NOI VOC Emissions.xlsx
13K

UDAQ Form 2_Tank7514_final.pdf
101K

Tank 7514 VOC PTE Summary

Year	External Floating Roof Storing Slop Oil VOC (lb)	Internal Floating Roof Storing Slop Oil VOC (lb)	PTE Change VOC (lb)
2020	1438	421	**1017**
2019	1063	407	656

Notes:

1. Tanks 7513 and 7514 are identical in size.

2. The External Floating Roof calculations are based on actual Tank 7513 (an external floating roof tank storing slop oil) emissions from 2019 and 2020.

3. The Internal Floating Roof calculations are calculated using TankESP assuming Tank 7513 was converted to an internal floating roof tank.

4. Only emissions from 2019 and 2020 were considered because we calculated VOC emissions in 2018 and prior years differently; so using those years would not be an apples-to-apples comparison.