FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

For draft Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0001038000, U.S. Environmental Protection Agency (EPA) ID No. TX0006394, to discharge to water in the state

Issuing Office:	Texas Commission on Environmental Quality (TCEQ) P.O. Box 13087 Austin, Texas 78711-3087
Applicant:	NRG Texas Power LLC 910 Louisiana Street, 7th Floor, Environmental Department Houston, Texas 77002
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Date:	April 14, 2020; July 10, 2020 revision
Permit Action:	Renewal; TPDES Permit No. WQ0001038000

I. EXECUTIVE DIRECTOR RECOMMENDATION

The executive director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit will expire at midnight, three years from the date of permit issuance according to the requirements of 30 Texas Administrative Code (TAC) §305.127(1)(C)(i).

II. APPLICANT ACTIVITY

The applicant currently operates W.A. Parish Steam Electric Generating Station, a 3,653 megawatt dual natural gas-fired and coal-fired power plant.

III. DISCHARGE LOCATION

As described in the application, the facility is located at 2500 Y.U. Jones Road, south of, and adjacent to, Smithers Lake and Dry Creek, near the Town of Thompsons, in Fort Bend County, Texas. Discharge is via Outfall 001 to Dry Creek below the spillway of Smithers Lake; via Outfall 002 to an unnamed tributary of Rabbs Bayou; via Outfalls 003-006 to Smithers Lake, thence to Dry Creek below the spillway of Smithers Lake via Outfall 001; thence from all outfalls to Rabbs Bayou, thence to Big Creek, thence to Brazos River Below Navasota River in Segment No. 1202 of the Brazos River Basin.

IV. RECEIVING STREAM USES

The unclassified receiving water uses are minimal aquatic life use for Dry Creek, limited aquatic life use for the unnamed tributary, and high aquatic life use for Smithers Lake and Rabbs Bayou. The designated uses for Segment No. 1202 are primary contact recreation, public water supply, and high aquatic life use.

V. STREAM STANDARDS

The general criteria and numerical criteria that make up the stream standards are provided in 30 TAC §§ 307.1 - 307.10.

VI. DISCHARGE DESCRIPTION

The following is a quantitative description of the discharge described in the monthly effluent report data for the period March 2015 through February 2020. The "average of daily average" values presented in the following table are the average of all daily average values for the reporting period for each pollutant. The "maximum of daily maximum" values presented in the following table are the individual maximum values for the reporting period for each pollutant. Flows are expressed in million gallons per day (MGD). All pH values are expressed in standard units (SU). Bacteria levels are expressed in colony-forming units (CFU) or most probable number (MPN) per 100 mL.

A. Flow

Outfall	Frequency	Average of Daily Average, MGD	Maximum of Daily Maximum, MGD
001	Continuous	3.65	17.80
002 [1]	Continuous	0.32	0.72
003	Continuous	1,296.74	2,029.0
103	Intermittent	No discharge	No discharge
203	Intermittent	0.86	1.40
303	Intermittent	0.017	1.218
403	Intermittent	0.048	0.405
503	Intermittent	9.09	27.82
603	Intermittent	No discharge	No discharge
703	Intermittent	0.176	0.870
803	Intermittent	0.009	0.215
903	Intermittent	0.001	0.001
113	Intermittent	0.007	0.039
004	Continuous	0.95	1.09
005	Intermittent	0.12	0.56
006 [2]	Intermittent	0.001	0.001

B. Temperature

Outfall	Average of Daily Average, °F	Maximum of Daily Maximum, °F
001	76.65	95.0
003	86.28	112.0

C. Effluent Characteristics

Outfall	Pollutant	Average of Daily Average		Maximum of Daily Maximum	
		lbs/day	mg/L	lbs/day	mg/L
003	Free available chlorine	29.7	0.01	158.57	0.10

[1] There are only two reported discharges from Outfall 002 during the period reviewed (August-September 2017).

[2] There are only three reported discharges from Outfall 006 during the period reviewed (November 2019-January 2020).

C. Effluent Characteristics

Outfall	Pollutant	Average of Daily Average		Maximum of Daily Maximum	
		lbs/day	mg/L	lbs/day	mg/L
003	Total residual chlorine	N/A	N/A	49.96	0.01
	pH	7.3 SU (min)		8.95 SU (max)	

Outfall	Pollutant	Average of Daily Average, mg/L	Maximum of Daily Maximum, mg/L
001	Total Dissolved Solids (TDS)	N/A	1,070
	pH	7.1 SU (min)	9.0 SU (max)
002 [1]	Total Suspended Solids (TSS)	No discharge	No discharge
	Oil and grease	No discharge	No discharge
	Total Iron	No discharge	No discharge
	Total Copper	No discharge	No discharge
	Total Selenium	No discharge	No discharge
	pH	No discharge	No discharge
103	TSS	No discharge	No discharge
	Oil and Grease	No discharge	No discharge
	Total Iron	No discharge	No discharge
	Total Copper	No discharge	No discharge
	Total Selenium	No discharge	No discharge
203	TSS	9.35	47.0
	Oil and Grease	5.0	5.0
	Total Selenium	Not detected	Not detected
303	TSS	6.32	42.0
	Oil and Grease	5.08	9.00
403	TSS	5.45	22.0
	Oil and Grease	5.00	6.00
503	TSS [3]	18.8	30.0
	Oil and Grease [3]	5.00	5.00
603	TSS	No discharge	No discharge
	Oil and Grease	No discharge	No discharge
	Total Iron	No discharge	No discharge
	Total Copper	No discharge	No discharge
	Total Selenium	No discharge	No discharge
703	TSS	13.22	53.00
	Oil and Grease	5.00	5.00
	Total Selenium	N/A	0.01
803	TSS	8.77	65.0
	Oil and Grease	5.10	12.0
903	Biochemical Oxygen Demand, 5-day (BOD_5)	4.10	24.0
	TSS	7.05	32.0
	Escherichia coli (in CFU)	2	36

[3] Effluent monitoring for TSS and oil and grease at Outfall 503 occurs only when discharging low volume waste sources from cooling tower basin-drainage and cleaning wastes. For the period of review, data was reported for March 2015, November 2015, February 2018, and January 2019 only.

Outfall	Pollutant	Average of Daily Average, mg/L	Maximum of Daily Maximum, mg/L
113	BOD_5	3.30	16.0
	TSS	5.62	27.0
	E. coli (in CFU)	1	80
004	TSS	11.84	35.0
	Oil and Grease	5.0	5.0
	Total Selenium	0.01	0.03
005	TSS	6.95	27.0
	Oil and Grease	5.37	14.0
	pH	7.10 SU (min)	9.10 SU (max)
006 [2]	TSS	4.67	10.0
	Oil and Grease	4.00	5.00
	pH	7.30	8.00

Effluent limit violations documented in the monthly effluent reports are summarized in the following table.

Outfall	Pollutant (units)	Month/ Year	Daily Maximum	
			Limit	Reported
005	pH (SU)	January 2019	9.0	9.10

The draft permit was not changed to address this effluent limit violation because it is an isolated incident and is not indicative of on-going compliance issues.

VII. DRAFT EFFLUENT LIMITATIONS

Effluent limitations are established in the draft permit as follows:

Outfall	*Pollutant*	*Daily Avg*	*Daily Max*
		mg/L	*mg/L*
001	Flow	37 MGD	Report
	Temperature	Report	95°F
	Total Dissolved Solids	-	2,500
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	
002	Flow	Report	Report
	Total Suspended Solids	30	50
	Oil and Grease	15	20
	Total Iron	1.0	1.0
	Total Copper	0.059	0.123
	Total Selenium	-	0.012
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	
003	Flow	2,121 MGD	Report
	Temperature	110°F	118°F
	Free Available Chlorine	0.2 (295 lbs/day)	0.5 (737 lbs/day)
	Total Residual Chlorine	N/A	0.2 (1,770 lbs/day)
	Total Dissolved Solids	Report	Report
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	
103	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Iron	1.0	1.0
	Total Copper	0.5	1.0
	Total Selenium	-	0.2
203	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Selenium	N/A	0.2
303	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
403	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
503	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Chromium	0.2	0.2
	Total Zinc	1.0	1.0
603	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Iron	1.0	1.0
	Total Copper	0.5	1.0
	Total Selenium	N/A	0.2
703	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Selenium	N/A	0.2
803	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
903	Flow	Report	Report
	BOD_5	20	45

903	Total Suspended Solids	20	45
	E. coli (CFU /100 mL)	126	394
113	Flow	Report	Report
	BOD_5	20	45
	Total Suspended Solids	20	45
	E. coli (CFU /100 mL)	126	394
004	Flow	1.296	2.6
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	Total Selenium	0.05	0.10
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	
005	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	
006	Flow	Report	Report
	Total Suspended Solids	30	100
	Oil and Grease	15	20
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)	

OUTFALL LOCATIONS

Outfall	Latitude	Longitude
001	29.488065 N	95.623993 W
002	29.47074 N	95.63467 W
003	29.479867 N	95.63819 W
004	29.495728 N	95.628842 W
005	29.486185 N	95.63054 W
006	29.485798 N	95.631772 W

VIII. SUMMARY OF CHANGES FROM APPLICATION

The following changes have been made from the application that make the draft permit more stringent:

1. Technology-based effluent limitations for total chromium and total zinc have been added to Outfall 503. Best Available Technology Economically Achievable (BAT) limitations at 40 CFR §423.13(d)(1) apply to the "*cooling tower blowdown*". A compliance period is not applicable for technology based effluent limitations and the limits are effective upon permit issuance. Other requirement No. 10 in the existing permit prohibits the discharge of cooling tower maintenance chemicals which contain the 126 priority pollutants, including total chromium and total zinc. This is more stringent than the BAT limitations. Other Requirement No. 10 in the existing permit (No. 11 in the draft permit) has been revised accordingly to allow discharge of total zinc and total chromium per 40 CFR §423.13(d)(1). The existing Other Requirement No. 10 represents a misinterpretation of the rules and technical error. Including limitations for total zinc and total chromium in accordance with BAT guidelines corrects this error and satisfies antibacksliding exceptions in accordance with 40 CFR §122.44(l)(2)(i)(B)(2).

2. Limitations for pH have been added to Outfall 004. A pH range of 6.0-9.0 SU has been added based on BPJ in accordance with General Guidance – Industrial Permits: Uncontaminated Stormwater Runoff, EPA, January 1997.
3. Water quality-based effluent limitations for total copper at Outfall 002 are more stringent than the existing permit. A daily average limit of 0.059 mg/L and daily maximum limit of 0.123 mg/L have been included in the draft permit. A compliance period of three years has been included in the draft permit to allow the permittee time to identify the source of total copper in the effluent and establish treatment controls or mitigation efforts. Other Requirement No. 20 has been added to the draft permit accordingly.

IX. SUMMARY OF CHANGES FROM EXISTING PERMIT

The following additional changes have been made to the draft permit:

1. The permittee's mailing address has been updated and a facility description has been added to the draft permit.
2. The discharge route description has been revised for clarity, per the permittee's request, to include "below the spillway of Smithers Lake."
3. The wastestreams authorized at Outfall 001 have been revised for clarity. The phrase "overflow from the cooling pond (Smithers Lake)" has been expanded to include "which contains previously monitored effluent (PME) from Outfalls 003, 004, 005, and 006." All site wastestreams except those discharged via Outfall 002 discharge directly to Smithers Lake for equalization and heat dissipation prior to discharge to the spillway or blowdown line. Samples for Outfall 001 are collected at the blowdown line from Smithers Lake, therefore the effluent contains PME from the other outfalls.
4. Flue gas desulfurization (FGD) wastewater was previously included as a type of "low volume waste source" in the existing permit. The final rule in the November 3, 2015 revision of 40 CFR Part 423 establishes separate definitions for FGD wastewater, flue gas mercury control (FGMC) wastewater, gasification wastewater, and combustion residual leachate, making clear that these four wastestreams are no longer considered low volume waste sources. Therefore, FGD wastewater is now included as a distinct wastewater authorized at Outfalls 002, 203, and 703. Similarly, bottom ash transport water has been discharged via Outfall 002. The permittee has disclosed the discharge of bottom ash transport water via Outfall 002 in previous applications. These corrections are clarifications for accuracy, not authorizations of new wastestreams.
5. Certain authorized wastestreams have been removed per the permittee's request for clarity and accuracy. "Low volume waste sources" has been removed from the wastestreams authorized at Outfall 003. "Bottom ash transport water" has been removed from the wastestreams authorized at Outfalls 103 and 603. These wastestreams were included in a previous permit in error.
6. The generating units identified at each outfall have been updated for accuracy. For example, low volume waste sources from Units 1-6 authorized at Outfall 203 has been updated to Units 1-8. This does not represent a request to increase permitted flow or add a new wastestream. This is a clarification for accuracy.
7. Pages 3-13 were updated (January 2016 version).
8. A whole effluent toxicity (WET) limit for the water flea has been added to Outfall 003 as the result of four biomonitoring failures. Lethal and sublethal WET limits for

Ceriodaphnia dubia have been added to the draft permit. See the WHOLE EFFLUENT TOXICITY (BIOMONITORING) CRITERIA section of this Fact Sheet.

The permittee shall submit a Whole Effluent Toxicity Compliance Schedule Plan to initiate a toxicity identification study and include milestones to achieve compliance with the pending WET limit(s), as required by Other Requirement Item No. 19. This will require the permittee to perform an extensive evaluation of the treatment and collection system, effluent characterization, and all other possible sources of toxicity. The permittee must then characterize the pollutant(s) causing test failures, provided that the failure(s) are of an adequate magnitude to perform accurate characterization. The permittee will then need to evaluate potential source control options and potential wastewater treatment options for these pollutants. After the permittee selects the most effective combination of source controls and treatment options, then the selected option will then need to be implemented into the facility's operations. The amount of time needed to complete this process justifies the need for a 34-month compliance schedule.

9. The dilution series for biomonitoring has been revised from 32%, 42%, 56%, ***75***%, and 100% with a critical dilution of 100% to 32%, 42%, 56%, ***80***%, and 100% with a critical dilution of 100%.

10. The following table includes a comparison of the other requirements in the existing and draft permits:

Other Requirement No. in Existing Permit	Other Requirement No. in Draft Permit
1	1
2	2
3	3
4	4
5	5
	6 (New)
6	7
7	8
8	9
9	10
10	11

Other Requirement No. in Existing Permit	Other Requirement No. in Draft Permit
11	12
12	13
13	14
14	15
15	Removed
16	16
17	Removed
	17 (New)
	18 (New)
	19 (New)
	20 (New)

X. DRAFT PERMIT RATIONALE

The following section sets forth the statutory and regulatory requirements considered in preparing the draft permit. Also set forth are any calculations or other necessary explanations of the derivation of specific effluent limitations and conditions, including a citation to the applicable effluent limitation guidelines and water quality standards.

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A. REASON FOR PERMIT ISSUANCE

The applicant applied to the TCEQ for a renewal of Permit No. WQ0001038000, which authorizes the discharge of blowdown and overflow from the cooling pond (Smithers Lake, which includes previously monitored effluent from Outfalls 003-006) at a daily average flow not to exceed 37,000,000 gallons per day via Outfall 001; treated coal pile runoff, non-chemical metal cleaning wastes, low volume waste sources, and stormwater on an intermittent and flow-variable basis via Outfall 002; condenser cooling water, stormwater, line flush water, low volume waste sources, and previously monitored effluent (from Outfalls 103 through 113) at a daily average flow not to exceed 2,121,000,000 gallons per day via Outfall 003; treated stormwater from ash disposal cells at a daily average flow not to exceed 1,296,000 gallons per day via Outfall 004; stormwater runoff and low volume waste sources on an intermittent and flow-variable basis via Outfall 005; and cooling tower blowdown and low volume waste sources on an intermittent and flow-variable basis at Outfall 006. The draft permit includes clarifications to the authorized wastestreams, as discussed in Section IX of this document.

B. WATER QUALITY SUMMARY

Discharge Routes

The discharge route is via Outfall 001 to Dry Creek below the spillway of Smithers Lake; via Outfall 002 to an unnamed tributary of Rabbs Bayou; via Outfalls 003-006 to Smithers Lake, thence to Dry Creek below the spillway of Smithers Lake via Outfall 001; thence from all outfalls to Rabbs Bayou, thence to Big Creek, thence to Brazos River Below Navasota River in Segment No. 1202 of the Brazos River Basin. The unclassified receiving water uses are limited aquatic life use for the unnamed tributary and high aquatic life use for Smithers Lake and Rabbs Bayou. The designated uses for Segment No. 1202 are primary contact recreation, public water supply, and high aquatic life use. Effluent limitations and conditions established in the draft permit comply with state water quality standards and the applicable water quality management plan. The effluent limits in the draft permit will maintain and protect the existing instream uses. Additional discussion of the water quality aspects of the draft permit can be found at Section X.D. of this fact sheet.

Endangered Species Review

The Houston Toad (*Bufo houstonensis* Sanders), an endangered aquatic-dependent species of critical concern, occurs within the Segment No. 1202 watershed as well as the United States Geological Survey hydrologic unit code 12070104. This determination was made by referencing Appendix A of the United States Fish and Wildlife Service (USFWS) biological opinion on the State of Texas authorization of the TPDES (September 14, 1998; October 21, 1998 update). The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. Species distribution information for the Segment No. 1202 watershed provided by the USFWS documents the toad's presence solely in the vicinity of Deep Creek in Austin County, farther up the watershed from the facility associated with this permit action. Based upon this information, it is determined that the facility's discharge is not expected to impact the Houston Toad. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Impaired Water Bodies

Segment No. 1202 is currently listed on the State's inventory of impaired and threatened waters (the 2018 Clean Water Act Section 303(d) list). The listing is for elevated bacteria levels from the confluence with the Brazos River Tidal in Brazoria County upstream to the confluence with Flat Bank Creek in Fort Bend County (AU 1202_01). Additionally, **Big Creek** is listed on the 2018 303(d) list for elevated bacteria levels from the confluence of the Brazos River upstream to the confluence of an unnamed tributary 2.1 km downstream of Farm-to-Market Road 2977 south of Rosenberg (AU 1202J_01) and in the intermittent stream with perennial pools section from the confluence with an unnamed tributary 2.1 km downstream of Farm-to-Market Road 2977 upstream to the confluence of Cottonwood Creek and Coon Creek (AU 1202J_02). The draft permit authorizes the discharge of domestic wastewater and includes limits for *E. coli* at internal Outfalls 903 and 113 in accordance with 30 TAC §307.7(b)(1)(A) and 309.3(h). This permit action is a renewal which does not represent an increase in domestic wastewater contributions and therefore is not expected to further contribute to the bacteria impairment of the segment.

Completed Total Maximum Daily Loads (TMDLs)

There are no completed TMDLs for Segment No. 1202.

C. TECHNOLOGY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

Regulations in Title 40 of the Code of Federal Regulations (40 CFR) require that technology-based limitations be placed in wastewater discharge permits based on effluent limitations guidelines, where applicable, or on best professional judgment (BPJ) in the absence of guidelines.

The wastewater at this facility consists of once-through cooling water, cooling tower blowdown, boiler blowdown, line flush water, bottom ash transport water, coal pile runoff, FGD wastewater, domestic sewage treatment, chemical and non-chemical metal cleaning wastewater, stormwater, and miscellaneous low volume wastewater from sources such as plant floor drains, chemical storage area drains, laboratory and sampling drains, recirculated service water, boiler blowdown, and wash-down water.

The process discharges from Units 1-4 and Units 5-8 and coal pile runoff are subject to federal effluent limitations guidelines at 40 CFR Part 423. These regulations were originally promulgated in 1974. The September 1980 Development Document for the Steam Electric guidelines indicates at page 505 that the new source date for the guideline is March 4, 1974. The facility reports that Units 1-4 were in operation well before the 1974 new source date while Units 5-8 (the coal fired side) were built after 1974. As a result, a new source determination was performed and the discharges of process wastewaters and coal pile runoff from Units 5-8 are new sources as defined at 40 CFR §122.2, while process wastewater discharges from Units 1-4 are not. Therefore, new source performance standards (NSPS) are required for process discharges and coal pile runoff from Units 5-8.

The W.A. Parish Steam Electric Generating Station utilizes natural gas and coal to produce steam, and subsequently electricity. The facility discharges a variety of wastestreams regulated by 40 CFR Part 423 as well as wastestreams not

specifically regulated by the part that are subject to BPJ technology-based effluent limitations. The discharge of domestic wastewater is subject to 30 TAC Chapter 309. A description of wastestreams discharged via each outfall and treatment provided follows.

Outfall 001:
All site wastestreams (i.e., previously monitored effluent (PME) from Outfalls 003, 004, 005, and 006; stormwater overflows from floor drain collection sumps; manhole dewatering; containment and berm dewatering; water well line flush water; potable water line flush water; and fire hydrant flush water), except those discharged via Outfall 002, discharge directly to Smithers Lake (2,430 acres in area and 16,300 acre-feet in volume) for equalization and heat dissipation prior to discharge to the spillway or blowdown line. Surface water drawn from the Brazos River as well as stormwater from the Dry Creek watershed (upstream of Smithers Lake) also feed Smithers Lake. Blowdown flow is measured by a Parshall flume. Samples are collected at the blowdown line.

Outfall 002:
The draft permit authorizes the discharge of coal pile runoff from coal storage areas, non-chemical metal cleaning wastes (Units 5-8), low volume waste (LVW) sources, FGD wastewater (previously considered a low volume waste source), bottom ash transport water, and stormwater. The existing permit specifies that samples shall be collected where commingled wastewater is discharged from the coal storage retention pond prior to mixing with any other waters and prior to discharge to the unnamed tributary. As reported by the applicant, all wastestreams (i.e., coal pile runoff, sump agitation water, coal handling area washdown, nonchemical metal cleaning wastes, miscellaneous low volume wastewater, and stormwater from non-coal handling areas) flow directly to the 76-acre (76.7 acre-feet) Coal Pile Runoff (CPR) Pond for sedimentation. Around 1994-1995, the facility began drawing water from the CPR Pond for additional treatment at the CPR Pretreatment System before the water is used as make-up water to the Main Cooling Tower System. Blowdown and drainage from the Cooling Tower Basin discharges via Outfall 503. Flow from Outfall 503 is estimated using a 45° V-notch weir located where the CPR Pond discharges to the unnamed tributary of Rabbs Bayou. During the term of the existing permit, the facility has reported discharge via Outfall 002 only twice (August-September 2017). The lack of discharge is attributed to the capacity of the Coal Pile Runoff Pond, water lost through evaporation, and water drawn for use as make-up at the Main Cooling Tower System.

Outfall 003:
The draft permit authorizes the discharge of condenser cooling water, stormwater, line flush waters, and PME. As reported by the permittee, all wastestreams (including previously monitored effluents from Outfalls 103, 203, 303, 403, 503, 603, 703, 803, 903, and 113) flow to the 2,500-foot-long Discharge Canal for heat dissipation and neutralization (as needed) prior to discharge via Outfall 003. Outfall 003 flow is estimated by summing the calculated influent flow to the Main Condensers Units 1-6 and the estimated Outfall 503 flow. Samples for Outfall 003 are collected at the exit effluent from the Discharge Canal prior to mixing with waters of Smithers Lake. Instantaneous flow measurements at 2-hour intervals are acceptable for reporting continuous flow at Outfall 003. These flows may be calculated based on the number of hours each condenser circulating pump (Units 1-6) was

operated and the pump curve for each pump, plus the flow contributed by Outfall 503, for each day.

Outfall 103: The draft permit authorizes the discharge of Units 1-6 chemical and non-chemical metal cleaning (MCW) wastewater and low volume waste sources (including boiler blowdown). As reported by the permittee, metal cleaning wastes and low volume waste sources are sent to either the East or West OAC Basin for equalization prior to injection to boilers (and subsequent volatilization). Alternatively, these equalized wastewaters may then flow to the MCW Primary Reaction Tank and on to the MCW Secondary Reaction Tank for pH adjustment. The wastestreams may be recycled back to the Units 5/6 North and/or Units 5/6 South MCW Basin or proceed to the MCW Clarifier for sedimentation and skimming, with coagulation, flocculation and chemical precipitation performed as needed. These clarified wastewaters are neutralized at the Final pH Adjustment Tanks Nos. 1 and 2 (in series) and either discharged via Outfall 103 or recycled back to the Units 5/6 North and/or Units 5/6 South MCW Basins. Flow is measured on the re-combined flow after the Units 5/6 North/South MCW Basins but prior to entering the MCW Primary Reaction Tank. If there is a discharge, samples are collected before the Final pH Adjustment Tank No. 1.

Outfalls 103 and 203 utilize the same discharge pipe. When the effluent contains metal cleaning wastewater, the shared discharge pipe is monitored in accordance with the requirements for Outfall 103. When the effluent contains bottom ash transport water, the shared discharge pipe is monitored in accordance with the requirements for Outfall 203.

Outfall 203: The draft permit authorizes the discharge of low volume waste sources from Units 1-8, FGD wastewater (previously considered a low volume waste source), stormwater, previously monitored effluents from Outfalls 303, 403, and 803, and bottom ash transport wastewater. The permittee reports that the authorized wastestreams combine and enter either the Units 5/6 East or Units 5/6 West LVW Basin for equalization before entering the Units 5/6 Primary Reaction Tank for pH adjustment, then Units 5/6 Secondary Reaction Tank for additional pH adjustment, thence the Units 5/6 Clarifier for sedimentation and skimming with optional coagulation and flocculation.

Effluents from the Secondary Reaction Tank and from the Clarifier may be redirected to combine with effluent from the Units 5/6 East LVW Basin and bottom ash transport water for equalization at the Units 5/6 North or Units 5/6 South MCW Basin (i.e., the head of the Outfall 103 wastewater treatment system, a.k.a. Units 1-6 Metal Cleaning Waste Treatment System). The wastewaters move on to the MCW Primary Reaction tank for pH adjustment, then to the MCW Secondary Tank for additional pH adjustment before entering the MCW Clarifier for sedimentation and skimming, with optional coagulation and flocculation. MCW Clarifier effluent moves on to the Final pH Adjustment Tank No. 1 then to Tank No. 2. Effluent from the MCW Secondary Reaction Tank and from the Final pH Adjustment Tank No. 2 may be rerouted back to the Units 5/6 North or Units 5/6 South MCW Basin.

Outfall 203 flow is estimated as influent into the Unit 5/6 Primary Reaction Tank. When wastewater is discharged from a combination of Units 5-6 and Units 7-8 wastewater systems, then flow is measured at two locations and summed. The permittee reports that it rarely discharges from more than one

treatment train at one time. Outfall 203 samples are collected at the exit effluent from the Final pH Adjustment Tank No. 2. Samples are collected from the LVW Clarifier in lieu of the Final pH Adjustment Tank No. 2 when Outfall 103 metal cleaning wastewaters are being treated and discharged from the MCW treatment train.

Outfall 303: The draft permit authorizes the discharge of low volume waste sources and stormwater at Outfall 303. The permittee reports that floor drainage, washdown water, miscellaneous low volume wastewater, spill prevention, control, and countermeasure (SPCC) sources (e.g., floor drainage areas around transformers), and stormwater are routed to an oil/water separator. High-level overflow would discharge directly to the Discharge Canal. Otherwise, the wastewater flows to the Tricellerator for dissolved air flotation and skimming, with possible coagulation and flocculation, prior to discharge via Outfall 303. During dry weather and initial rainfall conditions, the wastewater is not discharged via Outfall 303 but rather routed for commingling with other Outfall 203 wastestreams for additional treatment within the Outfall 203 treatment systems and subsequent discharge via Outfall 203. During rainfall conditions, the wastewaters are discharged through Outfall 303. Flow is measured at the influent to the Tricellerator. Recirculating the Tricellerator effluent back to the Oil Separator would result in an elevated discharge flow estimate. During periods where the Outfall 303 wastewaters are routed to the Outfall 203 treatment system and not discharged directly to the Discharge Canal, flow and sampling continues at the effluent from the Tricellerator, with results reported on the DMR for Outfall 303.

Outfall 403: The draft permit authorizes the discharge of low volume waste sources (auxiliary cooling tower blowdown from Units 5 and 6) at Outfall 403. The permittee reports that well water is used as makeup water for the Cooling Tower Basin which provides sedimentation and neutralization for recirculated cooling water. Basin blowdown and drainage discharges via Outfall 403, then to the Discharge Canal during continued rainfall, or is routed for commingling with other wastestreams for treatment and subsequent discharge via Outfall 203 during dry weather and initial rainfall. Flow is measured and samples are collected at the effluent from the Cooling Tower Basin. During periods where Outfall 403 wastestreams are routed to the Outfall 203 treatment system and not directly discharged to the Discharge Canal, the permittee continues to measure flow and monitor as required for Outfall 403 and submit these data on the DMR for Outfall 403.

Outfall 503: The draft permit authorizes the discharge cooling tower blowdown and/or low volume waste sources from Units 7 and 8 at Outfall 503. As reported by the permittee, water drawn from the Dry Creek Watershed, Brazos River, and Smithers Lake combine with PME from Outfalls 603 and 703 for possible pretreatment. These waters commingle with reused water from the house recirculating water system and pretreated Coal Pile Runoff Pond waters and enter either the Cooling Tower Basin No. 7 or No. 8 for sedimentation and neutralization. Blowdown and drainage from each basin is measured by a weir and sampled separately (when both are discharging), then routed to the Discharge Canal.

Outfall 603: The draft permit authorizes the discharge of treated chemical and non-chemical metal cleaning wastewater, and low volume wastewaters from Units 1-8 at Outfall 603. As reported by the permittee, the authorized

wastestreams enter the Units 7/8 MCW Basins for equalization and aeration and chemical precipitation when necessary. These equalized wastewaters then recombine and flow to the MCW Primary and Secondary Reaction Tanks for pH adjustment, to the MCW Clarifier for sedimentation and skimming, with coagulation, flocculation and chemical precipitation performed as needed, then to the Final pH Adjustment Tanks Nos. 1 and 2 (in series). Treated wastewater is either discharged via Outfall 603 or recycled back to the basins. Wastewaters discharged via Outfall 603 may be used as freshwater make-up and potentially pre-treated with other waters prior to entering Cooling Tower Basin No. 7 or 8. Drainage and blowdown from these Cooling Tower Basins discharge via Outfall 503.

Similar to Outfalls 103 and 203, the Outfall 603 Units 7/8 Metal Cleaning Waste Treatment System is also part of the Outfall 703 Units 7/8 Low Volume Waste Treatment System, which consists of the Outfall 603 Units 7/8 Metal Cleaning Waste (Units 7/8 MCW) Treatment System train and one other treatment train (i.e., referred to herein as the "Units 7/8 LVW" treatment train). Therefore, Outfall 603 wastewaters always discharge via Outfall 703 piping. When metal cleaning wastes are scheduled to be generated, the equalization basins for the Units 7/8 MCW train are drained, allowing primarily metal cleaning wastes to enter the basins for subsequent treatment at the Units 7/8 MCW treatment train. Outfall 603 samples are collected at the effluent from the Final pH Adjustment Tanks. Flow is measured in-line at the influent to the Units 7/8 MCW Primary Reaction Tank. Recirculating flow back to the treatment system would overestimate Outfall 603 flow.

Outfall 703: The draft permit authorizes the discharge of low volume waste sources from Units 1-8, FGD wastewater (previously considered a low volume waste source), bottom ash transport water, and stormwater. Boiler blowdown, demineralizer regenerant, laboratory and sample drains, area drains in chemical storage area, miscellaneous low volume wastewater, stormwater from non-oily areas of the generating station, Outfall 803 effluent, and FGD water combine for equalization at the Units 7/8 West and East LVW Basins. Effluent from the Units 7/8 West LVW Basin combines with bottom ash transport water for further equalization at the Units 7/8 North or Units 7/8 South MCW Basins, thence on to the Units 7/8 Primary and Secondary Reaction Tanks for pH adjustment, then on to the Units 7/8 Clarifiers for sedimentation and skimming, with optional coagulation and flocculation, as needed.

Effluent from the Units 7/8 West or Units 7/8 East LVW Basin that does not combine with ash transport water flows directly to the Units 7/8 LVW Primary and Secondary Reaction Tanks for pH adjustment, then on to the Units 7/8 LVW Clarifier for sedimentation and skimming, with possible coagulation and flocculation. These clarified waters thence recombine with clarified waters from the Units 7/8 MCW Clarifier for final pH adjustment at the Units 7/8 Final Adjustment Tank No. 1, then Units 7/8 Final pH Adjustment Tank No. 2, prior to discharge via Outfall 703. Outfall 703 effluent may be used as "Fresh Make-up Water" for the Cooling Tower System associated with Outfall 503.

Effluent from the Secondary Reaction Tanks as well as from the Units 7/8 Final pH Adjustment Tank No. 2 may be recirculated back to the Units 7/8 North or Units 7/8 South MCW Basin for retreatment. Flow is estimated by measuring flow at the combined flow from the Units 7/8 North and Units 7/8 South MCW Basin and at the effluent from the Units 7/8 East LVW Basin. Recirculating

flow back for retreatment will overestimate Outfall 703 flow discharge. Outfall 703 samples are collected downstream from the Units 7/8 Final pH Adjustment Tank No. 2.

Outfall 803: The draft permit authorizes the discharge of stormwater and low volume waste sources from Units 7 and 8. As reported by the permittee, low volume waste sources (i.e. floor drainage, washdown water, miscellaneous low volume wastewater, and SPCC sources) and stormwater are routed to an API Separator. High-level overflow will discharge directly to the Discharge Canal, although no such discharge has been reported. Otherwise, the wastewater flows to the Tricellerator for dissolved air flotation and skimming, with possible coagulation and flocculation, prior to discharge via Outfall 803. Effluent from the Tricellerator may be recirculated back to the API Separator. Effluent from Outfall 803 flows to the Discharge Canal during continued rainfall events. During dry weather and initial rainfall events, the Outfall 803 effluent is reported to commingle with untreated Outfall 203 wastestreams or Outfall 703 wastestreams for additional treatment and subsequent discharge via the respective outfall. During periods where Outfall 803 wastewaters are routed to the Outfall 203 or Outfall 703 treatment systems, the facility continues to measure flow and monitor as required at Outfall 803 and submit data on the DMR.

Flow is measured at the influent to the Tricellerator; recirculating would overestimate actual discharge. Samples are collected at the effluent from the Units 7/8 Oily Waste Treatment System's Tricellerator, after the treatment system's recirculation point and prior to mixing with any other waters.

Outfall 903: The draft permit authorizes the discharge of domestic effluent (from the Units 1-4 generating areas) and air conditioning condensate. As reported by the applicant, domestic sewage and air conditioning condensate generated at the "gas-fired side" of the facility enters the Comminutor, then on to the Surge Chamber for equalization prior to entering the Aeration Chamber (activated sludge), then on to the Settling Chamber, thence the three-chambered Chlorine Contact Chamber prior to discharge via Outfall 903 and on to the Discharge Canal. Flow is measured and samples are collected following the 3rd (final) Chlorine Contact Chamber of the Gas Side Sewage Treatment System. Wasted sludge is taken off-site for disposal either via land application or landfill.

Outfall 113: The draft permit authorizes the discharge of treated domestic effluent (from the Units 5-8 generating areas) and air conditioning condensate. As reported by the applicant, domestic sewage and air conditioning condensate generated at the "coal-fired side" of the facility enters the Comminutor, then on to the Surge Chamber for equalization prior to entering the Aeration Chamber (activated sludge), then on to the Settling Chamber, then to the Chlorine Contact Chamber prior to discharge via Outfall 113 and on to the Discharge Canal. Flow is measured and samples are collected following the Chlorine Contact Chamber of the Coal Side Sewage Treatment System. Wasted sludge is taken off-site for disposal either via land application or landfill.

Outfall 004:

The draft permit authorizes the discharge of treated stormwater from ash disposal cells via Outfall 004. As reported by the permittee, stormwater from ash disposal cells is routed to one or more of the four Cell Ponds for

equalization and sedimentation. The ponds are connected in series with Cell Pond 2B, Cell 1C, Cell 2A, and Cell 3. Any of the cell ponds may discharge to Outfall 004. The discharge via Outfall 004 consists 100% of stormwater from the ash disposal cells.

Outfall 005:
The draft permit authorizes the discharge of stormwater runoff from Units 1-4 and low volume wastewaters at Outfall 005. Floor drainage and washdown water, miscellaneous low volume wastewaters, SPCC sources, and stormwater flow to a collection sump where the waters are typically pumped to an API Separator for sedimentation, flotation, and skimming, then on to the Tricellerator for dissolved air flotation and skimming, with optional coagulation and flocculation. During rain events, wastestreams may be routed to a Stormwater Tank for equalization prior to being pumped to the API Separator. Under high flows, sumps and the Stormwater Tank may overflow directly to Smithers Lake or the Discharge Canal. Flow is estimated by pump run time and Outfall 005 samples are collected at the effluent from the Units 1-4 Oily Waste Treatment System's Tricellerator, prior to mixing with any other waters.

Outfall 006:
The draft permit authorizes the discharge of Units 1-4 auxiliary cooling tower blowdown and low volume waste sources at Outfall 006. Well water is used as makeup water at the Cooling Tower Basin which provides sedimentation and neutralization for recirculated cooling water. Cooling tower blowdown and basin drainage discharge via Outfall 006. Flow is measured and samples are collected at the effluent from the Units 1-4 Auxiliary Cooling Tower System's Cooling Tower Basin, prior to mixing with any other waters or entering Smithers Lake.

2. CALCULATIONS

See Appendix A of this fact sheet for calculations and further discussion of technology-based effluent limitations proposed in the draft permit.

Technology-based effluent limitations for free available chlorine and total residual chlorine at Outfall 003; TSS, oil and grease, and total iron at Outfall 002; TSS, oil and grease, total iron, and total copper at Outfall 103; TSS and oil and grease at Outfalls 203-403, 803 005, and 006; TSS, oil and grease, total chromium, and total zinc at Outfall 503; TSS, oil and grease, total iron, total copper, and total selenium at Outfall 603; TSS, oil and grease, and total selenium at Outfalls 703 and 004; BOD_5, TSS, and *E. coli* at Outfalls 903 and 113; and pH at all applicable outfalls are continued from the existing permit.

The following technology-based effluent limitations are proposed in the draft permit:

Outfall	Pollutant	Daily Average, *mg/L*	Daily Maximum, *mg/L*
002	TSS	30	50
	Oil and Grease	15	20
	Total Iron	1.0	1.0

Outfall	Pollutant	Daily Average, *mg/L*	Daily Maximum, *mg/L*
003	Free Available Chlorine	0.2 (295 lbs/day)	0.5 (737 lbs/day)
	Total Residual Chlorine	N/A	0.2 (1.770 lbs/day)
103	TSS	30	100
	Oil and Grease	15	20
	Total Iron	1.0	1.0
	Total Copper	0.5	1.0
203	Total Selenium	-	0.2
	TSS	30	100
	Oil and Grease	15	20
	Total Selenium	-	0.2
303	TSS	30	100
	Oil and Grease	15	20
403	TSS	30	100
	Oil and Grease	15	20
503	TSS	30	100
	Oil and Grease	15	20
	Total Chromium	0.2	0.2
	Total Zinc	1.0	1.0
603	TSS	30	100
	Oil and Grease	15	20
	Total Iron	1.0	1.0
	Total Copper	0.5	1.0
	Total Selenium	-	0.2
703	TSS	30	100
	Oil and Grease	15	20
	Total Selenium	N/A	0.20
803	TSS	30	100
	Oil and Grease	15	20
903	BOD_5	20	45
	TSS	20	45
	E. coli (CFU or MPN/100 mL)	126	(existing limit more stringent)
113	BOD_5	20	45
	TSS	20	45
	E. coli (CFU or MPN/100 mL)	126	(existing limit more stringent)
004	TSS	30	100
	Oil and Grease	15	20
	Total Selenium	0.05	(existing limit more stringent)
005	TSS	30	100
	Oil and Grease	15	20

Outfall	Pollutant	Daily Average, *mg/L*	Daily Maximum, *mg/L*
006	TSS	30	100
	Oil and Grease	15	20

3. 316(B) COOLING WATER INTAKE STRUCTURES

Section 316(b) of the Clean Water Act (CWA) requires facilities to use the Best Technology Available (BTA) for minimizing Impingement Mortality and Entrainment (IM & E). Revised regulations in 40 CFR Part 125, Subpart J published in the Federal Register on August 15, 2014 outline BTA for minimizing IM & E and establish standards for compliance with Section 316(b). The revised regulations apply to existing point source facilities that use a CWIS designed to withdraw 2.0 MGD or more from waters of the United States (WOTUS) and use 25 percent or more of the water withdrawn exclusively for cooling purposes.

a. SCREENING

NRG Texas Power LLC operates a cooling water intake structure (CWIS) located on Smithers Lake, in Fort Bend County, to obtain water for cooling purposes. The facility is subject to the requirements of Section 316(b) of the CWA because the CWIS withdraws more than 2 MGD of water from waters of the United States and more than 25% of the water withdrawn (actual intake flow) is used for cooling purposes within the facility.

Smithers Lake is a cooling water impoundment. Cooling water withdrawn via the CWIS located on Smithers Lake supplies once-through cooling water (Units 1-6) and cooling towers (Units 7-8). The CWIS is operated in a manner consistent with a closed-cycle recirculating system (CCRS) as defined at 40 CFR § 125.92(c), withdrawing surface water for make-up purposes only.

The Standards Implementation Team reviewed the permit application in accordance with 40 CFR §§ 125.98(f)(2)(i) and (f)(3)(i) and concluded that that intake structure is not having a demonstrable impact on the health of the fishery in the source waterbody, or on endangered species that may rely on the source waterbody.

The operation of a CCRS (i.e., cooling water impoundment for once-through cooling (Units 1-6) and cooling towers (Units 7-8) reduces withdrawals from surface waters effectively, thereby reducing the impingement and entrainment of aquatic organisms. The facility meets BTA standards for IM&E. The executive director will review this determination upon receipt of additional information in accordance with 40 CFR § 122.21(r); 40 CFR Part 125, Subpart J; or both; as applicable.

b. PERMIT ACTION

Other Requirement No. 16 has been revised to include the definitions for CCRS and actual intake flow, monitoring requirements, and record-

keeping requirements. Additionally, the draft permit requires the permittee to notify the TCEQ of any change in the design, operation, or maintenance of the cooling water system or the method by which cooling water is obtained. Upon receipt of such notification, the TCEQ may reopen the permit to include additional terms and conditions as necessary.

D. WATER QUALITY-BASED EFFLUENT LIMITATIONS/CONDITIONS

1. GENERAL COMMENTS

The *Texas Surface Water Quality Standards* found at 30 TAC Chapter 307 state that surface waters will not be toxic to man from ingestion of water, consumption of aquatic organisms, or contact with the skin, or to terrestrial or aquatic life. The methodology outlined in the TCEQ guidance document *Procedures to Implement the Texas Surface Water Quality Standards* (IPs) is designed to ensure compliance with 30 TAC Chapter 307. Specifically, the methodology is designed to ensure that no source will be allowed to discharge any wastewater that (1) results in instream aquatic toxicity; (2) causes a violation of an applicable narrative or numerical state water quality standard; (3) results in the endangerment of a drinking water supply; or (4) results in aquatic bioaccumulation that threatens human health. Calculated water quality-based effluent limits can be found in Appendix B of this fact sheet.

TPDES permits contain technology-based effluent limits reflecting the best controls available. Where these technology-based permit limits do not protect water quality or the designated uses, additional water quality-based effluent limitations or conditions are included. State narrative and numerical water quality standards are used in conjunction with EPA criteria and other toxicity databases to determine the adequacy of technology-based permit limits and the need for additional water quality-based controls. A comparison of technology-based effluent limits and calculated water quality-based effluent limits can be found in Appendix D of this fact sheet.

2. AQUATIC LIFE CRITERIA

a. SCREENING

Water quality-based effluent limitations are calculated from freshwater aquatic life criteria found in Table 1 of the *Texas Surface Water Quality Standards* (30 TAC Chapter 307).

Outfall 001-
Outfall 001 is a reservoir discharge. Critical conditions are not typically assessed for these discharges.

Outfall 002-
There is no mixing zone for this discharge directly to the unnamed tributary, an intermittent stream with perennial pools; acute and chronic freshwater criteria apply at the end of pipe. The following critical effluent percentages are being used:

Acute Effluent % 100% Chronic Effluent % 100 %

Outfall 003-
Acute freshwater criteria are applied at the edge of the zone of initial dilution (ZID), and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as volume within a radius of 25 feet from the point where the discharge enters Smithers Lake. The aquatic life mixing zone for this discharge is defined as volume within a radius of 200 feet from the point where the discharge enters Smithers Lake.

TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edges of the ZID and aquatic life mixing zone for discharges greater than 10 MGD into lakes or reservoirs. General assumptions used in the horizontal jet plume model are a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the following critical effluent percentages are calculated based on the two-year maximum monthly average flow of >100 MGD:

Acute Effluent % 100% Chronic Effluent % 100%

Outfall 004
Discharge via Outfall 004 is via a diffuser into Smithers Lake. Discharge occurs intermittently. Acute freshwater criteria are applied at the edge of the ZID, and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as volume within a radius of 25 feet from the point where the discharge enters Smithers Lake. The aquatic life mixing zone for this discharge is defined as volume within a radius of 200 feet from the point where the discharge enters Smithers Lake.

An analysis for the diffuser discharge was performed using CORMIX Ver. 8.0GTD. These critical effluent percentages are as follows:

Acute Effluent % 14.1% Chronic Effluent % 4.6%

Outfalls 005 and 006-
Acute freshwater criteria are applied at the edge of the ZID, and chronic freshwater criteria are applied at the edge of the aquatic life mixing zone. The ZID for this discharge is defined as volume within a radius of 25 feet from the point where the discharge enters Smithers Lake. The aquatic life mixing zone for this discharge is defined as volume within a radius of 200 feet from the point where the discharge enters Smithers Lake.

TCEQ practice is to establish minimum estimated effluent percentages at the edges of the ZID and aquatic life mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. These critical effluent percentages are as follows:

Acute Effluent % 60% Chronic Effluent % 15%

General Screening Procedures

Wasteload allocations (WLAs) are calculated using the above estimated effluent percentages, criteria outlined in the *Texas Surface Water Quality Standards*, and partitioning coefficients for metals (when appropriate and designated in the implementation procedures). The WLA is the end-of-pipe effluent concentration that can be discharged when, after mixing in the receiving stream, the instream numerical criteria will not be exceeded.

From the WLA, a long-term average (LTA) is calculated for lakes and reservoirs (Smithers Lake) using a lognormal probability distribution, a given coefficient of variation (0.6), and a 99th percentile confidence level. The LTA is the long-term average effluent concentration for which the WLA will never be exceeded using a selected percentile confidence level. The lower of the two LTAs (acute and chronic) is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12).

From the WLA, a LTA is calculated for streams and rivers using a lognormal probability distribution, a given coefficient of variation (0.6), and a 90th percentile confidence level. The LTA is the long-term average effluent concentration for which the WLA will never be exceeded using a selected percentile confidence level. The LTA is used to calculate a daily average and daily maximum effluent limitation for the protection of aquatic life using the same statistical considerations with the 99th percentile confidence level and a standard number of monthly effluent samples collected (12).

Assumptions used in deriving the effluent limitations include segment-specific values for TSS, pH, hardness, and chloride according to the *IPs*. The segment values are 36 mg/L for TSS, 7.6 standard units for pH, 160 mg/L for hardness (as calcium carbonate, $CaCO_3$), and 88 mg/L for chloride. For additional details on the calculation of water quality-based effluent limitations, refer to the *IPs*.

TCEQ practice for determining significant potential is to compare the reported analytical data against percentages of the calculated daily average water quality-based effluent limitation. Permit limitations are required when analytical data reported in the application equals or exceeds 85 percent of the calculated daily average water quality-based effluent limitation. Monitoring and reporting is required when analytical data reported in the application equals or exceeds 70 percent of the calculated daily average water quality-based effluent limitation.

b. PERMIT ACTION

No analytical data is available for Outfall 002 for screening against water quality-based effluent limitations because discharge has not occurred in the past year to conduct a pollutant analysis.

Analytical data reported in the application for Outfalls 003-006 were screened against calculated water quality-based effluent limitations for the protection of aquatic life. Reported analytical data does not exceed 70 percent of the calculated daily average water quality-based effluent limitation for aquatic life protection. No additional limits or monitoring and reporting requirements have been added to the draft permit.

A site-specific partitioning coefficient of 0.02 was used for total aluminum at Outfalls 003-006 based on a 1994 TCEQ-approved study.

The limits in the existing permit were compared to the calculated water quality-based effluent limits to determine whether the existing limits are still protective. WQBELs for total copper at Outfall 002 (0.059 mg/L daily average and 0.123 mg/L daily maximum) were more stringent than the existing permit limit (0.078 mg/L daily average and 0.164 mg/L daily maximum). The total copper limitations have been revised accordingly.

An interim three-year compliance period is included in the draft permit for total copper in accordance with 30 TAC § 307.2(f). The interim compliance period will give the applicant time to identify and mitigate sources of total copper in the effluent or provide for additional treatment to attain the limits in the draft permit.

3. WHOLE EFFLUENT TOXICITY (BIOMONITORING) CRITERIA (*7-DAY CHRONIC*)

a. SCREENING AND REASONABLE POTENTIAL ANALYSIS

The existing permit includes chronic freshwater biomonitoring requirements at Outfall 003.

In the past three years, the permittee has performed twenty-eight chronic tests, with four sublethal failures by the water flea.

A reasonable potential (RP) determination was performed in accordance with 40 CFR §122.44(d)(1)(ii) to determine whether the discharge will reasonably be expected to cause or contribute to an exceedance of a state water quality standard or criterion within that standard. Each test species is evaluated separately. The RP determination is based on representative data from the previous three years of chronic WET testing. This determination was performed in accordance with the methodology outlined in the TCEQ letter to the EPA dated December 28, 2015, and approved by the EPA in a letter dated December 28, 2015.

With zero failures by the fathead minnow, a determination of no RP was made. WET limits are not required and this species is eligible for the testing frequency reduction.

With four failures by the water flea, WET limits have been added to the draft permit, with a 34-month compliance period. In accordance with EPA Region 6 policy, the lethal WET limit will be set at 100% and the sublethal WET limit will be set at 80%.

b. PERMIT ACTION

The provisions of this section apply to Outfall 003.

Based on information contained in the permit application, the TCEQ has determined that there may be pollutants present in the effluent(s) that may have the potential to cause toxic conditions in the receiving stream.

Whole effluent toxicity testing (biomonitoring) is the most direct measure of potential toxicity, which incorporates the effects of synergism of effluent components and receiving stream water quality characteristics. Biomonitoring of the effluent is, therefore, required as a condition of this permit to assess potential toxicity. The biomonitoring procedures stipulated as a condition of this permit are as follows:

i) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*). The frequency of the testing will be once per quarter.

ii) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*). The frequency of testing will be once per quarter.

Toxicity tests will be performed in accordance with protocols described in *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms,* Fourth Edition (EPA-821-R-02-013) or the latest revision. The stipulated test species are appropriate to measure the toxicity of the effluent consistent with the requirements of the state water quality standards. The biomonitoring frequency has been established to reflect the likelihood of ambient toxicity and to provide data representative of the toxic potential of the facility's discharge.

This permit may be reopened to require effluent limits, additional testing, or other appropriate actions to address toxicity if biomonitoring data show actual or potential ambient toxicity to be the result of the permittee's discharge to the receiving stream or water body.

Only the fathead minnow may be eligible for a testing frequency reduction. If none of the first four consecutive quarterly tests demonstrates significant lethal or sublethal effects, the permittee may submit this information in writing and, upon approval, reduce the testing frequency to once per year for the vertebrate test species. If one or more of the first four consecutive quarterly tests demonstrates significant sublethal effects, the permittee is required by the permit to continue quarterly testing for that species until four consecutive quarterly tests demonstrate no significant sublethal effects. At that time, the permittee may apply for the appropriate testing frequency reduction for that species. If one or more of the first four consecutive quarterly tests demonstrates significant lethal effects, the permittee is required by the permit to continue quarterly testing for that species until the permit is reissued.

c. DILUTION SERIES

The permit requires five (5) dilutions in addition to the control (0% effluent) to be used in the toxicity tests. These additional effluent concentrations shall be 32%, 42%, 56%, 80%, and 100%. The low-flow effluent concentration (critical dilution) is defined as 100% effluent.

The dilution series outlined above was calculated using a 0.75 factor applied to the critical dilution. The critical dilution is the estimated effluent dilution at the edge of the aquatic life mixing zone, which is discussed in Section X.D.2.a. of this fact sheet.

4. AQUATIC ORGANISM TOXICITY CRITERIA (24-HOUR ACUTE)

a. SCREENING

The existing permit includes 24-hour acute freshwater biomonitoring requirements for Outfall 003. In the past three years, the permittee has performed twelve 24-hour acute tests, with zero demonstrations of significant mortality (i.e., zero failures). Minimum 24-hour acute freshwater biomonitoring requirements are proposed in the draft permit as outlined below.

b. PERMIT ACTION

Twenty-four-hour 100% acute biomonitoring tests are required at Outfall 003 at a frequency of once per six months for the life of the permit.

The biomonitoring procedures stipulated as a condition of this permit are as follows:

i) Acute 24-hour static toxicity test using the water flea (*Ceriodaphnia dubia* or *Daphnia pulex*). A minimum of five (5) replicates with eight (8) organisms per replicate will be used for this test.

ii) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*). A minimum of five (5) replicates with eight (8) organisms per replicate will be used for this test.

Toxicity tests will be performed in accordance with protocols described in *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms*, Fifth Edition (EPA-821-R-02-012) or the latest revision.

5. AQUATIC ORGANISM BIOACCUMULATION CRITERIA

a. SCREENING

Water quality-based effluent limitations for the protection of human health are calculated using criteria for the consumption of fish tissue found in Table 2 of the *Texas Surface Water Quality Standards* (30 TAC Chapter 307).

Outfall 001-
Outfall 001 is a reservoir discharge. Critical conditions are not typically assessed for these discharges.

Outfall 002-
The discharge point is to an unnamed tributary, an intermittent stream with perennial pools. Human health screening using incidental fish only criteria (= 10 × fish only criteria) is applicable due to the perennial pools that support incidental fisheries. TCEQ uses the mass balance equation to estimate dilution in the intermittent stream with perennial pools during average flow conditions. The estimated dilution for human health protection is calculated using the two-year average monthly average flow of 0.648 MGD and the harmonic mean flow of 0.1 cubic feet per second (cfs) for the unnamed tributary. The following effluent percentage is being used:

Human Health Effluent %: 90.931 %

In addition, critical conditions were developed for Rabbs Bayou. Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone. The human health mixing zone for this discharge is identical to the aquatic life mixing zone. TCEQ uses the mass balance equation to estimate dilution at the edge of the human health mixing zone during average flow conditions. The estimated dilution at the edge of the human health mixing zone is calculated using the two-year average monthly average flow of 0.648 MGD and the harmonic mean flow of 0.2 cfs for Rabbs Bayou. The following critical effluent percentage is being used:

Human Health Effluent %: 83.37%

Outfall 003-
Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into lakes and reservoirs. The human health mixing zone for this discharge is defined as a volume within a radius of 200 feet from the point where the discharge enters Smithers Lake. TCEQ uses the EPA horizontal jet plume model to estimate dilution at the edge of the human health mixing zone for discharges greater than 10 MGD into lakes or reservoirs. General assumptions used in the horizontal jet plume model are a non-buoyant discharge, a submersed pipe, and no cross flow. Based on this analysis, the following critical effluent percentage is calculated based on the two-year average monthly average flow of >100 MGD:

Human health Effluent %: 100%

Outfall 004
Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into lakes and reservoirs. The human health mixing zone for this discharge is defined as a volume within a radius of 200 feet from the point where the discharge enters Smithers Lake. An analysis for the diffuser discharge was performed using CORMIX Ver. 8.0GTD. These critical effluent percentages are as follows:

Human health Effluent %: 3.2%

Outfalls 005 and 006-
Fish tissue bioaccumulation criteria are applied at the edge of the human health mixing zone for discharges into lakes and reservoirs. The human health mixing zone for this discharge is defined as a volume within a radius of 200 feet from the point where the discharge enters Smithers Lake. TCEQ practice is to establish a minimum estimated effluent percentage at the edge of the human health mixing zone for discharges that are 10 MGD or less into sections of lakes or reservoirs that are at least 200 feet wide. This critical effluent percentage is:

Human Health Effluent %: 8%

Water quality-based effluent limitations for human health protection against the consumption of fish tissue are calculated using the same procedure as outlined for calculation of water quality-based effluent limitations for aquatic life protection. A 99th percentile confidence level in the long-term average calculation is used, with only one long-term average value being calculated.

Significant potential is again determined by comparing reported analytical data against 70 percent and 85 percent of the calculated daily average water quality-based effluent limitation.

b. PERMIT ACTION

No analytical data is available for Outfall 002 for screening against water quality-based effluent limitations because the facility is not in operation.

Analytical data reported for Outfalls 003-006 in the application were screened against calculated water quality-based effluent limitations for the protection of human health. Reported analytical data does not exceed 70 percent of the calculated daily average water quality-based effluent limitation for human health protection. No additional limits or monitoring and reporting requirements have been added to the draft permit.

6. DRINKING WATER SUPPLY PROTECTION

a. SCREENING

Segment No. 1202, which receives the discharge from this facility, is designated as a public water supply. The discharge point is located at a distance greater than three miles from the classified segment. Screening reported analytical data of the effluent against water quality-based effluent limitations calculated for the protection of a drinking water supply is not applicable due to the distance between the discharge point and the classified segment.

b. PERMIT ACTION

None.

7. TOTAL DISSOLVED SOLIDS, CHLORIDE, AND SULFATE STANDARDS PROTECTION

a. SCREENING

The average concentration of TDS, chloride, and sulfate in the effluent at Outfalls 003 and the average concentration of TDS and sulfate in the effluent at Outfall 004 are greater than the segment criterion.

Screening procedures and effluent limitations for TDS, chloride, and sulfate are calculated using the methodology in the *IPs* and criteria in the *Texas Surface Water Quality Standards* (30 TAC Chapter 307). Detailed calculations are presented in Appendix C.

b. PERMIT ACTION

Outfall 003

Based on the screening, concentrations of TDS, chloride, and sulfate in the effluent exceed the segment criteria at the edge of the human health mixing zone. Once-through cooling water is discharged via Outfall 003. In accordance with guidance provided by the *IPs* additional review of available data was conducted to determine if a once-through cooling water exemption may be applied to Outfall 003.

Influent and effluent TDS data collected previously for a conditional exemption to toxicity due to TDS for WET sampling was submitted by the applicant as supplemental information and reviewed in order to determine if a once-through exemption for TDS could be granted. Statistical analyses were run in the form of a paired, two-tailed t-test, which demonstrated no statistically significant difference at a 95 percent confidence level between the TDS content of the influent water from Smithers Lake and the effluent discharge to Smithers Lake.

t-Test: Two-Sample Assuming Unequal Variances
Total Dissolved Solids

	Variable 1	*Variable 2*
Mean	1012	1007.692
Variance	94978	98921.9
Observations	13	13
Hypothesized Mean Difference	0	
degrees of freedom	24	
t Stat	0.035272	
P(T<=t) one-tail	0.486077	
t Critical one-tail	1.710882	
P(T<=t) two-tail	**0.972155**	
t Critical two-tail	2.063899	

Sample Data:

Intake (mg/L)	Effluent (mg/L)
1220	1190
1270	1290
1390	1410
1320	1310
1130	1080
1140	1130
1140	1190
1050	1060
1020	1030
862	814
428	430
714	710
472	456

Smither's Lake is an unclassified water body not listed in Appendix D of the *Texas Surface Water Quality Standards*; therefore, the designated high aquatic life use and dissolved oxygen criteria are presumed in accordance with guidance provided in the *IP*s.

Additionally, it is noted that FGD wastewater discharged at internal Outfalls 203 and 703 (monitored prior to discharge via Outfall 003) may contain elevated concentrations of total dissolved solids, sulfates, and chlorides as described in EPA's *Technical Development Document for the Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category* (EPA-821-R-15-007, September 2015); however, neither effluent monitoring or effluent limitations are required by the promulgated regulations, as noted in EPA-821-R-15-007. TDS, sulfate, and chloride were considered in the development of effluent limitations guidelines and standards for steam electric generating facilities, but were not included in the final guidelines. This information is given additional consideration because TDS, sulfate, and chloride may be integral to treatment system additives, existing treatment technologies may be ineffective, or are adequately controlled through the regulation of another indicator pollutant, and additional permit action to establish controls for these parameters may have adverse effects on the effectiveness of treatment, or are not effectively treated with existing control technology. Sulfate and chloride controls are not included in the draft permit until a subsequent review of information required for collection by the draft permit is available, and additional relevant factors may be considered prior to the development of any additional permit action(s).

TDS monitoring requirements have been added to the draft permit at Outfall 003. Other Requirement No. 18 has been added to the draft permit accordingly. The permittee shall sample once per quarter for the duration of the permit.

Outfall 004

Screening for TDS, chloride, and sulfate at Outfall 004 was conducted using an effluent fraction of 3.2% at the edge of the human health mixing zone based on model results incorporating the outfall diffuser.

Based on the screening for Outfall 004, no effluent limitations are needed for TDS, chloride, or sulfate. Monitoring and reporting requirements for TDS, chloride, and sulfate have been added to the draft permit for Outfall 003.

8. PROTECTION OF pH STANDARDS

a. SCREENING

The existing permit includes pH limits of 6.0 – 9.0 standard units at Outfalls 001, 002, 003, 005, and 006, which discharge into unclassified water bodies. Consistent with the procedures for pH screening that were submitted to EPA with a letter dated May 28, 2014, and approved by EPA in a letter dated June 2, 2014, requiring a discharge to an unclassified water body to meet pH limits of 6.0 – 9.0 standard units reasonably ensures instream compliance with *Texas Surface Water Quality Standards* pH criteria.

b. PERMIT ACTION

The existing pH limits of 6.0 – 9.0 standard units are carried forward in the draft permit at Outfalls 001, 002, 003, and 005. The draft permit includes pH limits for Outfall 004.

9. DISSOLVED OXYGEN PROTECTION

a. SCREENING

Due to the low levels of oxygen-demanding constituents expected from the discharges via Outfalls 001 through 006, no significant dissolved oxygen depletion is anticipated in the receiving waters as a result of these discharges.

b. PERMIT ACTION

None.

10. BACTERIA STANDARDS PROTECTION

a. SCREENING

Outfalls 903 and 113 are authorized to discharge treated domestic effluent and are recognized as potential sources of bacteria. The existing permit contains effluent limitations for *E. coli* at both outfalls.

b. PERMIT ACTION

The single grab and daily maximum *E. coli* bacteria limits have been have been continued from the existing permit. The current effluent limitations applied at Outfalls 903 and 113 are equivalent to the most stringent primary contact recreation standard and are expected to protect and maintain the existing segment uses.

11. THERMAL STANDARDS PROTECTION

a. SCREENING

The permittee is required to meet the segment criteria of 95°F at Outfall 001, where discharges from the cooling water impoundment (Smithers Lake) enter the receiving water. Existing effluent limitations for temperature at Outfall 001 are expected to maintain the 95°F temperature criteria for Classified Segment No. 1202 (Brazos River). The permittee is required to meet temperature limits of 110°F (daily average) and 118°F (daily maximum) at Outfall 003. Smithers Lake was designed/built as cooling pond to dissipate heat (designed with an internal weir system that forces the water through the lake allowing for heat dissipation – it takes approximately three days for the water to make it to the final discharge location of the lake Outfall 001) from this discharge prior to final discharge from the lake at Outfall 001 that currently has a maximum discharge limit of 95°F.

b. PERMIT ACTION

Existing temperature limits have been continued in the draft permit. Temperature limits may be revised at a future date.

XI. PRETREATMENT REQUIREMENTS

This facility is not defined as a publicly owned treatment works. Pretreatment requirements are not proposed in the draft permit.

XII. VARIANCE REQUESTS

No variance requests have been received.

XIII. PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the chief clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the chief clerk instructs the applicant to place a copy of the application in a public place for reviewing and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The chief clerk also mails this notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent, along with the executive director's preliminary decision, as contained in the technical summary or fact sheet, to the chief clerk. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the executive director's preliminary decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case proceeding.

After the public comment deadline, the executive director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The chief clerk then mails the executive director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the executive director's response and decision, they can request a contested case hearing or file a request to reconsider the executive director's decision within 30 days after the notice is mailed.

The executive director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the executive director's response to comments and final decision is mailed. If a hearing request or request for reconsideration is filed, the executive director will not issue the permit and will forward the application and request to the TCEQ commissioners for their consideration at a scheduled commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the executive director calls a public meeting or the commission grants a contested case hearing as described above, the commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the commission will consider all public comments in making its decision and shall either adopt the executive director's response to public comments or prepare its own response.

For additional information about this application, contact Sarah A. Johnson, Ph.D., at (512) 239-4649.

XIV. ADMINISTRATIVE RECORD

The following section is a list of the fact sheet citations to applicable statutory or regulatory provisions and appropriate supporting references.

A. PERMIT(S)

TPDES Permit No. WQ0001038000 issued on June 21, 2011.

B. APPLICATION

TPDES wastewater permit application received on December 20, 2012 and additional information received on January 15, 2013 and February 17, 2020.

C. 40 CFR CITATION

40 CFR Part 423 (BPT, BCT, BAT, NSPS).

D. LETTERS/MEMORANDA/RECORDS OF COMMUNICATION

Letter dated April 29, 2014, from L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ, to Bill Honker, Director, Water Quality Protection Division, EPA (TCEQ proposed development strategy for thermal evaluation procedures).

Letter dated May 12, 2014, from William K. Honker, P.E., Director, Water Quality Protection Division, EPA, to L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ (Approval of TCEQ proposed development strategy for thermal evaluation procedures).

Letter dated May 28, 2014, from L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ, to Bill Honker, Director, Water Quality Protection Division, EPA (TCEQ proposed development strategy for pH evaluation procedures).

Letter dated June 2, 2014, from William K. Honker, P.E., Director, Water Quality Protection Division, EPA, to L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ (Approval of TCEQ proposed development strategy for pH evaluation procedures).

Letter dated December 28, 2015, from L'Oreal Stepney, P.E., Deputy Director, Office of Water, TCEQ, to Bill Honker, Director, Water Quality Protection Division, EPA (TCEQ proposed development strategy for procedures to determine reasonable potential for whole effluent toxicity limitations).

Letter dated December 28, 2015, from William K. Honker, P.E., Director, Water Quality Protection Division, EPA, to L'Oreal W. Stepney, P.E., Deputy Director, Office of Water, TCEQ (Approval of TCEQ proposed development strategy for procedures to determine reasonable potential for whole effluent toxicity limitations).

TCEQ Interoffice Memorandum dated March 5, 2013 and April 1, 2014 from Lili Murphy and May 13, 2019 from Peter Schaefer of the Standards Implementation Team, Water Quality Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Standards Memos).

TCEQ Interoffice Memorandum Addendum for TDS Exemption dated June 14, 2016 and November 5, 2018, from Lili Murphy of the Standards Implementation Team, Water Quality Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Standards Memos).

TCEQ Interoffice Memorandum dated March 14, 2013 from James Michalk of the Water Quality Assessment Team, Water Quality Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Diffuser Review Memo).

TCEQ Interoffice Memoranda dated March 19, 2013 from Nancy Vignali and dated April 9, 2020 from Katie Cunningham of the Water Quality Assessment Team, Water Quality Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Critical Conditions Memo).

TCEQ Interoffice Memoranda dated March 15, 2013 and December 9, 2013 from James Michalk and dated April 9, 2020 from Katie Cunningham of the Water Quality Assessment Team, Water Quality Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Modeling Memo).

TCEQ Interoffice Memoranda dated March 22, 2013, December 19, 2018, and March 31, 2020 from Michael Pfeil of the Standards Implementation Team, Water Quality

Assessment Section, to the Industrial Permits Team, Wastewater Permitting Section (Biomonitoring Memo).

Electronic mail dated November 13, 2019, from Sarah A. Johnson of the Industrial Permits Team, Wastewater Permitting Section, to Carl Burch, NRG Texas Power LLC, regarding a conference call to discuss the status of the permit and additional information needed.

E. MISCELLANEOUS

The *State of Texas 2014 Integrated Report* – Texas 303(d) List (Category 5), TCEQ, November 19, 2015.

Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective March 1, 2018, as approved by EPA Region 6.

Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective March 6, 2014, as approved by EPA Region 6, for portions of the 2018 standards not approved by EPA Region 6.

Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective July 22, 2010, as approved by EPA Region 6, for portions of the 2014 standards not yet approved by EPA Region 6.

Texas Surface Water Quality Standards, 30 TAC §§307.1 - 307.10, TCEQ, effective August 17, 2000, and Appendix E, effective February 27, 2002, for portions of the 2010 standards not yet approved by EPA Region 6.

Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition (EPA-821-R-02-013).

Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition (EPA-821-R-02-012).

Procedures to Implement the Texas Surface Water Quality Standards, TCEQ, June 2010, as approved by EPA Region 6.

Procedures to Implement the Texas Surface Water Quality Standards, TCEQ, January 2003, for portions of the 2010 IPs not approved by EPA Region 6.

Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits, TCEQ Document No. 98-001.000-OWR-WQ, May 1998.

General Guidance – Industrial Permits: Uncontaminated Stormwater Runoff, EPA, January 1997.

Appendix A
Calculated Technology-Based Effluent Limits

The W.A. Parish Steam Electric Generating Station consists of natural gas-fired units and coal-fired units. The new source performance standards (NSPS) date for 40 CFR Part 423 is March 4, 1974. Units 1-4 (gas side) were in operation well before 1974 while Units 5-8 (coal fired) commenced operations after 1974. Discharges associated with Units 1-4 are considered existing sources while discharges associated with Units 5-8 are considered new sources as defined at 40 CFR §122.2. New source performance standards (NSPS) are applied when appropriate.

Not all technology-based limits calculated below are incorporated in the draft permit. A comparison of technology-based effluent limits and water quality-based effluent limits is presented in Appendix D.

pH

Rules at 40 CFR §423.12(b)(1) and 40 CFR §423.15(a) require the pH of all discharges, except once through cooling water, to be within the range of 6.0-9.0 standard units. This limit is currently imposed at final Outfalls 001, 002, 003, 005, and 006.

Outfall 001- Blowdown and overflow (including previously monitored effluent) from the cooling impoundment (Smithers Lake)

All site wastestreams (i.e., previously monitored effluent from Outfalls 003, 004, 005, and 006; stormwater overflows from floor drain collection sumps; manhole dewatering; containment and berm dewatering; water well line flush water; potable water line flush water; and fire hydrant flush water) except those discharged via Outfall 002, flow directly to Smithers Lake for equalization and heat dissipation prior to discharge to the spillway or blowdown line. Surface water drawn from the Brazos River as well as stormwater from the Dry Creek watershed (upstream of Smithers Lake) also feed Smithers Lake. Blowdown flow is measured by a Parshall flume. Samples are collected at the blowdown line. Limits at this Outfall for temperature and total dissolved solids are continued from the existing TPDES permit in accordance with anti-backsliding regulations under 40 CFR §122.44(l).

Pollutant or pollutant property		
	Daily Maximum (mg/L)	Daily Average (mg/L)
TDS	2,5000	-
Temperature	95°F	Report
pH (in standard units, SU)	6.0 SU (minimum) and 9.0 SU (maximum)	

Outfall 002- Coal pile runoff, non-chemical metal cleaning wastes, bottom ash transport water, FGD wastewater, low volume waste sources, and stormwater

The permittee stated that coal pile runoff, sump agitation water, coal handling area washdown, metal cleaning wastewater, FGD wastewater, bottom ash transport water, miscellaneous low volume wastewater, and stormwater from non-coal handling areas all flow to the coal pile runoff pond for sedimentation, where they may be lost through evaporation, routed for reuse as make-up to the main cooling tower system, or discharged via Outfall 002.

a. Limits on pH are found in 40 CFR §423.12(b)(1) and 40 CFR §423.15(a)(1). The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

b. Effluent limitations for low volume waste sources based on BPT are found in 40 CFR §423.12(b)(3). Low volume waste sources are not regulated under BAT. Effluent limitations for bottom ash transport water based on BPT are found in 40 CFR §423.12(b)(4).

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		BPT effluent limitations for bottom ash transport water	
	Daily Maximum (mg/L)	Daily Average (mg/L)	Daily Maximum (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0

c. Effluent limitations for metal cleaning wastes based on BPT are found in 40 CFR §423.12(b)(5).

Pollutant or pollutant property	BPT effluent limitations	
	Daily Maximum (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0
Copper, total	1.0	1.0
Iron, total	1.0	1.0

d. Effluent limitations for coal pile runoff based on BPT are found in 40 CFR §423.12(b)(9). Limits based on NSPS are found in 40 CFR §423.25(b)(11).

Pollutant or pollutant property	BPT effluent limitations	NSPS effluent limitations
	Daily Maximum (mg/l)	For anytime
TSS	50.0	Not to exceed 50.0 mg/L

e. Effluent limitations for FGD wastewater based on BPT are found in 40 CFR §423.12(b)(11).

Pollutant or pollutant property	BPT effluent limitations for FGD wastewater	
	Daily Maximum (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0

f. A selenium limit was continued from the existing TPDES permit based on anti-backsliding regulations in 40 CFR § 122.44(l). The limit was originally included because the outfall contains runoff from the coal storage area. Additional effluent limitations for total copper and total selenium are found in 30 TAC §319.22 regarding general regulations incorporated into permits for hazardous metals (inland waters):

Pollutant or pollutant property	30 TAC §319.22 effluent limitations for hazardous metals	
	Daily Maximum (mg/L)	Daily Average (mg/L)
Total Copper	1.0	0.5
Total Selenium	0.20	0.05

Outfall 003- Condenser cooling water, stormwater, line flush waters, and previously monitored effluent (PME) from Outfalls 103 through 113.

Previously monitored effluents from Outfalls 103, 203, 303, 403, 503, 603, 703, 803, 903, and 113, stormwater overflows from floor drain collection sumps, manhole dewatering, containment and berm dewatering, water well line flush water, potable water line flush water, fire hydrant flush water, and once through cooling water drawn from Smithers Lake, Brazos River, and the Dry Creek watersheds flow to the 2,500 foot long Discharge Canal for heat dissipation and neutralization (as needed) prior to discharge via Outfall 003. Discharge of condenser cooling water is subject to effluent limitation guidelines (ELGs) in 40 CFR Part 423. Effluent limitations for the PME are addressed at the applicable internal outfalls.

a. Limits on pH are found in 40 CFR §423.12(b)(1). The pH of all discharges, except once through cooling water, shall be within the range of 6.0-9.0.

b. The following BPT effluent limitations for once through cooling water are found in 40 CFR §423.12(b)(6):

Pollutant or pollutant property	BPT effluent limitations	
	Daily Maximum (mg/L)	Daily Average (mg/L)
Free available chlorine (FAC)	0.5	0.2

The facility is not allowed to discharge FAC for more than two hours in any one day. The permitted daily average flow was used to calculate the daily average and daily maximum mass limitations for FAC as follows:

Daily Average = (0.2 mg/L) × (2,121 MGD) × (8.345) × (2 hrs/24 hrs)
= 295 lbs/day

Daily Maximum = (0.5 mg/L) × (2,121 MGD) × (8.345) × (2 hrs/24 hrs)
= 737 lbs/day

c. The following BAT effluent limitations for once through cooling water are found in 40 CFR §423.13(b)(1):

Pollutant or pollutant property	BAT effluent limitations
	Daily Maximum (mg/L)
Total residual chlorine (TRC)	0.20

The facility is not allowed to discharge TRC for more than two hours in any one day. Simultaneous multi-unit chlorination is not permitted. The permitted daily average flow was used to calculate the daily maximum mass limitations for TRC as follows:

Daily Maximum = (0.2 mg/L) × (2,121 MGD) × (8.345) × (2 hrs/24 hrs) × 7 units
= 2,064 lbs/day

Outfall 103- Chemical and non-chemical metal cleaning wastes from Units 1-6, and low volume waste sources

BPT limitations at 40 CFR §423.12(b)(5) apply for "*metal cleaning wastes*" and BAT limitations at 40 CFR §423.13(3)(e) apply for "*chemical metal cleaning wastes*" at Units 1-4, while NSPS limitations at 40 CFR §423.15(a)(4) applies to Units 5-6 for "*chemical metal cleaning wastes.*" No guidelines currently apply to the Units 5-6 nonchemical metal cleaning wastes (these ELGs are reserved for new

sources). BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the *"low volume waste sources"*. Additional effluent limitations for total copper and total selenium are found in 30 TAC §319.22 regarding general regulations incorporated into permits for hazardous metals (inland waters). The daily maximum limitation for total selenium is appropriate for daily maximum grab samples. Limitations for pH are monitored at external Outfall 003.

Pollutant or pollutant property	BPT effluent limitations for metal cleaning wastes		BAT effluent limitations for chemical metal cleaning wastes		NSPS effluent limitations for chemical metal cleaning wastes		30 TAC §319.22 effluent limitations for hazardous metals	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	-	-	100.0	30.0	-	-
Oil and grease	20.0	15.0	-	-	20.0	15.0	-	-
Copper, total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5
Iron, total	1.0	1.0	1.0	1.0	1.0	1.0	-	-
Selenium, total	-	-	-	-	-	-	0.2	0.05

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0

Outfall 203- Low volume waste sources from Units 1-8, stormwater, FGD wastewater, PME from Outfalls 303, 403, and 803, and bottom ash transport water

BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the *"low volume waste sources"*, for Units 1-4 and Units 5-8, respectively. Limitations at 40 CFR §423.12(b)(4) for BPT and 40 CFR §423.15(a)(6) for NSPS apply to *"bottom ash transport water."* Effluent limitations for FGD wastewater based on BPT are found in 40 CFR §423.12(b)(11). Additional effluent limitations for total selenium are found in 30 TAC §319.22 regarding general regulations incorporated into permits for hazardous metals (inland waters). The daily maximum limitation for total selenium is appropriate for daily maximum grab samples. Limitations for pH are monitored at external Outfall 003.

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources		BPT effluent limitations for bottom ash transport water		NSPS effluent limitations for bottom ash transport water	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0	20.0	15.0	20.0	15.0

Pollutant or pollutant property	BPT effluent limitations for FGD wastewater	
	Daily Maximum (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0

Pollutant or pollutant property	30 TAC §319.22 effluent limitations for hazardous metals	
	Daily Maximum (mg/L)	Daily Average (mg/L)
Total Selenium	0.2	0.05

Outfall 303- Low volume waste sources from Units 1-8 and stormwater

BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the "*low volume waste sources*", for Units 1-4 and Units 5-8, respectively.

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0

Outfall 403- Low volume waste sources as auxiliary cooling tower blowdown from Units 5 and 6

NSPS limitations at 40 CFR §423.15(a)(3) apply to the "*low volume waste sources*" from Units 5 and 6.

Pollutant or pollutant property	NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0

Outfall 503- Cooling tower blowdown and/or low volume waste sources from Units 7 and 8

NSPS limitations at 40 CFR §423.15(a)(3) apply to the "*low volume waste sources*" from Units 7 and 8. BAT limitations at 40 CFR §423.13(d)(1) apply to the "*cooling tower blowdown.*" BPT limitations at 40 CFR §423.12(b)(7) and BAT limitations at 40 CFR §423.13(d)(1) for free available chlorine are applied at Outfall 003.

Pollutant or pollutant property	NSPS effluent limitations for low volume waste sources		BAT effluent limitations for cooling tower blowdown	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	-	-
Oil and grease	20.0	15.0	-	-
Chromium, total	-	-	0.2	0.2
Zinc, total	-	-	1.0	1.0

Outfall 603- Chemical and non-chemical metal cleaning wastes, and low volume waste sources from Units 1-8

BPT limitations at 40 CFR §423.12(b)(5) apply for "*metal cleaning wastes*" and BAT limitations at 40 CFR §423.13(3)(e) apply for "*chemical metal cleaning wastes*" at Units 1-4, while NSPS limitations at 40 CFR §423.15(a)(4) applies to Units 5-8 for "*chemical metal cleaning wastes.*" No guidelines currently apply to the Units 5-8 nonchemical metal cleaning wastes (these ELGs are reserved for new sources). BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the "*low volume waste sources.*" Additional effluent limitations for total copper and total

selenium are found in 30 TAC §319.22 regarding general regulations incorporated into permits for hazardous metals (inland waters). Limitations for pH are monitored at external Outfall 003.

Pollutant or pollutant property	BPT effluent limitations for metal cleaning wastes		BAT effluent limitations for chemical metal cleaning wastes		NSPS effluent limitations for chemical metal cleaning wastes		30 TAC §319.22 effluent limitations for hazardous metals	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	-	-	100.0	30.0	-	-
Oil and grease	20.0	15.0	-	-	20.0	15.0	-	-
Copper, total	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.5
Iron, total	1.0	1.0	1.0	1.0	1.0	1.0	-	-
Selenium, total	-	-	-	-	-	-	0.20	0.05

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0

Outfall 703- Low volume waste sources from Units 1-8, bottom ash transport water, FGD wastewater, and stormwater

BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the *"low volume waste sources"* at Units 1-4 and Units 5-8, respectively. BPT limitations at 40 CFR §423.12(b)(4) and NSPS limitations at 40 CFR §423.15(a)(6) apply to the *"bottom ash transport water."* Effluent limitations for *"FGD wastewater"* based on BPT are found in 40 CFR §423.12(b)(11). Additional effluent limitations for total selenium are found in 30 TAC §319.22 regarding general regulations incorporated into permits for hazardous metals (inland waters). The daily maximum limitation for total selenium is appropriate for daily maximum grab samples. Limitations for pH are monitored at external Outfall 003.

Pollutant or pollutant property	30 TAC §319.22 effluent limitations for hazardous metals	
	Daily Max (mg/L)	Daily Average (mg/L)
Selenium, total	0.20	0.05 *

*Daily average limitations for total selenium are not included in the draft permit because of the monitoring frequency of only once per quarter.

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources		BPT effluent limitations for bottom ash transport water		NSPS effluent limitations for bottom ash transport water	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0	20.0	15.0	20.0	15.0

Pollutant or pollutant property	BPT effluent limitations for FGD wastewater	
	Daily Maximum (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0

Outfall 803- Low volume waste sources from Units 7 and 8 and stormwater

NSPS limitations at 40 CFR §423.15(a)(3) apply to the *"low volume waste sources"* from Units 7 and 8.

Pollutant or pollutant property	NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0

Outfalls 903 and 113- Sanitary wastewater and air conditioning condensate

Domestic sewage and air conditioning condensate generated at the "gas-fired side" combine for treatment and discharge via Outfall 903. Similarly, domestic sewage and air conditioning condensate generated at the "coal-fired side" combine for treatment and discharge via Outfall 113. Domestic sewage and air conditioning condensate are specifically excluded from 40 CFR Part 423 (refer to 40 CFR §423.11(b)).

Guidelines at 30 TAC §§309.1-309.4 establish limitations for domestic wastewater. *E. coli* is limited at these outfalls equivalent to the most stringent primary contact recreation standard in 30 TAC Chapter 307, the *Texas Surface Water Quality Standards* in accordance with 30 TAC Chapter 309. Residual chlorine following disinfection is not limited at these outfalls because it is limited at external Outfall 003.

Pollutant or pollutant property	30 TAC Chapters 307 and 309	
	Daily Max (mg/L)	Daily Average (mg/L)
BOD_5	45.0	20.0
TSS	45.0	20.0
E. coli, CFU or MPN per 100 mL	399	126

Outfall 004- Stormwater from ash disposal cells

Though Part 423 regulates coal pile runoff, it does not regulate stormwater from ash disposal cells. BPJ values for the TSS and oil and grease were established at least as far back as the permit issued on August 31, 2005. The existing permit includes limits for total selenium. Total selenium effluent quality levels for inland waters are established at 30 TAC §319.22. The daily maximum limitation for total selenium is appropriate for daily maximum grab samples.

Pollutant or pollutant property	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0
Selenium, total	0.2 (existing permit more stringent)	0.05
pH (in SU)	6.0 SU (minimum) and 9.0 SU (maximum)	

Outfall 005- Stormwater runoff from Units 1-4 and low volume waste sources

BPT limitations at 40 CFR §423.12(b)(3) and NSPS limitations at 40 CFR §423.15(a)(3) apply to the *"low volume waste sources"*. Rules at 40 CFR §423.12(b)(1) and 40 CFR §423.15(a) require the pH of all discharges, except once through cooling water, to be within the range of 6.0-9.0 standard units.

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources		NSPS effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0	100.0	30.0
Oil and grease	20.0	15.0	20.0	15.0
pH (in SU)	6.0 SU (minimum) and 9.0 SU (maximum)			

Outfall 006- Auxiliary cooling tower blowdown from Units 1-4 and low volume waste sources

BPT limitations at 40 CFR §423.12(b)(3) apply to the *"low volume waste sources"*. The pH limits at 40 CFR §423.12(b)(1) apply.

Pollutant or pollutant property	BPT effluent limitations for low volume waste sources	
	Daily Max (mg/L)	Daily Average (mg/L)
TSS	100.0	30.0
Oil and grease	20.0	15.0
pH (in SU)	6.0 SU (minimum) and 9.0 SU (maximum)	

Appendix B
Calculated Water Quality-Based Effluent Limits

TEXTOX MENU #7 - INTERMITTENT STREAM WITH PERENNIAL POOLS

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health, Incidental Fishery
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	NRG Texas Power LLC
TPDES Permit No.:	WQ0001038000
Outfall No.:	002
Prepared by:	S. Johnson
Date:	April 14, 2020

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	Unnamed tributary
Segment No.:	1202
TSS (mg/L):	36
pH (Standard Units):	7.6
Hardness (mg/L as $CaCO_3$):	160
Chloride (mg/L):	88
Effluent Flow for Aquatic Life (MGD):	0.648
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Chronic Aquatic Life:	100
% Effluent for Acute Aquatic Life:	100
Effluent Flow for Human Health (MGD):	0.648
Harmonic Mean Flow (cfs):	0.1
% Effluent for Human Health:	90.931

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	34986.39	0.443		1.00	Assumed
Cadmium	6.60	-1.13	69402.99	0.286		1.00	Assumed
Chromium (total)	6.52	-0.93	118205.77	0.190		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	118205.77	0.190		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	73847.56	0.273		1.00	Assumed
Lead	6.45	-0.80	160309.03	0.148		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	63519.57	0.304		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	59842.32	0.317		1.00	Assumed
Zinc	6.10	-0.70	102468.00	0.213		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	3.00	N/A	1.72	N/A	2.52	5.34
Aluminum	991	N/A	991	N/A	568	N/A	834	1765

Parameter	FW Acute Criterion (µg/L)	FW Chronic Criterion (µg/L)	WLAa (µg/L)	WLAc (µg/L)	LTAa (µg/L)	LTAc (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Arsenic	340	150	768	339	440	261	383	811
Cadmium	13.6	0.341	47.4	1.19	27.2	0.918	1.35	2.85
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.00400	1.38	0.00308	0.00452	0.00957
Chlorpyrifos	0.083	0.041	0.0830	0.0410	0.0476	0.0316	0.0464	0.0981
Chromium (+3)	837	109	4400	572	2521	441	647	1370
Chromium (+6)	15.7	10.6	15.7	10.6	9.00	8.16	11.9	25.3
Copper	22.1	14.1	80.9	51.8	46.4	39.9	58.5	123
Cyanide (free)	45.8	10.7	45.8	10.7	26.2	8.24	12.1	25.6
4,4'-DDT	1.1	0.001	1.10	0.00100	0.630	0.000770	0.00113	0.00239
Demeton	N/A	0.1	N/A	0.100	N/A	0.0770	0.113	0.239
Diazinon	0.17	0.17	0.170	0.170	0.0974	0.131	0.143	0.302
Dicofol	59.3	19.8	59.3	19.8	34.0	15.2	22.4	47.4
Dieldrin	0.24	0.002	0.240	0.00200	0.138	0.00154	0.00226	0.00478
Diuron	210	70	210	70.0	120	53.9	79.2	167
Endosulfan I (alpha)	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endosulfan II (beta)	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endosulfan sulfate	0.22	0.056	0.220	0.0560	0.126	0.0431	0.0633	0.134
Endrin	0.086	0.002	0.0860	0.00200	0.0493	0.00154	0.00226	0.00478
Guthion	N/A	0.01	N/A	0.0100	N/A	0.00770	0.0113	0.0239
Heptachlor	0.52	0.004	0.520	0.00400	0.298	0.00308	0.00452	0.00957
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.0800	0.645	0.0616	0.0905	0.191
Lead	107	4.18	727	28.3	416	21.8	32.0	67.8
Malathion	N/A	0.01	N/A	0.0100	N/A	0.00770	0.0113	0.0239
Mercury	2.4	1.3	2.40	1.30	1.38	1.00	1.47	3.11
Methoxychlor	N/A	0.03	N/A	0.0300	N/A	0.0231	0.0339	0.0718
Mirex	N/A	0.001	N/A	0.00100	N/A	0.000770	0.00113	0.00239
Nickel	697	77.4	2290	254	1312	196	287	609
Nonylphenol	28	6.6	28.0	6.60	16.0	5.08	7.47	15.8
Parathion (ethyl)	0.065	0.013	0.0650	0.0130	0.0372	0.0100	0.0147	0.0311
Pentachlorophenol	15.9	12.2	15.9	12.2	9.14	9.42	13.4	28.4
Phenanthrene	30	30	30.0	30.0	17.2	23.1	25.2	53.4
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.00	0.0140	1.15	0.0108	0.0158	0.0335
Selenium	20	5	20.0	5.00	11.5	3.85	5.65	11.9
Silver	0.8	N/A	18.6	N/A	10.7	N/A	15.6	33.1
Toxaphene	0.78	0.0002	0.780	0.000200	0.447	0.000154	0.000226	0.000478
Tributyltin (TBT)	0.13	0.024	0.130	0.0240	0.0745	0.0185	0.0271	0.0574
2,4,5 Trichlorophenol	136	64	136	64.0	77.9	49.3	72.4	153
Zinc	175	176	818	825	469	635	689	1458

HUMAN HEALTH (APPLIES FOR INCIDENTAL FRESHWATER FISH TISSUE)

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Acrylonitrile	1150	1265	1176	1728	3657
Aldrin	1.147E-04	0.000126	0.000117	0.000172	0.000364
Anthracene	13170	14484	13470	19800	41890
Antimony	10710	11778	10954	16102	34066
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	5810	6389	5942	8735	18480
Benzidine	1.07	1.18	1.09	1.60	3.40

Parameter	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Benzo(*a*)anthracene	0.25	0.275	0.256	0.375	0.795
Benzo(*a*)pyrene	0.025	0.0275	0.0256	0.0375	0.0795
Bis(chloromethyl)ether	2.745	3.02	2.81	4.12	8.73
Bis(2-chloroethyl)ether	428.3	471	438	643	1362
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	75.5	83.0	77.2	113	240
Bromodichloromethane [Dichlorobromomethane]	2750	3024	2813	4134	8747
Bromoform [Tribromomethane]	10600	11657	10841	15936	33716
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	460	506	470	691	1463
Chlordane	0.025	0.0275	0.0256	0.0375	0.0795
Chlorobenzene	27370	30100	27993	41149	87057
Chlorodibromomethane [Dibromochloromethane]	1830	2013	1872	2751	5820
Chloroform [Trichloromethane]	76970	84647	78722	115720	244824
Chromium (hexavalent)	5020	5521	5134	7547	15967
Chrysene	25.2	27.7	25.8	37.8	80.1
Cresols [Methylphenols]	93010	102287	95127	139836	295844
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.02	0.0220	0.0205	0.0300	0.0636
4,4'-DDE	0.0013	0.00143	0.00133	0.00195	0.00413
4,4'-DDT	0.004	0.00440	0.00409	0.00601	0.0127
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	4730	5202	4838	7111	15045
1,2-Dibromoethane [Ethylene Dibromide]	42.4	46.6	43.4	63.7	134
m-Dichlorobenzene [1,3-Dichlorobenzene]	5950	6543	6085	8945	18925
o-Dichlorobenzene [1,2-Dichlorobenzene]	32990	36280	33741	49598	104933
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	22.4	24.6	22.9	33.6	71.2
1,2-Dichloroethane	3640	4003	3723	5472	11578
1,1-Dichloroethylene [1,1-Dichloroethene]	551140	606111	563683	828614	1753055
Dichloromethane [Methylene Chloride]	133330	146628	136364	200455	424093
1,2-Dichloropropane	2590	2848	2649	3893	8238
1,3-Dichloropropene [1,3-Dichloropropylene]	1190	1309	1217	1789	3785
Dicofol [Kelthane]	3	3.30	3.07	4.51	9.54
Dieldrin	2.0E-04	0.000220	0.000205	0.000300	0.000636
2,4-Dimethylphenol	84360	92774	86280	126831	268330
Di-*n*-Butyl Phthalate	924	1016	945	1389	2939
Dioxins/Furans [TCDD Equivalents]	7.97E-07	8.76E-07	8.15E-07	0.0000012	0.0000025
Endrin	0.2	0.220	0.205	0.300	0.636
Epichlorohydrin	20130	22138	20588	30264	64029
Ethylbenzene	18670	20532	19095	28069	59385
Ethylene Glycol	1.68E+08	184756444	171823493	252580535	534371064
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.001	0.00110	0.00102	0.00150	0.00318
Heptachlor Epoxide	0.0029	0.00319	0.00297	0.00436	0.00922
Hexachlorobenzene	0.0068	0.00748	0.00695	0.0102	0.0216
Hexachlorobutadiene	2.2	2.42	2.25	3.30	6.99
Hexachlorocyclohexane (*alpha*)	0.084	0.0924	0.0859	0.126	0.267
Hexachlorocyclohexane (*beta*)	2.6	2.86	2.66	3.90	8.27
Hexachlorocyclohexane (*gamma*) [Lindane]	3.41	3.75	3.49	5.12	10.8
Hexachlorocyclopentadiene	116	128	119	174	368
Hexachloroethane	23.3	25.6	23.8	35.0	74.1
Hexachlorophene	29	31.9	29.7	43.6	92.2
4,4'-Isopropylidenediphenol [Bisphenol A]	159820	175761	163457	240282	508352
Lead	38.3	285	265	389	824
Mercury	0.122	0.134	0.125	0.183	0.388

Parameter	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Methoxychlor	30	33.0	30.7	45.1	95.4
Methyl Ethyl Ketone	9.92E+06	10909428	10145768	14914279	31553339
Methyl *tert*-butyl ether [MTBE]	104820	115275	107206	157592	333409
Nickel	11400	41206	38321	56332	119178
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	18730	20598	19156	28159	59576
N-Nitrosodiethylamine	21	23.1	21.5	31.5	66.7
N-Nitroso-di-*n*-Butylamine	42	46.2	43.0	63.1	133
Pentachlorobenzene	3.55	3.90	3.63	5.33	11.2
Pentachlorophenol	2.9	3.19	2.97	4.36	9.22
Polychlorinated Biphenyls [PCBs]	6.40E-03	0.00704	0.00655	0.00962	0.0203
Pyridine	9470	10415	9686	14237	30121
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.4	2.64	2.45	3.60	7.63
1,1,2,2-Tetrachloroethane	263.5	290	269	396	838
Tetrachloroethylene [Tetrachloroethylene]	2800	3079	2864	4209	8906
Thallium	2.3	2.53	2.35	3.45	7.31
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.11	0.121	0.113	0.165	0.349
2,4,5-TP [Silvex]	3690	4058	3774	5547	11737
1,1,1-Trichloroethane	7843540	8625860	8022050	11792413	24948576
1,1,2-Trichloroethane	1660	1826	1698	2495	5280
Trichloroethylene [Trichloroethene]	719	791	735	1080	2286
2,4,5-Trichlorophenol	18670	20532	19095	28069	59385
TTHM [Sum of Total Trihalomethanes]	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	165	181	169	248	524

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Aldrin	1.76	2.14
Aluminum	584	709
Arsenic	268	326
Cadmium	0.945	1.14
Carbaryl	1.17	1.43
Chlordane	0.00316	0.00384
Chlorpyrifos	0.0324	0.0394
Chromium (+3)	453	550
Chromium (+6)	8.39	10.1
Copper	41.0	49.8
Cyanide (free)	8.47	10.2
4,4'-DDT	0.000792	0.000962
Demeton	0.0792	0.0962
Diazinon	0.100	0.121
Dicofol	15.6	19.0
Dieldrin	0.00158	0.00192
Diuron	55.4	67.3
Endosulfan (alpha)	0.0443	0.0538
Endosulfan (beta)	0.0443	0.0538
Endosulfan sulfate	0.0443	0.0538
Endrin	0.00158	0.00192
Guthion	0.00792	0.00962
Heptachlor	0.00316	0.00384
Hexachlorocyclohexane (Lindane)	0.0633	0.0769

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
Lead	22.4	27.2
Malathion	0.00792	0.00962
Mercury	1.03	1.25
Methoxychlor	0.0237	0.0288
Mirex	0.000792	0.000962
Nickel	201	244
Nonylphenol	5.22	6.34
Parathion (ethyl)	0.0103	0.0125
Pentachlorophenol	9.40	11.4
Phenanthrene	17.6	21.4
Polychlorinated Biphenyls (PCBs)	0.0110	0.0134
Selenium	3.96	4.81
Silver	10.9	13.3
Toxaphene	0.000158	0.000192
Tributyltin (TBT)	0.0190	0.0230
2,4,5 Trichlorophenol	50.7	61.5
Zinc	482	585

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
Acrylonitrile	1210	1469
Aldrin	0.000120	0.000146
Anthracene	13860	16830
Antimony	11271	13686
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	6114	7424
Benzidine	1.12	1.36
Benzo(*a*)anthracene	0.263	0.319
Benzo(*a*)pyrene	0.0263	0.0319
Bis(chloromethyl)ether	2.88	3.50
Bis(2-chloroethyl)ether	450	547
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	79.4	96.4
Bromodichloromethane [Dichlorobromomethane]	2894	3514
Bromoform [Tribromomethane]	11155	13546
Cadmium	N/A	N/A
Carbon Tetrachloride	484	587
Chlordane	0.0263	0.0319
Chlorobenzene	28804	34977
Chlorodibromomethane [Dibromochloromethane]	1925	2338
Chloroform [Trichloromethane]	81004	98362
Chromium (hexavalent)	5283	6415
Chrysene	26.5	32.2
Cresols [Methylphenols]	97885	118860
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0210	0.0255
4,4'-DDE	0.00136	0.00166
4,4'-DDT	0.00420	0.00511
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	4977	6044
1,2-Dibromoethane [Ethylene Dibromide]	44.6	54.1
m-Dichlorobenzene [1,3-Dichlorobenzene]	6261	7603
o-Dichlorobenzene [1,2-Dichlorobenzene]	34719	42159
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	23.5	28.6

Human Health	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
1,2-Dichloroethane	3830	4651
1,1-Dichloroethylene [1,1-Dichloroethene]	580030	704322
Dichloromethane [Methylene Chloride]	140319	170387
1,2-Dichloropropane	2725	3309
1,3-Dichloropropene [1,3-Dichloropropylene]	1252	1520
Dicofol [Kelthane]	3.15	3.83
Dieldrin	0.000210	0.000255
2,4-Dimethylphenol	88782	107806
Di-*n*-Butyl Phthalate	972	1180
Dioxins/Furans [TCDD Equivalents]	8.38E-07	0.0000010
Endrin	0.210	0.255
Epichlorohydrin	21185	25724
Ethylbenzene	19648	23859
Ethylene Glycol	176806374	214693454
Fluoride	N/A	N/A
Heptachlor	0.00105	0.00127
Heptachlor Epoxide	0.00305	0.00370
Hexachlorobenzene	0.00715	0.00868
Hexachlorobutadiene	2.31	2.81
Hexachlorocyclohexane (*alpha*)	0.0884	0.107
Hexachlorocyclohexane (*beta*)	2.73	3.32
Hexachlorocyclohexane (*gamma*) [Lindane]	3.58	4.35
Hexachlorocyclopentadiene	122	148
Hexachloroethane	24.5	29.7
Hexachlorophene	30.5	37.0
4,4'-Isopropylidenediphenol [Bisphenol A]	168197	204239
Lead	272	331
Mercury	0.128	0.155
Methoxychlor	31.5	38.3
Methyl Ethyl Ketone	10439995	12677137
Methyl *tert*-butyl ether [MTBE]	110314	133953
Nickel	39432	47882
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	19711	23935
N-Nitrosodiethylamine	22.1	26.8
N-Nitroso-di-*n*-Butylamine	44.2	53.6
Pentachlorobenzene	3.73	4.53
Pentachlorophenol	3.05	3.70
Polychlorinated Biphenyls [PCBs]	0.00673	0.00817
Pyridine	9966	12102
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.52	3.06
1,1,2,2-Tetrachloroethane	277	336
Tetrachloroethylene [Tetrachloroethylene]	2946	3578
Thallium	2.42	2.93
Toluene	N/A	N/A
Toxaphene	0.115	0.140
2,4,5-TP [Silvex]	3883	4715
1,1,1-Trichloroethane	8254689	10023551
1,1,2-Trichloroethane	1747	2121
Trichloroethylene [Trichloroethene]	756	918
2,4,5-Trichlorophenol	19648	23859
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	173	210

TEXTOX MENU #3 - PERENNIAL STREAM OR RIVER
HUMAN HEALTH ONLY

The water quality-based effluent limitations developed below are calculated using:

Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	NRG Texas Power LLC
TPDES Permit No.:	WQ0001038000
Outfall No.:	002
Prepared by:	S. Johnson
Date:	April 14, 2020

DISCHARGE INFORMATION

Receiving Waterbody:	Rabbs Bayou
Segment No.:	1202
TSS (mg/L):	36
Effluent Flow for Human Health (MGD):	0.648
Harmonic Mean Flow (cfs):	0.2
% Effluent for Human Health:	83.37
Human Health Criterion (select: PWS or FISH)	FISH

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Arsenic	5.68	-0.73	34986.39	0.443		1.00	Assumed
Cadmium	6.60	-1.13	69402.99	0.286		1.00	Assumed
Chromium (total)	6.52	-0.93	118205.77	0.190		1.00	Assumed
Chromium (trivalent)	6.52	-0.93	118205.77	0.190		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.02	-0.74	73847.56	0.273		1.00	Assumed
Lead	6.45	-0.80	160309.03	0.148		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	5.69	-0.57	63519.57	0.304		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	59842.32	0.317		1.00	Assumed
Zinc	6.10	-0.70	102468.00	0.213		1.00	Assumed

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Acrylonitrile	1.0	115	138	128	188	398
Aldrin	1.146E-05	1.147E-05	0.0000138	0.0000128	0.0000188	0.0000398
Anthracene	1109	1317	1580	1469	2159	4568
Antimony	6	1071	1285	1195	1756	3716
Arsenic	10	N/A	N/A	N/A	N/A	N/A
Barium	2000	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	697	648	952	2015
Benzidine	0.0015	0.107	0.128	0.119	0.174	0.370

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Benzo(*a*)anthracene	0.024	0.025	0.0300	0.0279	0.0410	0.0867
Benzo(*a*)pyrene	0.0025	0.0025	0.00300	0.00279	0.00410	0.00867
Bis(chloromethyl)ether	0.0024	0.2745	0.329	0.306	0.449	0.951
Bis(2-chloroethyl)ether	0.60	42.83	51.4	47.8	70.2	148
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	9.06	8.43	12.3	26.2
Bromodichloromethane [Dichlorobromomethane]	10.2	275	330	307	451	954
Bromoform [Tribromomethane]	66.9	1060	1271	1182	1737	3676
Cadmium	5	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	55.2	51.3	75.4	159
Chlordane	0.0025	0.0025	0.00300	0.00279	0.00410	0.00867
Chlorobenzene	100	2737	3283	3053	4487	9494
Chlorodibromomethane [Dibromochloromethane]	7.5	183	220	205	301	637
Chloroform [Trichloromethane]	70	7697	9232	8586	12621	26702
Chromium (hexavalent)	62	502	602	560	823	1741
Chrysene	2.45	2.52	3.02	2.81	4.13	8.73
Cresols [Methylphenols]	1041	9301	11156	10375	15251	32266
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.00240	0.00223	0.00327	0.00693
4,4'-DDE	0.00013	0.00013	0.000156	0.000145	0.000213	0.000450
4,4'-DDT	0.0004	0.0004	0.000480	0.000446	0.000655	0.00138
2,4'-D	70	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	567	527	774	1638
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	5.09	4.73	6.95	14.7
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	714	664	976	2065
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	3957	3680	5409	11444
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.79	2.24	2.69	2.50	3.67	7.77
1,2-Dichloroethane	5	364	437	406	596	1262
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	66108	61480	90375	191202
Dichloromethane [Methylene Chloride]	5	13333	15993	14873	21863	46255
1,2-Dichloropropane	5	259	311	289	424	898
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	143	133	195	413
Dicofol [Kelthane]	0.30	0.30	0.360	0.335	0.492	1.04
Dieldrin	2.0E-05	2.0E-05	0.0000240	0.0000223	0.0000327	0.0000693
2,4-Dimethylphenol	444	8436	10119	9411	13834	29268
Di-*n*-Butyl Phthalate	88.9	92.4	111	103	151	320
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	9.56E-08	8.89E-08	1.30E-07	2.76E-07
Endrin	0.02	0.02	0.0240	0.0223	0.0327	0.0693
Epichlorohydrin	53.5	2013	2415	2246	3301	6985
Ethylbenzene	700	1867	2239	2082	3060	6475
Ethyl Glycol	46744	1.68E+07	20151289	18740699	27548827	58283573
Fluoride	4000	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.000120	0.000112	0.000164	0.000348
Heptachlor Epoxide	0.00029	0.00029	0.000348	0.000324	0.000476	0.00100
Hexachlorobenzene	0.00068	0.00068	0.000816	0.000759	0.00111	0.00236
Hexachlorobutadiene	0.21	0.22	0.264	0.246	0.361	0.765
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.0101	0.00939	0.0138	0.0292
Hexachlorocyclohexane (*beta*)	0.15	0.26	0.312	0.290	0.426	0.901
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	0.409	0.380	0.558	1.18
Hexachlorocyclopentadiene	10.7	11.6	13.9	12.9	18.9	40.1
Hexachloroethane	1.84	2.33	2.79	2.59	3.80	8.05
Hexachlorophene	2.05	2.90	3.48	3.24	4.76	10.0
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	19170	17828	26207	55445
Lead	1.15	3.83	31.1	28.9	42.4	89.8

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Mercury	0.0122	0.0122	0.0146	0.0136	0.0199	0.0422
Methoxychlor	2.92	3.0	3.60	3.35	4.92	10.4
Methyl Ethyl Ketone	13865	9.92E+05	1189886	1106594	1626693	3441507
Methyl *tert*-butyl ether [MTBE]	15	10482	12573	11693	17188	36365
Nickel	332	1140	4494	4179	6143	12996
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	2247	2090	3072	6499
N-Nitrosodiethylamine	0.0037	2.1	2.52	2.34	3.43	7.27
N-Nitroso-di-*n*-Butylamine	0.119	4.2	5.04	4.69	6.89	14.5
Pentachlorobenzene	0.348	0.355	0.426	0.396	0.582	1.23
Pentachlorophenol	0.22	0.29	0.348	0.324	0.476	1.00
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	0.000768	0.000714	0.00104	0.00222
Pyridine	23	947	1136	1056	1552	3284
Selenium	50	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	0.288	0.268	0.393	0.833
1,1,2,2-Tetrachloroethane	1.64	26.35	31.6	29.4	43.2	91.4
Tetrachloroethylene [Tetrachloroethylene]	5	280	336	312	458	970
Thallium	0.12	0.23	0.276	0.257	0.377	0.799
Toluene	1000	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.0132	0.0123	0.0180	0.0382
2,4,5-TP [Silvex]	50	369	443	412	605	1281
1,1,1-Trichloroethane	200	784354	940818	874961	1286192	2721128
1,1,2-Trichloroethane	5	166	199	185	271	575
Trichloroethylene [Trichloroethene]	5	71.9	86.2	80.2	117	249
2,4,5-Trichlorophenol	1039	1867	2239	2082	3060	6475
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	19.8	18.4	27.0	57.2

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Human Health *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Acrylonitrile	131	159
Aldrin	0.0000131	0.0000159
Anthracene	1511	1835
Antimony	1229	1492
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	666	809
Benzidine	0.121	0.147
Benzo(*a*)anthracene	0.0287	0.0348
Benzo(*a*)pyrene	0.00287	0.00348
Bis(chloromethyl)ether	0.314	0.381
Bis(2-chloroethyl)ether	49.1	59.6
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	8.61	10.4
Bromodichloromethane [Dichlorobromomethane]	315	383
Bromoform [Tribromomethane]	1215	1476
Cadmium	N/A	N/A
Carbon Tetrachloride	52.7	64.0
Chlordane	0.00287	0.00348
Chlorobenzene	3140	3813
Chlorodibromomethane [Dibromochloromethane]	210	255
Chloroform [Trichloromethane]	8834	10727

Human Health *Parameter*	*70% of Daily Avg. (µg/L)*	*85% of Daily Avg. (µg/L)*
Chromium (hexavalent)	576	699
Chrysene	2.89	3.51
Cresols [Methylphenols]	10675	12963
Cyanide (free)	N/A	N/A
4,4'-DDD	0.00228	0.00277
4,4'-DDE	0.000149	0.000181
4,4'-DDT	0.000458	0.000556
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	541	657
1,2-Dibromoethane [Ethylene Dibromide]	4.86	5.90
m-Dichlorobenzene [1,3-Dichlorobenzene]	683	829
o-Dichlorobenzene [1,2-Dichlorobenzene]	3786	4597
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	2.56	3.11
1,2-Dichloroethane	417	506
1,1-Dichloroethylene [1,1-Dichloroethene]	63262	76818
Dichloromethane [Methylene Chloride]	15304	18583
1,2-Dichloropropane	296	360
1,3-Dichloropropene [1,3-Dichloropropylene]	136	165
Dicofol [Kelthane]	0.344	0.418
Dieldrin	0.0000228	0.0000277
2,4-Dimethylphenol	9683	11758
Di-*n*-Butyl Phthalate	105	128
Dioxins/Furans [TCDD Equivalents]	9.10E-08	1.10E-07
Endrin	0.0228	0.0277
Epichlorohydrin	2310	2805
Ethylbenzene	2142	2601
Ethyl Glycol	19284178	23416502
Fluoride	N/A	N/A
Heptachlor	0.000114	0.000139
Heptachlor Epoxide	0.000333	0.000404
Hexachlorobenzene	0.000777	0.000943
Hexachlorobutadiene	0.252	0.306
Hexachlorocyclohexane (*alpha*)	0.00966	0.0117
Hexachlorocyclohexane (*beta*)	0.298	0.362
Hexachlorocyclohexane (*gamma*) [Lindane]	0.390	0.474
Hexachlorocyclopentadiene	13.2	16.0
Hexachloroethane	2.66	3.23
Hexachlorophene	3.33	4.04
4,4'-Isopropylidenediphenol [Bisphenol A]	18344	22275
Lead	29.6	36.0
Mercury	0.0139	0.0169
Methoxychlor	3.44	4.18
Methyl Ethyl Ketone	1138685	1382689
Methyl *tert*-butyl ether [MTBE]	12031	14609
Nickel	4300	5221
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	2150	2611
N-Nitrosodiethylamine	2.40	2.91
N-Nitroso-di-*n*-Butylamine	4.82	5.85
Pentachlorobenzene	0.407	0.494
Pentachlorophenol	0.333	0.404
Polychlorinated Biphenyls [PCBs]	0.000728	0.000884
Pyridine	1086	1319
Selenium	N/A	N/A

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
1,2,4,5-Tetrachlorobenzene	0.275	0.334
1,1,2,2-Tetrachloroethane	30.2	36.7
Tetrachloroethylene [Tetrachloroethylene]	320	389
Thallium	0.263	0.320
Toluene	N/A	N/A
Toxaphene	0.0126	0.0153
2,4,5-TP [Silvex]	423	514
1,1,1-Trichloroethane	900334	1093263
1,1,2-Trichloroethane	189	230
Trichloroethylene [Trichloroethene]	81.9	99.4
2,4,5-Trichlorophenol	2142	2601
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	18.9	22.9

TEXTOX MENU #4 - LAKE OR RESERVOIR

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	NRG Texas Power LLC
TPDES Permit No:	WQ0001038000
Outfall No:	003
Prepared by:	S. Johnson
Date:	April 14, 2020

DISCHARGE INFORMATION

Receiving Waterbody:	Smithers lake
Segment No.:	1202
TSS (mg/L):	36
pH (Standard Units):	7.6
Hardness (mg/L as $CaCO_3$):	160
Chloride (mg/L):	88
Effluent Flow for Aquatic Life (MGD):	>100
% Effluent for Chronic Aquatic Life (Mixing Zone):	100
% Effluent for Acute Aquatic Life (ZID):	100
Effluent Flow for Human Health (MGD):	>100
% Effluent for Human Health:	100
Human Health Criterion (select: PWS, FISH, or INC)	FISH

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Lake/Reservoir Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	0.02	1994 Study	1.00	Assumed
Arsenic	5.68	-0.73	34986.39	0.443		1.00	Assumed
Cadmium	6.55	-0.92	131280.95	0.175		1.00	Assumed
Chromium (total)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (trivalent)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.45	-0.90	112028.30	0.199		1.00	Assumed
Lead	6.31	-0.53	305604.45	0.083		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	6.34	-0.76	143618.41	0.162		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	59842.32	0.317		1.00	Assumed
Zinc	6.52	-0.68	289543.82	0.088		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	3.00	N/A	0.960	N/A	1.41	2.98
Aluminum	991	N/A	49550	N/A	15856	N/A	23308	49312
Arsenic	340	150	768	339	246	207	303	642
Cadmium	13.55	0.341	77.6	1.95	24.8	1.19	1.75	3.70
Carbaryl	2.0	N/A	2.00	N/A	0.640	N/A	0.940	1.99
Chlordane	2.4	0.004	2.40	0.00400	0.768	0.00244	0.00358	0.00758

Parameter	FW Acute Criterion (µg/L)	FW Chronic Criterion (µg/L)	WLAa (µg/L)	WLAc (µg/L)	LTAa (µg/L)	LTAc (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Chlorpyrifos	0.083	0.041	0.0830	0.0410	0.0266	0.0250	0.0367	0.0777
Chromium (trivalent)	837	108.9	25897	3369	8287	2055	3020	6390
Chromium (hexavalent)	15.7	10.6	15.7	10.6	5.02	6.47	7.38	15.6
Copper	22.11	14.15	111	71.2	35.6	43.4	52.3	110
Cyanide (free)	45.8	10.7	45.8	10.7	14.7	6.53	9.59	20.2
4,4'-DDT	1.1	0.001	1.10	0.00100	0.352	0.000610	0.000896	0.00189
Demeton	N/A	0.1	N/A	0.100	N/A	0.0610	0.0896	0.189
Diazinon	0.17	0.17	0.170	0.170	0.0544	0.104	0.0799	0.169
Dicofol [Kelthane]	59.3	19.8	59.3	19.8	19.0	12.1	17.7	37.5
Dieldrin	0.24	0.002	0.240	0.00200	0.0768	0.00122	0.00179	0.00379
Diuron	210	70	210	70.0	67.2	42.7	62.7	132
Endosulfan I (*alpha*)	0.22	0.056	0.220	0.0560	0.0704	0.0342	0.0502	0.106
Endosulfan II (*beta*)	0.22	0.056	0.220	0.0560	0.0704	0.0342	0.0502	0.106
Endosulfan sulfate	0.22	0.056	0.220	0.0560	0.0704	0.0342	0.0502	0.106
Endrin	0.086	0.002	0.0860	0.00200	0.0275	0.00122	0.00179	0.00379
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.0100	N/A	0.00610	0.00896	0.0189
Heptachlor	0.52	0.004	0.520	0.00400	0.166	0.00244	0.00358	0.00758
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	0.08	1.13	0.0800	0.360	0.0488	0.0717	0.151
Lead	107.3	4.18	1288	50.2	412	30.6	45.0	95.2
Malathion	N/A	0.01	N/A	0.0100	N/A	0.00610	0.00896	0.0189
Mercury	2.4	1.3	2.40	1.30	0.768	0.793	1.12	2.38
Methoxychlor	N/A	0.03	N/A	0.0300	N/A	0.0183	0.0269	0.0569
Mirex	N/A	0.001	N/A	0.00100	N/A	0.000610	0.000896	0.00189
Nickel	697	77.4	4300	478	1376	291	428	906
Nonylphenol	28	6.6	28.0	6.60	8.96	4.03	5.91	12.5
Parathion (ethyl)	0.065	0.013	0.0650	0.0130	0.0208	0.00793	0.0116	0.0246
Pentachlorophenol	15.9	12.23	15.9	12.2	5.10	7.46	7.49	15.8
Phenanthrene	30	30	30.0	30.0	9.60	18.3	14.1	29.8
Polychlorinated Biphenyls [PCBs]	2.0	0.014	2.00	0.0140	0.640	0.00854	0.0125	0.0265
Selenium	20	5	20.0	5.00	6.40	3.05	4.48	9.48
Silver	0.8	N/A	18.6	N/A	5.95	N/A	8.74	18.4
Toxaphene	0.78	0.0002	0.780	0.000200	0.250	0.000122	0.000179	0.000379
Tributyltin [TBT]	0.13	0.024	0.130	0.0240	0.0416	0.0146	0.0215	0.0455
2,4,5 Trichlorophenol	136	64	136	64.0	43.5	39.0	57.3	121
Zinc	174.5	175.9	1993	2010	638	1226	937	1983

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Acrylonitrile	1.0	115	1150	115	107	157	332
Aldrin	1.146E-05	1.147E-05	1.147E-04	0.0000115	0.0000107	0.0000156	0.0000331
Anthracene	1109	1317	13170	1317	1225	1800	3809
Antimony	6	1071	10710	1071	996	1464	3097
Arsenic	10	N/A	N/A	N/A	N/A	N/A	N/A
Barium	2000	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	5810	581	540	794	1680
Benzidine	0.0015	0.107	1.07	0.107	0.0995	0.146	0.309
Benzo(*a*)anthracene	0.024	0.025	0.25	0.0250	0.0233	0.0341	0.0723
Benzo(*a*)pyrene	0.0025	0.0025	0.025	0.00250	0.00233	0.00341	0.00723
Bis(chloromethyl)ether	0.0024	0.2745	2.745	0.275	0.255	0.375	0.793
Bis(2-chloroethyl)ether	0.60	42.83	428.3	42.8	39.8	58.5	123
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	75.5	7.55	7.02	10.3	21.8

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Bromodichloromethane [Dichlorobromomethane]	10.2	275	2750	275	256	375	795
Bromoform [Tribromomethane]	66.9	1060	10600	1060	986	1449	3065
Cadmium	5	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	460	46.0	42.8	62.8	133
Chlordane	0.0025	0.0025	0.025	0.00250	0.00233	0.00341	0.00723
Chlorobenzene	100	2737	27370	2737	2545	3741	7916
Chlorodibromomethane [Dibromochloromethane]	7.5	183	1830	183	170	250	529
Chloroform [Trichloromethane]	70	7697	76970	7697	7158	10522	22262
Chromium (hexavalent)	62	502	5020	502	467	686	1451
Chrysene	2.45	2.52	25.2	2.52	2.34	3.44	7.28
Cresols [Methylphenols]	1041	9301	93010	9301	8650	12715	26901
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.02	0.00200	0.00186	0.00273	0.00578
4,4'-DDE	0.00013	0.00013	0.0013	0.000130	0.000121	0.000177	0.000375
4,4'-DDT	0.0004	0.0004	0.004	0.000400	0.000372	0.000546	0.00115
2,4'-D	70	N/A	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	4730	473	440	646	1368
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	42.4	4.24	3.94	5.79	12.2
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	5950	595	553	813	1720
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	3299	3068	4510	9541
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.79	2.24	22.4	2.24	2.08	3.06	6.47
1,2-Dichloroethane	5	364	3640	364	339	497	1052
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	55114	51256	75346	159406
Dichloromethane [Methylene Chloride]	5	13333	133330	13333	12400	18227	38563
1,2-Dichloropropane	5	259	2590	259	241	354	749
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	119	111	162	344
Dicofol [Kelthane]	0.30	0.30	3	0.300	0.279	0.410	0.867
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.0000200	0.0000186	0.0000273	0.0000578
2,4-Dimethylphenol	444	8436	84360	8436	7845	11532	24399
Di-*n*-Butyl Phthalate	88.9	92.4	924	92.4	85.9	126	267
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	7.97E-08	7.41E-08	1.08E-07	2.30E-07
Endrin	0.02	0.02	0.2	0.0200	0.0186	0.0273	0.0578
Epichlorohydrin	53.5	2013	20130	2013	1872	2751	5822
Ethylbenzene	700	1867	18670	1867	1736	2552	5399
Ethylene Glycol	46744	1.68E+07	1.68E+08	16800000	15624000	22967280	48590640
Fluoride	4000	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.001	0.000100	0.0000930	0.000136	0.000289
Heptachlor Epoxide	0.00029	0.00029	0.0029	0.000290	0.000270	0.000396	0.000838
Hexachlorobenzene	0.00068	0.00068	0.0068	0.000680	0.000632	0.000929	0.00196
Hexachlorobutadiene	0.21	0.22	2.2	0.220	0.205	0.300	0.636
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.084	0.00840	0.00781	0.0114	0.0242
Hexachlorocyclohexane (*beta*)	0.15	0.26	2.6	0.260	0.242	0.355	0.751
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	3.41	0.341	0.317	0.466	0.986
Hexachlorocyclopentadiene	10.7	11.6	116	11.6	10.8	15.8	33.5
Hexachloroethane	1.84	2.33	23.3	2.33	2.17	3.18	6.73
Hexachlorophene	2.05	2.90	29	2.90	2.70	3.96	8.38
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	159820	15982	14863	21848	46224
Lead	1.15	3.83	38.3	46.0	42.7	62.8	132
Mercury	0.0122	0.0122	0.122	0.0122	0.0113	0.0166	0.0352
Methoxychlor	2.92	3.0	30	3.00	2.79	4.10	8.67
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	992000	922560	1356163	2869161
Methyl *tert*-butyl ether [MTBE]	15	10482	104820	10482	9748	14329	30317

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Nickel	332	1140	11400	7034	6542	9616	20344
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	18730	1873	1742	2560	5417
N-Nitrosodiethylamine	0.0037	2.1	21	2.10	1.95	2.87	6.07
N-Nitroso-di-*n*-Butylamine	0.119	4.2	42	4.20	3.91	5.74	12.1
Pentachlorobenzene	0.348	0.355	3.55	0.355	0.330	0.485	1.02
Pentachlorophenol	0.22	0.29	2.9	0.290	0.270	0.396	0.838
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.000640	0.000595	0.000874	0.00185
Pyridine	23	947	9470	947	881	1294	2739
Selenium	50	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	0.240	0.223	0.328	0.694
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	26.4	24.5	36.0	76.2
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	280	260	382	809
Thallium	0.12	0.23	2.3	0.230	0.214	0.314	0.665
Toluene	1000	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.11	0.0110	0.0102	0.0150	0.0318
2,4,5-TP [Silvex]	50	369	3690	369	343	504	1067
1,1,1-Trichloroethane	200	784354	7843540	784354	729449	1072290	2268587
1,1,2-Trichloroethane	5	166	1660	166	154	226	480
Trichloroethylene [Trichloroethene]	5	71.9	719	71.9	66.9	98.2	207
2,4,5-Trichlorophenol	1039	1867	18670	1867	1736	2552	5399
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	165	16.5	15.3	22.5	47.7

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life *Parameter*	70% of Daily Avg. (µg/L)	85% of Daily Avg. (µg/L)
Aldrin	0.987	1.19
Aluminum	16315	19812
Arsenic	212	258
Cadmium	1.22	1.48
Carbaryl	0.658	0.799
Chlordane	0.00251	0.00304
Chlorpyrifos	0.0257	0.0312
Chromium (trivalent)	2114	2567
Chromium (hexavalent)	5.16	6.27
Copper	36.6	44.5
Cyanide (free)	6.71	8.15
4,4'-DDT	0.000627	0.000762
Demeton	0.0627	0.0762
Diazinon	0.0559	0.0679
Dicofol [Kelthane]	12.4	15.0
Dieldrin	0.00125	0.00152
Diuron	43.9	53.3
Endosulfan I (*alpha*)	0.0351	0.0426
Endosulfan II (*beta*)	0.0351	0.0426
Endosulfan sulfate	0.0351	0.0426
Endrin	0.00125	0.00152
Guthion [Azinphos Methyl]	0.00627	0.00762
Heptachlor	0.00251	0.00304
Hexachlorocyclohexane (*gamma*) [Lindane]	0.0502	0.0609
Lead	31.5	38.2

Aquatic Life *Parameter*	*70% of Daily Avg.* *(µg/L)*	*85% of Daily Avg.* *(µg/L)*
Malathion	0.00627	0.00762
Mercury	0.790	0.959
Methoxychlor	0.0188	0.0228
Mirex	0.000627	0.000762
Nickel	299	364
Nonylphenol	4.14	5.03
Parathion (ethyl)	0.00815	0.00990
Pentachlorophenol	5.24	6.37
Phenanthrene	9.87	11.9
Polychlorinated Biphenyls [PCBs]	0.00878	0.0106
Selenium	3.13	3.81
Silver	6.12	7.43
Toxaphene	0.000125	0.000152
Tributyltin [TBT]	0.0150	0.0182
2,4,5 Trichlorophenol	40.1	48.7
Zinc	656	797

Human Health *Parameter*	*70% of Daily Avg.* *(µg/L)*	*85% of Daily Avg.* *(µg/L)*
Acrylonitrile	110	133
Aldrin	0.0000109	0.0000133
Anthracene	1260	1530
Antimony	1024	1244
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	555	675
Benzidine	0.102	0.124
Benzo(*a*)anthracene	0.0239	0.0290
Benzo(*a*)pyrene	0.00239	0.00290
Bis(chloromethyl)ether	0.262	0.318
Bis(2-chloroethyl)ether	40.9	49.7
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	7.22	8.77
Bromodichloromethane [Dichlorobromomethane]	263	319
Bromoform [Tribromomethane]	1014	1231
Cadmium	N/A	N/A
Carbon Tetrachloride	44.0	53.4
Chlordane	0.00239	0.00290
Chlorobenzene	2619	3180
Chlorodibromomethane [Dibromochloromethane]	175	212
Chloroform [Trichloromethane]	7365	8944
Chromium (hexavalent)	480	583
Chrysene	2.41	2.92
Cresols [Methylphenols]	8900	10808
Cyanide (free)	N/A	N/A
4,4'-DDD	0.00191	0.00232
4,4'-DDE	0.000124	0.000151
4,4'-DDT	0.000382	0.000464
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	452	549
1,2-Dibromoethane [Ethylene Dibromide]	4.05	4.92
m-Dichlorobenzene [1,3-Dichlorobenzene]	569	691
o-Dichlorobenzene [1,2-Dichlorobenzene]	3157	3833
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	2.14	2.60

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
1,2-Dichloroethane	348	422
1,1-Dichloroethylene [1,1-Dichloroethene]	52742	64044
Dichloromethane [Methylene Chloride]	12759	15493
1,2-Dichloropropane	247	300
1,3-Dichloropropene [1,3-Dichloropropylene]	113	138
Dicofol [Kelthane]	0.287	0.348
Dieldrin	0.0000191	0.0000232
2,4-Dimethylphenol	8072	9802
Di-*n*-Butyl Phthalate	88.4	107
Dioxins/Furans [TCDD Equivalents]	7.62E-08	9.26E-08
Endrin	0.0191	0.0232
Epichlorohydrin	1926	2339
Ethylbenzene	1786	2169
Ethylene Glycol	16077096	19522188
Fluoride	N/A	N/A
Heptachlor	0.0000956	0.000116
Heptachlor Epoxide	0.000277	0.000336
Hexachlorobenzene	0.000650	0.000790
Hexachlorobutadiene	0.210	0.255
Hexachlorocyclohexane (*alpha*)	0.00803	0.00976
Hexachlorocyclohexane (*beta*)	0.248	0.302
Hexachlorocyclohexane (*gamma*) [Lindane]	0.326	0.396
Hexachlorocyclopentadiene	11.1	13.4
Hexachloroethane	2.22	2.70
Hexachlorophene	2.77	3.36
4,4'-Isopropylidenediphenol [Bisphenol A]	15294	18571
Lead	43.9	53.4
Mercury	0.0116	0.0141
Methoxychlor	2.87	3.48
Methyl Ethyl Ketone	949314	1152738
Methyl *tert*-butyl ether [MTBE]	10030	12180
Nickel	6731	8173
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	1792	2176
N-Nitrosodiethylamine	2.00	2.44
N-Nitroso-di-*n*-Butylamine	4.01	4.88
Pentachlorobenzene	0.339	0.412
Pentachlorophenol	0.277	0.336
Polychlorinated Biphenyls [PCBs]	0.000612	0.000743
Pyridine	906	1100
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.229	0.278
1,1,2,2-Tetrachloroethane	25.2	30.6
Tetrachloroethylene [Tetrachloroethylene]	267	325
Thallium	0.220	0.267
Toluene	N/A	N/A
Toxaphene	0.0105	0.0127
2,4,5-TP [Silvex]	353	428
1,1,1-Trichloroethane	750603	911446
1,1,2-Trichloroethane	158	192
Trichloroethylene [Trichloroethene]	68.8	83.5
2,4,5-Trichlorophenol	1786	2169
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	15.7	19.1

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

TEXTOX MENU #4 - LAKE OR RESERVOIR

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	NRG Texas Power LLC
TPDES Permit No:	WQ0001038000
Outfall No:	004
Prepared by:	S. Johnson
Date:	April 14, 2020

DISCHARGE INFORMATION

Receiving Waterbody:	Smithers lake
Segment No.:	1202
TSS (mg/L):	36
pH (Standard Units):	7.6
Hardness (mg/L as $CaCO_3$):	160
Chloride (mg/L):	88
Effluent Flow for Aquatic Life (MGD):	N/A
% Effluent for Chronic Aquatic Life (Mixing Zone):	4.6
% Effluent for Acute Aquatic Life (ZID):	14.1
Effluent Flow for Human Health (MGD):	N/A
% Effluent for Human Health:	3.2
Human Health Criterion (select: PWS, FISH, or INC)	FISH

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Lake/Reservoir Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	0.02	1994 Study	1.00	Assumed
Arsenic	5.68	-0.73	34986.39	0.443		1.00	Assumed
Cadmium	6.55	-0.92	131280.95	0.175		1.00	Assumed
Chromium (total)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (trivalent)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.45	-0.90	112028.30	0.199		1.00	Assumed
Lead	6.31	-0.53	305604.45	0.083		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	6.34	-0.76	143618.41	0.162		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	59842.32	0.317		1.00	Assumed
Zinc	6.52	-0.68	289543.82	0.088		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	21.3	N/A	6.81	N/A	10.0	21.1
Aluminum	991	N/A	351418	N/A	112454	N/A	165307	349731
Arsenic	340	150	5448	7368	1744	4494	2562	5422
Cadmium	13.55	0.341	550	42.4	176	25.9	38.0	80.5
Carbaryl	2.0	N/A	14.2	N/A	4.54	N/A	6.67	14.1
Chlordane	2.4	0.004	17.0	0.0870	5.45	0.0530	0.0779	0.164
Chlorpyrifos	0.083	0.041	0.589	0.891	0.188	0.544	0.276	0.585

Parameter	FW Acute Criterion (µg/L)	FW Chronic Criterion (µg/L)	WLAa (µg/L)	WLAc (µg/L)	LTAa (µg/L)	LTAc (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Chromium (trivalent)	837	108.9	183664	73231	58772	44671	65666	138926
Chromium (hexavalent)	15.7	10.6	111	230	35.6	141	52.3	110
Copper	22.11	14.15	789	1548	253	944	371	785
Cyanide (free)	45.8	10.7	325	233	104	142	152	323
4,4'-DDT	1.1	0.001	7.80	0.0217	2.50	0.0133	0.0194	0.0412
Demeton	N/A	0.1	N/A	2.17	N/A	1.33	1.94	4.12
Diazinon	0.17	0.17	1.21	3.70	0.386	2.25	0.567	1.19
Dicofol [Kelthane]	59.3	19.8	421	430	135	263	197	418
Dieldrin	0.24	0.002	1.70	0.0435	0.545	0.0265	0.0389	0.0824
Diuron	210	70	1489	1522	477	928	700	1482
Endosulfan I (*alpha*)	0.22	0.056	1.56	1.22	0.499	0.743	0.733	1.55
Endosulfan II (*beta*)	0.22	0.056	1.56	1.22	0.499	0.743	0.733	1.55
Endosulfan sulfate	0.22	0.056	1.56	1.22	0.499	0.743	0.733	1.55
Endrin	0.086	0.002	0.610	0.0435	0.195	0.0265	0.0389	0.0824
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.217	N/A	0.133	0.194	0.412
Heptachlor	0.52	0.004	3.69	0.0870	1.18	0.0530	0.0779	0.164
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	0.08	7.99	1.74	2.56	1.06	1.55	3.29
Lead	107.3	4.18	9134	1091	2923	666	978	2069
Malathion	N/A	0.01	N/A	0.217	N/A	0.133	0.194	0.412
Mercury	2.4	1.3	17.0	28.3	5.45	17.2	8.00	16.9
Methoxychlor	N/A	0.03	N/A	0.652	N/A	0.398	0.584	1.23
Mirex	N/A	0.001	N/A	0.0217	N/A	0.0133	0.0194	0.0412
Nickel	697	77.4	30495	10382	9759	6333	9309	19696
Nonylphenol	28	6.6	199	143	63.5	87.5	93.4	197
Parathion (ethyl)	0.065	0.013	0.461	0.283	0.148	0.172	0.216	0.458
Pentachlorophenol	15.9	12.23	113	266	36.2	162	53.1	112
Phenanthrene	30	30	213	652	68.1	398	100	211
Polychlorinated Biphenyls [PCBs]	2.0	0.014	14.2	0.304	4.54	0.186	0.272	0.577
Selenium	20	5	142	109	45.4	66.3	66.7	141
Silver	0.8	N/A	132	N/A	42.2	N/A	62.0	131
Toxaphene	0.78	0.0002	5.53	0.00435	1.77	0.00265	0.00389	0.00824
Tributyltin [TBT]	0.13	0.024	0.922	0.522	0.295	0.318	0.433	0.917
2,4,5 Trichlorophenol	136	64	965	1391	309	849	453	959
Zinc	174.5	175.9	14138	43691	4524	26651	6650	14070

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Acrylonitrile	1.0	115	1150	3594	3342	4913	10394
Aldrin	1.146E-05	1.147E-05	1.147E-04	0.000358	0.000333	0.000490	0.00103
Anthracene	1109	1317	13170	41156	38275	56264	119036
Antimony	6	1071	10710	33469	31126	45755	96801
Arsenic	10	N/A	N/A	N/A	N/A	N/A	N/A
Barium	2000	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	5810	18156	16885	24821	52513
Benzidine	0.0015	0.107	1.07	3.34	3.11	4.57	9.67
Benzo(*a*)anthracene	0.024	0.025	0.25	0.781	0.727	1.06	2.25
Benzo(*a*)pyrene	0.0025	0.0025	0.025	0.0781	0.0727	0.106	0.225
Bis(chloromethyl)ether	0.0024	0.2745	2.745	8.58	7.98	11.7	24.8
Bis(2-chloroethyl)ether	0.60	42.83	428.3	1338	1245	1829	3871
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	75.5	236	219	322	682

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Bromodichloromethane [Dichlorobromomethane]	10.2	275	2750	8594	7992	11748	24855
Bromoform [Tribromomethane]	66.9	1060	10600	33125	30806	45285	95807
Cadmium	5	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	460	1438	1337	1965	4157
Chlordane	0.0025	0.0025	0.025	0.0781	0.0727	0.106	0.225
Chlorobenzene	100	2737	27370	85531	79544	116929	247382
Chlorodibromomethane [Dibromochloromethane]	7.5	183	1830	5719	5318	7818	16540
Chloroform [Trichloromethane]	70	7697	76970	240531	223694	328830	695688
Chromium (hexavalent)	62	502	5020	15688	14589	21446	45372
Chrysene	2.45	2.52	25.2	78.8	73.2	107	227
Cresols [Methylphenols]	1041	9301	93010	290656	270310	397356	840665
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.02	0.0625	0.0581	0.0854	0.180
4,4'-DDE	0.00013	0.00013	0.0013	0.00406	0.00378	0.00555	0.0117
4,4'-DDT	0.0004	0.0004	0.004	0.0125	0.0116	0.0170	0.0361
2,4'-D	70	N/A	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	4730	14781	13747	20207	42751
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	42.4	133	123	181	383
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	5950	18594	17292	25419	53778
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	103094	95877	140939	298178
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.79	2.24	22.4	70.0	65.1	95.6	202
1,2-Dichloroethane	5	364	3640	11375	10579	15550	32899
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	1722313	1601751	2354573	4981444
Dichloromethane [Methylene Chloride]	5	13333	133330	416656	387490	569610	1205094
1,2-Dichloropropane	5	259	2590	8094	7527	11064	23409
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	3719	3458	5083	10755
Dicofol [Kelthane]	0.30	0.30	3	9.38	8.72	12.8	27.1
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.000625	0.000581	0.000854	0.00180
2,4-Dimethylphenol	444	8436	84360	263625	245171	360401	762482
Di-*n*-Butyl Phthalate	88.9	92.4	924	2888	2685	3947	8351
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	0.0000025	0.0000023	0.0000034	0.0000072
Endrin	0.02	0.02	0.2	0.625	0.581	0.854	1.80
Epichlorohydrin	53.5	2013	20130	62906	58503	85999	181943
Ethylbenzene	700	1867	18670	58344	54260	79761	168747
Ethylene Glycol	46744	1.68E+07	1.68E+08	525000000	488250000	717727500	1518457500
Fluoride	4000	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.001	0.00313	0.00291	0.00427	0.00903
Heptachlor Epoxide	0.00029	0.00029	0.0029	0.00906	0.00843	0.0123	0.0262
Hexachlorobenzene	0.00068	0.00068	0.0068	0.0213	0.0198	0.0290	0.0614
Hexachlorobutadiene	0.21	0.22	2.2	6.88	6.39	9.39	19.8
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.084	0.263	0.244	0.358	0.759
Hexachlorocyclohexane (*beta*)	0.15	0.26	2.6	8.13	7.56	11.1	23.4
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	3.41	10.7	9.91	14.5	30.8
Hexachlorocyclopentadiene	10.7	11.6	116	363	337	495	1048
Hexachloroethane	1.84	2.33	23.3	72.8	67.7	99.5	210
Hexachlorophene	2.05	2.90	29	90.6	84.3	123	262
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	159820	499438	464477	682781	1444523
Lead	1.15	3.83	38.3	1436	1336	1963	4154
Mercury	0.0122	0.0122	0.122	0.381	0.355	0.521	1.10
Methoxychlor	2.92	3.0	30	93.8	87.2	128	271
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	31000000	28830000	42380100	89661300
Methyl *tert*-butyl ether [MTBE]	15	10482	104820	327563	304633	447810	947409

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Nickel	332	1140	11400	219816	204429	300509	635772
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	18730	58531	54434	80018	169289
N-Nitrosodiethylamine	0.0037	2.1	21	65.6	61.0	89.7	189
N-Nitroso-di-*n*-Butylamine	0.119	4.2	42	131	122	179	379
Pentachlorobenzene	0.348	0.355	3.55	11.1	10.3	15.1	32.0
Pentachlorophenol	0.22	0.29	2.9	9.06	8.43	12.3	26.2
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.0200	0.0186	0.0273	0.0578
Pyridine	23	947	9470	29594	27522	40457	85594
Selenium	50	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	7.50	6.98	10.2	21.6
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	823	766	1125	2381
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	8750	8138	11962	25307
Thallium	0.12	0.23	2.3	7.19	6.68	9.82	20.7
Toluene	1000	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.11	0.344	0.320	0.469	0.994
2,4,5-TP [Silvex]	50	369	3690	11531	10724	15764	33351
1,1,1-Trichloroethane	200	784354	7843540	24511063	22795288	33509073	70893346
1,1,2-Trichloroethane	5	166	1660	5188	4824	7091	15003
Trichloroethylene [Trichloroethene]	5	71.9	719	2247	2090	3071	6498
2,4,5-Trichlorophenol	1039	1867	18670	58344	54260	79761	168747
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	165	516	480	704	1491

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life Parameter	70% of Daily Avg. (µg/L)	85% of Daily Avg. (µg/L)
Aldrin	7.00	8.50
Aluminum	115715	140511
Arsenic	1794	2178
Cadmium	26.6	32.3
Carbaryl	4.67	5.67
Chlordane	0.0545	0.0662
Chlorpyrifos	0.193	0.235
Chromium (trivalent)	45966	55816
Chromium (hexavalent)	36.6	44.5
Copper	259	315
Cyanide (free)	106	129
4,4'-DDT	0.0136	0.0165
Demeton	1.36	1.65
Diazinon	0.397	0.482
Dicofol [Kelthane]	138	168
Dieldrin	0.0272	0.0331
Diuron	490	595
Endosulfan I (*alpha*)	0.513	0.623
Endosulfan II (*beta*)	0.513	0.623
Endosulfan sulfate	0.513	0.623
Endrin	0.0272	0.0331
Guthion [Azinphos Methyl]	0.136	0.165
Heptachlor	0.0545	0.0662
Hexachlorocyclohexane (*gamma*) [Lindane]	1.09	1.32
Lead	684	831

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Malathion	0.136	0.165
Mercury	5.60	6.80
Methoxychlor	0.409	0.497
Mirex	0.0136	0.0165
Nickel	6516	7913
Nonylphenol	65.3	79.4
Parathion (ethyl)	0.151	0.184
Pentachlorophenol	37.2	45.2
Phenanthrene	70.0	85.0
Polychlorinated Biphenyls [PCBs]	0.191	0.231
Selenium	46.7	56.7
Silver	43.4	52.7
Toxaphene	0.00272	0.00331
Tributyltin [TBT]	0.303	0.368
2,4,5 Trichlorophenol	317	385
Zinc	4655	5652

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	***(µg/L)***	***(µg/L)***
Acrylonitrile	3439	4176
Aldrin	0.000343	0.000416
Anthracene	39385	47825
Antimony	32028	38891
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	17374	21098
Benzidine	3.19	3.88
Benzo(*a*)anthracene	0.747	0.907
Benzo(*a*)pyrene	0.0747	0.0907
Bis(chloromethyl)ether	8.20	9.96
Bis(2-chloroethyl)ether	1280	1555
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	225	274
Bromodichloromethane [Dichlorobromomethane]	8223	9986
Bromoform [Tribromomethane]	31699	38492
Cadmium	N/A	N/A
Carbon Tetrachloride	1375	1670
Chlordane	0.0747	0.0907
Chlorobenzene	81850	99390
Chlorodibromomethane [Dibromochloromethane]	5472	6645
Chloroform [Trichloromethane]	230181	279505
Chromium (hexavalent)	15012	18229
Chrysene	75.3	91.5
Cresols [Methylphenols]	278149	337752
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0598	0.0726
4,4'-DDE	0.00388	0.00472
4,4'-DDT	0.0119	0.0145
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	14145	17176
1,2-Dibromoethane [Ethylene Dibromide]	126	153
m-Dichlorobenzene [1,3-Dichlorobenzene]	17793	21606
o-Dichlorobenzene [1,2-Dichlorobenzene]	98657	119798
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A
3,3'-Dichlorobenzidine	66.9	81.3
1,2-Dichloroethane	10885	13218

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
1,1-Dichloroethylene [1,1-Dichloroethene]	1648201	2001387
Dichloromethane [Methylene Chloride]	398727	484169
1,2-Dichloropropane	7745	9405
1,3-Dichloropropene [1,3-Dichloropropylene]	3558	4321
Dicofol [Kelthane]	8.97	10.8
Dieldrin	0.000598	0.000726
2,4-Dimethylphenol	252281	306341
Di-*n*-Butyl Phthalate	2763	3355
Dioxins/Furans [TCDD Equivalents]	0.0000024	0.0000029
Endrin	0.598	0.726
Epichlorohydrin	60199	73099
Ethylbenzene	55833	67797
Ethylene Glycol	502409250	610068375
Fluoride	N/A	N/A
Heptachlor	0.00299	0.00363
Heptachlor Epoxide	0.00867	0.0105
Hexachlorobenzene	0.0203	0.0246
Hexachlorobutadiene	6.57	7.98
Hexachlorocyclohexane (*alpha*)	0.251	0.305
Hexachlorocyclohexane (*beta*)	7.77	9.44
Hexachlorocyclohexane (*gamma*) [Lindane]	10.1	12.3
Hexachlorocyclopentadiene	346	421
Hexachloroethane	69.6	84.6
Hexachlorophene	86.7	105
4,4'-Isopropylidenediphenol [Bisphenol A]	477946	580363
Lead	1374	1669
Mercury	0.364	0.443
Methoxychlor	89.7	108
Methyl Ethyl Ketone	29666070	36023085
Methyl *tert*-butyl ether [MTBE]	313467	380639
Nickel	210356	255433
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	56012	68015
N-Nitrosodiethylamine	62.8	76.2
N-Nitroso-di-*n*-Butylamine	125	152
Pentachlorobenzene	10.6	12.8
Pentachlorophenol	8.67	10.5
Polychlorinated Biphenyls [PCBs]	0.0191	0.0232
Pyridine	28320	34388
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	7.17	8.71
1,1,2,2-Tetrachloroethane	788	956
Tetrachloroethylene [Tetrachloroethylene]	8373	10167
Thallium	6.87	8.35
Toluene	N/A	N/A
Toxaphene	0.328	0.399
2,4,5-TP [Silvex]	11035	13399
1,1,1-Trichloroethane	23456351	28482712
1,1,2-Trichloroethane	4964	6028
Trichloroethylene [Trichloroethene]	2150	2610
2,4,5-Trichlorophenol	55833	67797
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	493	599

FACT SHEET AND EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

TEXTOX MENU #4 - LAKE OR RESERVOIR

The water quality-based effluent limitations developed below are calculated using:

Table 1, 2014 Texas Surface Water Quality Standards (30 TAC 307) for Freshwater Aquatic Life
Table 2, 2018 Texas Surface Water Quality Standards for Human Health
"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	NRG Texas Power LLC
TPDES Permit No:	WQ0001038000
Outfall No:	005 and 006
Prepared by:	S. Johnson
Date:	April 14, 2020

DISCHARGE INFORMATION

Receiving Waterbody:	Smithers lake
Segment No.:	1202
TSS (mg/L):	36
pH (Standard Units):	7.6
Hardness (mg/L as $CaCO_3$):	160
Chloride (mg/L):	88
Effluent Flow for Aquatic Life (MGD):	<10
% Effluent for Chronic Aquatic Life (Mixing Zone):	15
% Effluent for Acute Aquatic Life (ZID):	60
Effluent Flow for Human Health (MGD):	<10
% Effluent for Human Health:	8
Human Health Criterion (select: PWS, FISH, or INC)	FISH

CALCULATE DISSOLVED FRACTION (AND ENTER WATER EFFECT RATIO IF APPLICABLE):

Lake/Reservoir Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*	*Source*	*Water Effect Ratio (WER)*	*Source*
Aluminum	N/A	N/A	N/A	0.02	1994 Study	1.00	Assumed
Arsenic	5.68	-0.73	34986.39	0.443		1.00	Assumed
Cadmium	6.55	-0.92	131280.95	0.175		1.00	Assumed
Chromium (total)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (trivalent)	6.34	-0.27	831377.61	0.032		1.00	Assumed
Chromium (hexavalent)	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Copper	6.45	-0.90	112028.30	0.199		1.00	Assumed
Lead	6.31	-0.53	305604.45	0.083		1.00	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Nickel	6.34	-0.76	143618.41	0.162		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	59842.32	0.317		1.00	Assumed
Zinc	6.52	-0.68	289543.82	0.088		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (µg/L)*	*FW Chronic Criterion (µg/L)*	*WLAa (µg/L)*	*WLAc (µg/L)*	*LTAa (µg/L)*	*LTAc (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Aldrin	3.0	N/A	5.00	N/A	1.60	N/A	2.35	4.97
Aluminum	991	N/A	82583	N/A	26427	N/A	38847	82186
Arsenic	340	150	1280	2260	410	1378	602	1274
Cadmium	13.55	0.341	129	13.0	41.4	7.94	11.6	24.6
Carbaryl	2.0	N/A	3.33	N/A	1.07	N/A	1.56	3.31

Parameter	FW Acute Criterion (µg/L)	FW Chronic Criterion (µg/L)	WLAa (µg/L)	WLAc (µg/L)	LTAa (µg/L)	LTAc (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Chlordane	2.4	0.004	4.00	0.0267	1.28	0.0163	0.0239	0.0505
Chlorpyrifos	0.083	0.041	0.138	0.273	0.0443	0.167	0.0650	0.137
Chromium (trivalent)	837	108.9	43161	22457	13812	13699	20137	42604
Chromium (hexavalent)	15.7	10.6	26.2	70.7	8.37	43.1	12.3	26.0
Copper	22.11	14.15	185	475	59.4	290	87.2	184
Cyanide (free)	45.8	10.7	76.3	71.3	24.4	43.5	35.9	75.9
4,4'-DDT	1.1	0.001	1.83	0.00667	0.587	0.00407	0.00597	0.0126
Demeton	N/A	0.1	N/A	0.667	N/A	0.407	0.597	1.26
Diazinon	0.17	0.17	0.283	1.13	0.0907	0.691	0.133	0.281
Dicofol [Kelthane]	59.3	19.8	98.8	132	31.6	80.5	46.4	98.3
Dieldrin	0.24	0.002	0.400	0.0133	0.128	0.00813	0.0119	0.0252
Diuron	210	70	350	467	112	285	164	348
Endosulfan I (*alpha*)	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endosulfan II (*beta*)	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endosulfan sulfate	0.22	0.056	0.367	0.373	0.117	0.228	0.172	0.364
Endrin	0.086	0.002	0.143	0.0133	0.0459	0.00813	0.0119	0.0252
Guthion [Azinphos Methyl]	N/A	0.01	N/A	0.0667	N/A	0.0407	0.0597	0.126
Heptachlor	0.52	0.004	0.867	0.0267	0.277	0.0163	0.0239	0.0505
Hexachlorocyclohexane (*gamma*) [Lindane]	1.126	0.08	1.88	0.533	0.601	0.325	0.478	1.01
Lead	107.3	4.18	2146	335	687	204	300	634
Malathion	N/A	0.01	N/A	0.0667	N/A	0.0407	0.0597	0.126
Mercury	2.4	1.3	4.00	8.67	1.28	5.29	1.88	3.98
Methoxychlor	N/A	0.03	N/A	0.200	N/A	0.122	0.179	0.379
Mirex	N/A	0.001	N/A	0.00667	N/A	0.00407	0.00597	0.0126
Nickel	697	77.4	7166	3184	2293	1942	2854	6040
Nonylphenol	28	6.6	46.7	44.0	14.9	26.8	21.9	46.4
Parathion (ethyl)	0.065	0.013	0.108	0.0867	0.0347	0.0529	0.0509	0.107
Pentachlorophenol	15.9	12.23	26.6	81.5	8.50	49.7	12.4	26.4
Phenanthrene	30	30	50.0	200	16.0	122	23.5	49.7
Polychlorinated Biphenyls [PCBs]	2.0	0.014	3.33	0.0933	1.07	0.0569	0.0836	0.177
Selenium	20	5	33.3	33.3	10.7	20.3	15.6	33.1
Silver	0.8	N/A	31.0	N/A	9.91	N/A	14.5	30.8
Toxaphene	0.78	0.0002	1.30	0.00133	0.416	0.000813	0.00119	0.00252
Tributyltin [TBT]	0.13	0.024	0.217	0.160	0.0693	0.0976	0.101	0.215
2,4,5 Trichlorophenol	136	64	227	427	72.5	260	106	225
Zinc	174.5	175.9	3322	13398	1063	8173	1562	3306

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Acrylonitrile	1.0	115	1150	1438	1337	1965	4157
Aldrin	1.146E-05	1.147E-05	1.147E-04	0.000143	0.000133	0.000196	0.000414
Anthracene	1109	1317	13170	16463	15310	22505	47614
Antimony	6	1071	10710	13388	12450	18302	38720
Arsenic	10	N/A	N/A	N/A	N/A	N/A	N/A
Barium	2000	N/A	N/A	N/A	N/A	N/A	N/A
Benzene	5	581	5810	7263	6754	9928	21005
Benzidine	0.0015	0.107	1.07	1.34	1.24	1.82	3.86
Benzo(*a*)anthracene	0.024	0.025	0.25	0.313	0.291	0.427	0.903
Benzo(*a*)pyrene	0.0025	0.0025	0.025	0.0313	0.0291	0.0427	0.0903
Bis(chloromethyl)ether	0.0024	0.2745	2.745	3.43	3.19	4.69	9.92
Bis(2-chloroethyl)ether	0.60	42.83	428.3	535	498	731	1548

Parameter	*Water and Fish Criterion (µg/L)*	*Fish Only Criterion (µg/L)*	*Incidental Fish Criterion (µg/L)*	*WLAh (µg/L)*	*LTAh (µg/L)*	*Daily Avg. (µg/L)*	*Daily Max. (µg/L)*
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	6	7.55	75.5	94.4	87.8	129	272
Bromodichloromethane [Dichlorobromomethane]	10.2	275	2750	3438	3197	4699	9942
Bromoform [Tribromomethane]	66.9	1060	10600	13250	12323	18114	38322
Cadmium	5	N/A	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.5	46	460	575	535	786	1663
Chlordane	0.0025	0.0025	0.025	0.0313	0.0291	0.0427	0.0903
Chlorobenzene	100	2737	27370	34213	31818	46771	98952
Chlorodibromomethane [Dibromochloromethane]	7.5	183	1830	2288	2127	3127	6616
Chloroform [Trichloromethane]	70	7697	76970	96213	89478	131532	278275
Chromium (hexavalent)	62	502	5020	6275	5836	8578	18149
Chrysene	2.45	2.52	25.2	31.5	29.3	43.0	91.1
Cresols [Methylphenols]	1041	9301	93010	116263	108124	158942	336266
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.002	0.002	0.02	0.0250	0.0233	0.0341	0.0723
4,4'-DDE	0.00013	0.00013	0.0013	0.00163	0.00151	0.00222	0.00469
4,4'-DDT	0.0004	0.0004	0.004	0.00500	0.00465	0.00683	0.0144
2,4'-D	70	N/A	N/A	N/A	N/A	N/A	N/A
Danitol [Fenpropathrin]	262	473	4730	5913	5499	8082	17100
1,2-Dibromoethane [Ethylene Dibromide]	0.17	4.24	42.4	53.0	49.3	72.4	153
m-Dichlorobenzene [1,3-Dichlorobenzene]	322	595	5950	7438	6917	10167	21511
o-Dichlorobenzene [1,2-Dichlorobenzene]	600	3299	32990	41238	38351	56375	119271
p-Dichlorobenzene [1,4-Dichlorobenzene]	75	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.79	2.24	22.4	28.0	26.0	38.2	80.9
1,2-Dichloroethane	5	364	3640	4550	4232	6220	13159
1,1-Dichloroethylene [1,1-Dichloroethene]	7	55114	551140	688925	640700	941829	1992577
Dichloromethane [Methylene Chloride]	5	13333	133330	166663	154996	227844	482037
1,2-Dichloropropane	5	259	2590	3238	3011	4425	9363
1,3-Dichloropropene [1,3-Dichloropropylene]	2.8	119	1190	1488	1383	2033	4302
Dicofol [Kelthane]	0.30	0.30	3	3.75	3.49	5.12	10.8
Dieldrin	2.0E-05	2.0E-05	2.0E-04	0.000250	0.000233	0.000341	0.000723
2,4-Dimethylphenol	444	8436	84360	105450	98069	144160	304993
Di-*n*-Butyl Phthalate	88.9	92.4	924	1155	1074	1579	3340
Dioxins/Furans [TCDD Equivalents]	7.80E-08	7.97E-08	7.97E-07	9.96E-07	9.27E-07	0.0000014	0.0000029
Endrin	0.02	0.02	0.2	0.250	0.233	0.341	0.723
Epichlorohydrin	53.5	2013	20130	25163	23401	34399	72777
Ethylbenzene	700	1867	18670	23338	21704	31904	67499
Ethylene Glycol	46744	1.68E+07	1.68E+08	210000000	195300000	287091000	607383000
Fluoride	4000	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	8.0E-05	0.0001	0.001	0.00125	0.00116	0.00170	0.00361
Heptachlor Epoxide	0.00029	0.00029	0.0029	0.00363	0.00337	0.00495	0.0104
Hexachlorobenzene	0.00068	0.00068	0.0068	0.00850	0.00791	0.0116	0.0245
Hexachlorobutadiene	0.21	0.22	2.2	2.75	2.56	3.75	7.95
Hexachlorocyclohexane (*alpha*)	0.0078	0.0084	0.084	0.105	0.0977	0.143	0.303
Hexachlorocyclohexane (*beta*)	0.15	0.26	2.6	3.25	3.02	4.44	9.39
Hexachlorocyclohexane (*gamma*) [Lindane]	0.2	0.341	3.41	4.26	3.96	5.82	12.3
Hexachlorocyclopentadiene	10.7	11.6	116	145	135	198	419
Hexachloroethane	1.84	2.33	23.3	29.1	27.1	39.8	84.2
Hexachlorophene	2.05	2.90	29	36.3	33.7	49.5	104
4,4'-Isopropylidenediphenol [Bisphenol A]	1092	15982	159820	199775	185791	273112	577809
Lead	1.15	3.83	38.3	575	534	785	1661
Mercury	0.0122	0.0122	0.122	0.153	0.142	0.208	0.441
Methoxychlor	2.92	3.0	30	37.5	34.9	51.2	108

Parameter	Water and Fish Criterion (µg/L)	Fish Only Criterion (µg/L)	Incidental Fish Criterion (µg/L)	WLAh (µg/L)	LTAh (µg/L)	Daily Avg. (µg/L)	Daily Max. (µg/L)
Methyl Ethyl Ketone	13865	9.92E+05	9.92E+06	12400000	11532000	16952040	35864520
Methyl *tert*-butyl ether [MTBE]	15	10482	104820	131025	121853	179124	378963
Nickel	332	1140	11400	87926	81771	120203	254309
Nitrate-Nitrogen (as Total Nitrogen)	10000	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45.7	1873	18730	23413	21774	32007	67715
N-Nitrosodiethylamine	0.0037	2.1	21	26.3	24.4	35.8	75.9
N-Nitroso-di-*n*-Butylamine	0.119	4.2	42	52.5	48.8	71.7	151
Pentachlorobenzene	0.348	0.355	3.55	4.44	4.13	6.06	12.8
Pentachlorophenol	0.22	0.29	2.9	3.63	3.37	4.95	10.4
Polychlorinated Biphenyls [PCBs]	6.4E-04	6.4E-04	6.40E-03	0.00800	0.00744	0.0109	0.0231
Pyridine	23	947	9470	11838	11009	16183	34237
Selenium	50	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.23	0.24	2.4	3.00	2.79	4.10	8.67
1,1,2,2-Tetrachloroethane	1.64	26.35	263.5	329	306	450	952
Tetrachloroethylene [Tetrachloroethylene]	5	280	2800	3500	3255	4784	10123
Thallium	0.12	0.23	2.3	2.88	2.67	3.93	8.31
Toluene	1000	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.011	0.011	0.11	0.138	0.128	0.187	0.397
2,4,5-TP [Silvex]	50	369	3690	4613	4290	6305	13340
1,1,1-Trichloroethane	200	784354	7843540	9804425	9118115	13403629	28357338
1,1,2-Trichloroethane	5	166	1660	2075	1930	2836	6001
Trichloroethylene [Trichloroethene]	5	71.9	719	899	836	1228	2599
2,4,5-Trichlorophenol	1039	1867	18670	23338	21704	31904	67499
TTHM [Sum of Total Trihalomethanes]	80	N/A	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.23	16.5	165	206	192	281	596

CALCULATE 70% AND 85% OF DAILY AVERAGE EFFLUENT LIMITATIONS:

Aquatic Life Parameter	70% of Daily Avg. (µg/L)	85% of Daily Avg. (µg/L)
Aldrin	1.64	1.99
Aluminum	27193	33020
Arsenic	421	511
Cadmium	8.16	9.91
Carbaryl	1.09	1.33
Chlordane	0.0167	0.0203
Chlorpyrifos	0.0455	0.0553
Chromium (trivalent)	14096	17116
Chromium (hexavalent)	8.61	10.4
Copper	61.0	74.1
Cyanide (free)	25.1	30.5
4,4'-DDT	0.00418	0.00508
Demeton	0.418	0.508
Diazinon	0.0932	0.113
Dicofol [Kelthane]	32.5	39.5
Dieldrin	0.00836	0.0101
Diuron	115	139
Endosulfan I (*alpha*)	0.120	0.146
Endosulfan II (*beta*)	0.120	0.146
Endosulfan sulfate	0.120	0.146
Endrin	0.00836	0.0101
Guthion [Azinphos Methyl]	0.0418	0.0508
Heptachlor	0.0167	0.0203

Aquatic Life	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
Hexachlorocyclohexane (*gamma*) [Lindane]	0.334	0.406
Lead	210	255
Malathion	0.0418	0.0508
Mercury	1.31	1.59
Methoxychlor	0.125	0.152
Mirex	0.00418	0.00508
Nickel	1998	2426
Nonylphenol	15.3	18.6
Parathion (ethyl)	0.0356	0.0433
Pentachlorophenol	8.74	10.6
Phenanthrene	16.4	19.9
Polychlorinated Biphenyls [PCBs]	0.0585	0.0711
Selenium	10.9	13.3
Silver	10.2	12.3
Toxaphene	0.000836	0.00101
Tributyltin [TBT]	0.0713	0.0866
2,4,5 Trichlorophenol	74.6	90.6
Zinc	1094	1328

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
Acrylonitrile	1375	1670
Aldrin	0.000137	0.000166
Anthracene	15754	19130
Antimony	12811	15556
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	6949	8439
Benzidine	1.27	1.55
Benzo(*a*)anthracene	0.299	0.363
Benzo(*a*)pyrene	0.0299	0.0363
Bis(chloromethyl)ether	3.28	3.98
Bis(2-chloroethyl)ether	512	622
Bis(2-ethylhexyl) phthalate [Di(2-ethylhexyl) phthalate]	90.3	109
Bromodichloromethane [Dichlorobromomethane]	3289	3994
Bromoform [Tribromomethane]	12679	15396
Cadmium	N/A	N/A
Carbon Tetrachloride	550	668
Chlordane	0.0299	0.0363
Chlorobenzene	32740	39756
Chlorodibromomethane [Dibromochloromethane]	2189	2658
Chloroform [Trichloromethane]	92072	111802
Chromium (hexavalent)	6004	7291
Chrysene	30.1	36.6
Cresols [Methylphenols]	111259	135101
Cyanide (free)	N/A	N/A
4,4'-DDD	0.0239	0.0290
4,4'-DDE	0.00155	0.00188
4,4'-DDT	0.00478	0.00581
2,4'-D	N/A	N/A
Danitol [Fenpropathrin]	5658	6870
1,2-Dibromoethane [Ethylene Dibromide]	50.7	61.5
m-Dichlorobenzene [1,3-Dichlorobenzene]	7117	8642
o-Dichlorobenzene [1,2-Dichlorobenzene]	39463	47919
p-Dichlorobenzene [1,4-Dichlorobenzene]	N/A	N/A

Human Health	*70% of Daily Avg.*	*85% of Daily Avg.*
Parameter	*(µg/L)*	*(µg/L)*
3,3'-Dichlorobenzidine	26.7	32.5
1,2-Dichloroethane	4354	5287
1,1-Dichloroethylene [1,1-Dichloroethene]	659280	800554
Dichloromethane [Methylene Chloride]	159491	193667
1,2-Dichloropropane	3098	3762
1,3-Dichloropropene [1,3-Dichloropropylene]	1423	1728
Dicofol [Kelthane]	3.58	4.35
Dieldrin	0.000239	0.000290
2,4-Dimethylphenol	100912	122536
Di-*n*-Butyl Phthalate	1105	1342
Dioxins/Furans [TCDD Equivalents]	9.53E-07	0.0000012
Endrin	0.239	0.290
Epichlorohydrin	24079	29239
Ethylbenzene	22333	27118
Ethylene Glycol	200963700	244027350
Fluoride	N/A	N/A
Heptachlor	0.00119	0.00145
Heptachlor Epoxide	0.00346	0.00421
Hexachlorobenzene	0.00813	0.00987
Hexachlorobutadiene	2.63	3.19
Hexachlorocyclohexane (*alpha*)	0.100	0.122
Hexachlorocyclohexane (*beta*)	3.11	3.77
Hexachlorocyclohexane (*gamma*) [Lindane]	4.07	4.95
Hexachlorocyclopentadiene	138	168
Hexachloroethane	27.8	33.8
Hexachlorophene	34.6	42.1
4,4'-Isopropylidenediphenol [Bisphenol A]	191178	232145
Lead	549	667
Mercury	0.145	0.177
Methoxychlor	35.8	43.5
Methyl Ethyl Ketone	11866428	14409234
Methyl *tert*-butyl ether [MTBE]	125386	152255
Nickel	84142	102173
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	22405	27206
N-Nitrosodiethylamine	25.1	30.5
N-Nitroso-di-*n*-Butylamine	50.2	61.0
Pentachlorobenzene	4.24	5.15
Pentachlorophenol	3.46	4.21
Polychlorinated Biphenyls [PCBs]	0.00765	0.00929
Pyridine	11328	13755
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	2.87	3.48
1,1,2,2-Tetrachloroethane	315	382
Tetrachloroethylene [Tetrachloroethylene]	3349	4067
Thallium	2.75	3.34
Toluene	N/A	N/A
Toxaphene	0.131	0.159
2,4,5-TP [Silvex]	4414	5359
1,1,1-Trichloroethane	9382540	11393085
1,1,2-Trichloroethane	1985	2411
Trichloroethylene [Trichloroethene]	860	1044
2,4,5-Trichlorophenol	22333	27118
TTHM [Sum of Total Trihalomethanes]	N/A	N/A
Vinyl Chloride	197	239

Appendix C
TDS, Chloride, and Sulfate Screening Calculations

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate
Menu 4 - Discharge to a Lake

Applicant Name:	NRG Texas Power LLC				
Permit Number, Outfall:	003				
Segment Number:	1202				
Enter values needed for screening:			Data Source (edit if different)		
EF - Effluent fraction at edge of human health MZ	1	decimal fraction	Critical conditions memo		
CA - TDS - ambient segment concentration	438	mg/L	2010 IP, Appendix D		
CA - chloride - ambient segment concentration	88	mg/L	2010 IP, Appendix D		
CA - sulfate - ambient segment concentration	60	mg/L	2010 IP, Appendix D		
CC - TDS - segment criterion	750	mg/L	2014 TSWQS, Appendix A		
CC - chloride - segment criterion	300	mg/L	2014 TSWQS, Appendix A		
CC - sulfate - segment criterion	200	mg/L	2014 TSWQS, Appendix A		
CE - TDS - average effluent concentration	1312.5	mg/L	Permit application		
CE - chloride - average effluent concentration	354	mg/L	Permit application		
CE - sulfate - average effluent concentration	413	mg/L	Permit application		
TDS					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF			750.00	
Calculate the LTA	LTA = WLA * 0.93			697.50	
Calculate the daily average	Daily Avg. = LTA * 1.47			**1025.33**	
Calculate the daily maximum	Daily Max. = LTA * 3.11			**2169.23**	
Calculate 70% of the daily average	70% of Daily Avg. =			717.73	
Calculate 85% of the daily average	85% of Daily Avg. =			871.53	
No permit limitations needed if:	**1312.5**	≤	**717.73**		
Reporting needed if:	**1312.5**	>	**717.73**	**but ≤**	**871.53**
Permit limits may be needed if:	**1312.5**	>	**871.53**		
Permit limits may be needed for TDS					
Chloride					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF			300.00	
Calculate the LTA	LTA = WLA * 0.93			279.00	
Calculate the daily average	Daily Avg. = LTA * 1.47			**410.13**	
Calculate the daily maximum	Daily Max. = LTA * 3.11			**867.69**	
Calculate 70% of the daily average	70% of Daily Avg. =			287.09	
Calculate 85% of the daily average	85% of Daily Avg. =			348.61	
No permit limitations needed if:	**354**	≤	**287.09**		
Reporting needed if:	**354**	>	**287.09**	**but ≤**	**348.61**
Permit limits may be needed if:	**354**	>	**348.61**		
Permit limits may be needed for chloride					
Sulfate					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF			200.00	
Calculate the LTA	LTA = WLA * 0.93			186.00	
Calculate the daily average	Daily Avg. = LTA * 1.47			**273.42**	
Calculate the daily maximum	Daily Max. = LTA * 3.11			**578.46**	
Calculate 70% of the daily average	70% of Daily Avg. =			191.39	
Calculate 85% of the daily average	85% of Daily Avg. =			232.41	
No permit limitations needed if:	**413**	≤	**191.39**		
Reporting needed if:	**413**	>	**191.39**	**but ≤**	**232.41**
Permit limits may be needed if:	**413**	>	**232.41**		
Permit limits may be needed for sulfate					

Screening Calculations for Total Dissolved Solids, Chloride, and Sulfate

Menu 4 - Discharge to a Lake

Applicant Name:	NRG Texas Power LLC				
Permit Number, Outfall:	004				
Segment Number:	1202				
Enter values needed for screening:			**Data Source (edit if different)**		
EF - Effluent fraction at edge of human health MZ	0.032	decimal fraction	Critical conditions memo		
CA - TDS - ambient segment concentration	438	mg/L	2010 IP, Appendix D		
CA - chloride - ambient segment concentration	88	mg/L	2010 IP, Appendix D		
CA - sulfate - ambient segment concentration	60	mg/L	2010 IP, Appendix D		
CC - TDS - segment criterion	750	mg/L	2014 TSWQS, Appendix A		
CC - chloride - segment criterion	300	mg/L	2014 TSWQS, Appendix A		
CC - sulfate - segment criterion	200	mg/L	2014 TSWQS, Appendix A		
CE - TDS - average effluent concentration	1872.5	mg/L	Permit application		
CE - chloride - average effluent concentration	145.675	mg/L	Permit application		
CE - sulfate - average effluent concentration	1128.25	mg/L	Permit application		
TDS					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		10188.00		
Calculate the LTA	LTA = WLA * 0.93		9474.84		
Calculate the daily average	Daily Avg. = LTA * 1.47		**13928.01**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**29466.75**		
Calculate 70% of the daily average	70% of Daily Avg. =		9749.61		
Calculate 85% of the daily average	85% of Daily Avg. =		11838.81		
No permit limitations needed if:	**1872.5**	**≤**	**9749.61**		
Reporting needed if:	**1872.5**	**>**	**9749.61**	**but ≤**	**11838.81**
Permit limits may be needed if:	**1872.5**	**>**	**11838.81**		
No permit limitations needed for TDS					
Chloride					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		6713.00		
Calculate the LTA	LTA = WLA * 0.93		6243.09		
Calculate the daily average	Daily Avg. = LTA * 1.47		**9177.34**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**19416.01**		
Calculate 70% of the daily average	70% of Daily Avg. =		6424.14		
Calculate 85% of the daily average	85% of Daily Avg. =		7800.74		
No permit limitations needed if:	**145.675**	**≤**	**6424.14**		
Reporting needed if:	**145.675**	**>**	**6424.14**	**but ≤**	**7800.74**
Permit limits may be needed if:	**145.675**	**>**	**7800.74**		
No permit limitations needed for chloride					
Sulfate					
Calculate the WLA	WLA= [CC - (1-EF)(CA)]/EF		4435.00		
Calculate the LTA	LTA = WLA * 0.93		4124.55		
Calculate the daily average	Daily Avg. = LTA * 1.47		**6063.09**		
Calculate the daily maximum	Daily Max. = LTA * 3.11		**12827.35**		
Calculate 70% of the daily average	70% of Daily Avg. =		4244.16		
Calculate 85% of the daily average	85% of Daily Avg. =		5153.63		
No permit limitations needed if:	**1128.25**	**≤**	**4244.16**		
Reporting needed if:	**1128.25**	**>**	**4244.16**	**but ≤**	**5153.63**
Permit limits may be needed if:	**1128.25**	**>**	**5153.63**		
No permit limitations needed for sulfate					

Appendix D
Comparison of Technology-Based Effluent Limits and Water Quality-Based Effluent Limits

The following table is a summary of technology-based effluent limitations calculated/assessed in the draft permit (Technology-Based), calculated/ assessed water quality-based effluent limitations (Water Quality-Based), and effluent limitations in the existing permit (Existing Permit). Effluent limitations appearing in bold are the most stringent of the three and are included in the draft permit.

Outfall	*Pollutant*	*Technology-Based*				*Water Quality-Based*				*Existing Permit*			
		Daily Avg		*Daily Max*		*Daily Avg*		*Daily Max*		*Daily Avg*		*Daily Max*	
		lbs/day	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*	*lbs/day*	*mg/L*
003	Flow	Report		Report		Report		Report		**2,121 MGD**		**Report**	
	Temperature	N/A		N/A		110°F		118°F		**110°F**		**118°F**	
	Free Available Chlorine	295	0.2	737	0.5	N/A	N/A	N/A	N/A	**295**	**0.2**	**737**	**0.5**
	Total Residual Chlorine [1]	N/A	N/A	2,064	0.2	N/A	N/A	N/A	N/A	-	-	**1,770**	**0.2**
	Total Dissolved Solids	N/A	N/A	N/A	N/A	N/A	**Report**	N/A	**Report**	-	-	-	-
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)				6.0 SU (min) to 9.0 SU (max)				**6.0 SU (min) to 9.0 SU (max)**			

[1] The TBEL mass loading limitation for total residual chlorine was calculated for seven units, as indicated in the application materials. This revision to TRC lbs/day represents a correction.

Outfall	Pollutant	Technology-Based		Water Quality-Based		Existing Permit	
		Daily Avg	Daily Max	Daily Avg	Daily Max	Daily Avg	Daily Max
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
001	Flow	37 MGD	Report	N/A	N/A	**37 MGD**	**Report**
	Temperature	N/A	N/A	Report	95°F	**Report**	**95°F**
	Total Dissolved Solids	N/A	N/A	N/A	2,500	**-**	**2,500**
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)		6.0 SU (min) to 9.0 SU (max)		**6.0 SU (min) to 9.0 SU (max)**	
002	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**50**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Iron	1.0	1.0	N/A	N/A	**1.0**	**1.0**
	Total Copper	0.5	1.0	**0.059**	**0.123**	0.078	0.164
	Total Selenium [2]	0.05	0.20	0.0057	0.012	**-**	**0.012**
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)		6.0 SU (min) to 9.0 SU (max)		6.0 SU (min) to 9.0 SU (max)	
103	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Iron	1.0	1.0	N/A	N/A	**1.0**	**1.0**
	Total Copper	0.5	1.0	N/A	N/A	**0.5**	**1.0**
	Total Selenium	0.05	0.20	N/A	N/A	**-**	**0.2**
203	Flow	Report	Report	N/A	N/A	**Report**	Report
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Selenium	0.05	0.20	N/A	N/A	**-**	**0.2**
303	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
403	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
503	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Chromium	**0.2**	**0.2**	N/A	N/A	-	-

[2] Daily average limits are not applied because of the monitoring frequency in the draft permit. Only daily maximum limits are appropriate.

Outfall	Pollutant	Technology-Based		Water Quality-Based		Existing Permit	
		Daily Avg	Daily Max	Daily Avg	Daily Max	Daily Avg	Daily Max
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
503	Total Zinc	**1.0**	**1.0**	N/A	N/A	-	-
603	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Iron	1.0	1.0	N/A	N/A	**1.0**	**1.0**
	Total Copper	0.5	1.0	N/A	N/A	**0.5**	**1.0**
	Total Selenium	0.05	0.20	N/A	N/A	**N/A**	**0.2**
703	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Selenium	N/A	0.20	N/A	N/A	**N/A**	**0.2**
803	Flow	Report	Report	N/A	N/A	**Report**	Report
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
903	Flow	Report	Report	Report	Report	**Report**	**Report**
	BOD_5	20	45	N/A	N/A	**20**	**45**
	Total Suspended Solids	20	45	N/A	N/A	**20**	**45**
	E. coli (CFU or MPN/100 mL)	126	399	N/A	N/A	**126**	**394**
113	Flow	Report	Report	Report	Report	**Report**	**Report**
	BOD_5	20	45	N/A	N/A	**20**	45
	Total Suspended Solids	20	45	N/A	N/A	**20**	**45**
	E. coli (CFU or MPN/100 mL)	126	399	N/A	N/A	**126**	**394**
004	Flow	Report	Report	N/A	N/A	**1.296**	**2.6**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	Total Selenium	0.05	0.20	0.0667	0.141	**0.05**	**0.10**
	pH, standard units (SU)	**6.0 SU (min) to 9.0 SU (max)**		N/A		N/A	

Outfall	*Pollutant*	*Technology-Based*		*Water Quality-Based*		*Existing Permit*	
		Daily Avg	*Daily Max*	*Daily Avg*	*Daily Max*	*Daily Avg*	*Daily Max*
		mg/L	*mg/L*	*mg/L*	*mg/L*	*mg/L*	*mg/L*
005	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)		6.0 SU (min) to 9.0 SU (max)		**6.0 SU (min) to 9.0 SU (max)**	
006	Flow	Report	Report	N/A	N/A	**Report**	**Report**
	Total Suspended Solids	30	100	N/A	N/A	**30**	**100**
	Oil and Grease	15	20	N/A	N/A	**15**	**20**
	pH, standard units (SU)	6.0 SU (min) to 9.0 SU (max)		6.0 SU (min) to 9.0 SU (max)		**N/A**	

TPDES PERMIT NO.
WQ0001038000
[For TCEQ office use only -
EPA I.D. No. TX0006394]

This renewal replaces TPDES Permit No. WQ0001038000, issued on June 21, 2011.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

PERMIT TO DISCHARGE WASTES
under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code
and 40 CFR Part 423

NRG Texas Power LLC

whose mailing address is

910 Louisiana Street, 7th Floor, Environmental Department
Houston, Texas 77002

is authorized to treat and discharge wastes from W.A. Parish Steam Electric Generating Station, a dual natural gas-fired and coal-fired power plant (SIC 4911)

located at 2500 Y.U. Jones Road, south of and adjacent to Smithers Lake and Dry Creek, near the Town of Thompsons, in Fort Bend County, Texas 77469

via Outfall 001 to Dry Creek below the spillway of Smithers Lake; via Outfall 002 to an unnamed tributary of Rabbs Bayou; via Outfalls 003-006 to Smithers Lake, thence to Dry Creek below the spillway of Smithers Lake via Outfall 001; thence from all outfalls to Rabbs Bayou, thence to Big Creek, thence to Brazos River Below Navasota River in Segment No. 1202 of the Brazos River Basin

only according to effluent limitations, monitoring requirements, and other conditions set forth in this permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, three years from the date of permit issuance.

ISSUED DATE:

For the Commission

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge blowdown and overflow from the cooling pond (Smithers Lake), which contains previously monitored effluent (PME) from Outfalls 003, 004, 005, and 006, subject to the following effluent limitations:

   The daily average flow of effluent shall not exceed 37 million gallons per day (MGD) [1].

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	37 MGD	Report MGD	N/A	Continuous	Record
Temperature [2]	Report °F	95°F [2]	N/A	Continuous	Record
Total Dissolved Solids	N/A	2,500	2,500	1/year	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples shall be taken at the following location: Outfall 001, at the blowdown line from Smithers Lake, prior to entering Dry Creek.

[1] Blowdown flow only.
[2] See Other Requirements No. 10.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 002

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated coal pile runoff, non-chemical metal cleaning wastes (Units 5-8) [1], low volume waste sources [2], flue gas desulfurization wastewater [3], bottom ash transport water, and stormwater subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	50	50	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab
Total Iron [4, 5]	1.0	1.0	1.0	1/week	Grab
Total Copper [4, 5, 6]	0.078	0.164	0.164	1/week	Grab
Total Copper [4, 5, 7]	0.059	0.123	0.123	1/week	Grab
Total Selenium [5]	N/A	0.012	0.012	1/year	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples shall be taken at the following location: Outfall 002, where commingled wastewater is discharged from the coal storage retention pond prior to mixing with any other waters, and prior to discharge to the unnamed tributary.

1 See Other Requirement No. 3.
2 See Other Requirement No. 2.
3 See Other Requirement No. 6.
4 To be monitored only when discharging metal cleaning wastes.
5 See Other Requirement No. 1.
6 Beginning upon permit issuance and lasting for three years.
7 Beginning upon three years from the date of permit issuance and lasting until permit expiration. See Other Requirement No. 20.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge condenser cooling water, stormwater, line flush waters, and previously monitored effluent (from Outfalls 103 through 113) subject to the following effluent limitations:

The daily average flow of effluent shall not exceed 2,121 million gallons per day (MGD).

Effluent Characteristics	Discharge Limitations					Minimum Self-Monitoring Requirements	
	Daily Average		Daily Maximum		Single Grab	Report Daily Average and Daily Maximum	
	lbs/day	mg/L	lbs/day	mg/L	mg/L	Measurement Frequency	Sample Type
Flow	2, 121 MGD		Report MGD		N/A	Continuous [1]	Record
Temperature [2]	110°F		118°F		N/A	Continuous	Record
Free Available Chlorine [3]	295	0.2	737	0.5	N/A	1/week [4]	Grab
Total Residual Chlorine [3]	N/A	N/A	1,770	0.2	N/A	1/week [4]	Grab
Total Dissolved Solids	N/A	Report	N/A	Report	N/A	1/quarter [5]	Grab
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51710) [6] *Ceriodaphnia dubia* 3-brood chronic NOEC [7]	Report		Report			1/quarter	Composite
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51710) [6] *Ceriodaphnia dubia* 3-brood chronic NOEC [7]	Report		Report			1/quarter	Composite
Lethal Whole Effluent Toxicity (WET) limit (Parameter 51710) [6] *Ceriodaphnia dubia* 3-brood chronic NOEC [7]	100%		100%			1/quarter	Composite
Sublethal Whole Effluent Toxicity (WET) limit (Parameter 51710) [6] *Ceriodaphnia dubia* 3-brood chronic NOEC [7]	80%		80%			1/quarter	Composite

1 Instantaneous flow measurements at 2-hour intervals are acceptable for reporting continuous flow requirements at Outfall 003. These flows may be calculated based on the number of hours each condenser circulating pump (from Units 1-6) was operated and the pump curve for each pump, plus the flow contributed by Outfall 503.

2 See Other Requirements No. 10.

3 See Other Requirements No. 7 and 8.

4 Samples shall be representative of periods of chlorination.

5 Beginning upon the date of permit issuance and lasting until permit expiration.

6 The Lethal and Sublethal WET limits become effective 34-months from the permit issue date.

7 The no observed effect concentration (NOEC) is defined as the greatest effluent dilution at which no significant effect is demonstrated. A significant effect is defined as a statistically significant difference between a specified effluent dilution and the control for toxicity (lethal or sublethal effects, whichever is specified).

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.
3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.
4. Effluent monitoring samples shall be taken at the following location: Outfall 003, where all commingled waste streams discharge from the discharge canal, and prior to entering Smithers Lake.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge from Units 1-6 chemical and non-chemical metal cleaning wastewater [1], and low volume waste sources [2] subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab
Total Iron [3,4]	1.0	1.0	1.0	1/week	Grab
Total Copper [3,4]	0.5	1.0	1.0	1/week	Grab
Total Selenium [4]	N/A	0.2	0.2	1/year	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 103, where commingled wastes are discharged from the treatment facility, prior to mixing with the condenser cooling water.

1 See Other Requirements No. 3.
2 See Other Requirements No. 2.
3 Limitations and monitoring requirements are applicable only when discharging metal cleaning wastes.
4 See Other Requirement No. 1.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 203

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge low volume wastes sources [1] from Units 1-8, stormwater, previously monitored effluents from Outfalls 303, 403, and 803, flue gas desulfurization wastewater [2], and bottom ash transport wastewater [3] subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab
Total Selenium [4]	N/A	0.2	0.2	1/year	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 203, where commingled wastes are discharged from the treatment facility, prior to mixing with the condenser cooling water.

[1] See Other Requirement No. 2.
[2] See Other Requirement No. 6.
[3] See Other Requirement No. 4.
[4] See Other Requirement No. 1.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated low volume waste sources [1], and stormwater subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 303, where the above authorized waste streams discharge from the Units 5/6 Oily Waste Treatment System's Tricellerator, prior to mixing with any other waste streams.

[1] See Other Requirements No. 2.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 403

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated low volume waste sources [1] (auxiliary cooling tower blowdown from Units 5 and 6) subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 403, where commingled wastes are discharged from the treatment facility, prior to mixing with the condenser cooling water.

[1] See Other Requirements No. 2.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge cooling tower blowdown and/or low volume waste sources [1] from Units 7 and 8 subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week [2]	Grab
Oil and Grease	15	20	20	1/week [2]	Grab
Total Chromium [3]	0.2	0.2	0.2	1/quarter	Grab
Total Zinc [3]	1.0	1.0	1.0	1/quarter	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 503, at the cooling tower v-notch weir where commingled wastes are discharged from the treatment facility, prior to mixing with the condenser cooling water.

[1] See Other Requirement No. 2.
[2] Effluent limitations and monitoring requirements for total suspended solids and oil and grease apply only when discharging low volume waste sources. The discharge of low volume waste sources shall be sampled upon commencement of discharge, and thence weekly thereafter for the duration of the discharge.
[3] See Other Requirement No. 1.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated chemical and non-chemical metal cleaning wastewater [1] and low volume waste sources [2] from Units 1-8, subject to the following effluent limitations:

Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab
Total Iron [3, 4]	1.0	1.0	1.0	1/week	Grab
Total Copper [3, 4]	0.5	1.0	1.0	1/week	Grab
Total Selenium [4]	N/A	0.2	0.2	1/week	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 603, where commingled wastes are discharged from the treatment facility, prior to mixing with the condenser cooling water.

1 See Other Requirements No. 3.
2 See Other Requirements No. 2.
3 Limitations and monitoring requirements apply only when discharging metal cleaning wastes.
4 See Other Requirement No. 1.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS — Outfall Number 703

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge low volume waste sources [1] from Units 1-8, bottom ash transport water [2], flue gas desulfurization wastewater [3], and stormwater subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab
Total Selenium [4]	N/A	0.2	0.2	1/quarter	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 703, where commingled wastes are discharged from the treatment facility prior to mixing with the condenser cooling water.

1 See Other Requirements No. 2.
2 See Other Requirement No. 4.
3 See Other Requirement No. 6.
4 See Other Requirement No. 1.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 803

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge low volume waste sources [1] from Units 7 and 8, and stormwater subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 803, at the effluent from the Units 7/8 Oily Waste Treatment System's Tricellerator and the treatment systems' recirculation point, and prior to mixing with any other waters.

[1] See Other Requirements No. 2.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated domestic effluent (from the Units 1-4 generating areas) and air conditioning condensate subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/week	Estimate
Biochemical Oxygen Demands (5-day)	20	45	45	1/week	Grab
Total Suspended Solids	20	45	45	1/week	Grab
E. coli (CFU or MPN per 100 mL) [1]	126	399	399	1/quarter	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 903, at the exit from the final chlorine tank of the Gas Side Sewage Treatment System, prior to mixing with any other waste streams.

[1] Colony-forming units (CFU) or most probable number (MPN) per 100 mL.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 113

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated domestic effluent (from the Units 5-8 generating areas) and air conditioning condensate subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/week	Estimate
Biochemical Oxygen Demand (5-day)	20	45	45	1/week	Grab
Total Suspended Solids	20	45	45	1/week	Grab
E. coli (CFU or MPN per 100 mL) [1]	126	399	399	1/week	Grab

2. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

3. Effluent monitoring samples shall be taken at the following location: Outfall 113, at the exit from the final chlorine tank of the Coal Side Sewage Treatment System, prior to mixing with any other waste streams.

[1] Colony-forming units (CFU) or most probable number (MPN) per 100 mL.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS — Outfall Number 004

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge treated stormwater from ash disposal cells subject to the following effluent limitations:

   The daily average flow of effluent shall not exceed 1.296 million gallons per day (MGD). The daily maximum flow shall not exceed 2.6 MGD.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	1.296 MGD	2.6 MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week [1]	Grab
Oil and Grease	15	20	20	1/week [1]	Grab
Total Selenium [2]	0.05	0.10	0.2	1/week [1]	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week by grab sample.

3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples shall be taken at the following location: Outfall 004, at the pump that transport water to the submerged diffuser.

[1] When discharge occurs.
[2] See Other Requirement No. 1.

EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Outfall Number 005

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge stormwater runoff from Units 1-4 and low volume waste sources [1] subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week, by grab sample.

3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples shall be taken at the following location: Outfall 005, at the exit from the Tricellerator of the Units 1-4 Oily Waste Treatment System, prior to entering Smithers Lake.

[1] See Other Requirement No. 2.

1. During the period beginning upon date of issuance and lasting through date of expiration, the permittee is authorized to discharge Units 1-4 auxiliary cooling tower blowdown and low volume waste sources [1] subject to the following effluent limitations:

   Volume: Intermittent and flow variable.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	Report MGD	Report MGD	N/A	1/day	Estimate
Total Suspended Solids	30	100	100	1/week	Grab
Oil and Grease	15	20	20	1/week	Grab

2. The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week, by grab sample.

3. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

4. Effluent monitoring samples shall be taken at the following location: Outfall 006, where low volume waste sources are discharged prior to mixing with condenser cooling water.

[1] See Other Requirements No. 2.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC §§305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in Texas Water Code §26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

   a. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder, and limited to major domestic wastewater discharge facilities with a one million gallons per day or greater permitted flow.

   b. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

   c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.

   d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.

   e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.

   f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

2. Concentration Measurements

   a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.

      i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

      ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.

   b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.

   c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

   d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total

mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day.

The "daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

e. Bacteria concentration (Fecal coliform, *E. coli*, or Enterococci) – the number of colonies of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substitute value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD × Concentration, mg/L × 8.34).

g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

3. Sample Type

   a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(c).

   b. Grab sample - an individual sample collected in less than 15 minutes.

4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.

5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.

6. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING AND REPORTING REQUIREMENTS

1. Self-Reporting

Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Enforcement Division (MC 224), by the 20th day of the following month for each discharge that is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act; TWC Chapters 26, 27, and 28; and THSC Chapter 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

   a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§319.11 - 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.

   b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

   a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

   b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR §264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.

   c. Records of monitoring activities shall include the following:

      i. date, time, and place of sample or measurement;
      ii. identity of individual who collected the sample or made the measurement;
      iii. date and time of analysis;
      iv. identity of the individual and laboratory who performed the analysis;
      v. the technique or method of analysis; and
      vi. the results of the analysis or measurement and quality assurance/quality control records.

      The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

   If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

5. Calibration of Instruments

   All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

   Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the regional office and the Enforcement Division (MC 224).

7. Noncompliance Notification

   a. In accordance with 30 TAC §305.125(9) any noncompliance that may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally or by facsimile transmission (FAX) to the regional office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the regional office and the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective September 1, 2020, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.

   b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:

      i. unauthorized discharges as defined in Permit Condition 2(g).
      ii. any unanticipated bypass that exceeds any effluent limitation in the permit.
      iii. violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of an Industrial TPDES permit.

   c. In addition to the above, any effluent violation that deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the regional office and the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.

   d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.

8. In accordance with the procedures described in 30 TAC §§35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

   All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the regional office, orally or by facsimile transmission within 24 hours, and both the regional office and the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

   a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

      i. one hundred micrograms per liter (100 µg/L);
      ii. two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
      iii. five (5) times the maximum concentration value reported for that pollutant in the permit application; or
      iv. the level established by the TCEQ.

b. That any activity has occurred or will occur that would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. five hundred micrograms per liter (500 µg/L);
ii. one milligram per liter (1 mg/L) for antimony;
iii. ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
iv. the level established by the TCEQ.

10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

11. All POTWs must provide adequate notice to the Executive Director of the following:

a. any new introduction of pollutants into the POTW from an indirect discharger that would be subject to CWA §301 or §306 if it were directly discharging those pollutants;

b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and

c. for the purpose of this paragraph, adequate notice shall include information on:

i. the quality and quantity of effluent introduced into the POTW; and
ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PERMIT CONDITIONS

1. General

a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.

b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:

i. violation of any terms or conditions of this permit;
ii. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending, or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.

b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment,

revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.

c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.

e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.

f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§305.62 and 305.66 and TWC §7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.

h. In accordance with 30 TAC §305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility that does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.

i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code §§7.051 - 7.075 (relating to Administrative Penalties), 7.101 - 7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA §402, or any requirement imposed in a pretreatment program approved under the CWA §§402(a)(3) or 402(b)(8).

3. Inspections and Entry

a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC Chapter 361.

b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit, or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee, Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC §7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

4. Permit Amendment or Renewal

   a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:

      i. the alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC §305.534 (relating to New Sources and New Dischargers); or

      ii. the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or

      iii. the alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.

   c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.

   d. Prior to accepting or generating wastes that are not described in the permit application or that would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.

   e. In accordance with the TWC §26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.

   f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA §307(a) for a toxic pollutant that is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA §307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Permit Transfer

   a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.

   b. A permit may be transferred only according to the provisions of 30 TAC §305.64 (relating to Transfer of Permits) and 30 TAC §50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

   This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

   Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to Texas Water Code Chapter 11.

8. Property Rights

   A permit does not convey any property rights of any sort, or any exclusive privilege.

9. Permit Enforceability

   The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Relationship to Permit Application

    The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

11. Notice of Bankruptcy.

    a. Each permittee shall notify the executive director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:

       i. the permittee;
       ii. an entity (as that term is defined in 11 USC, §101(15)) controlling the permittee or listing the permit or permittee as property of the estate; or
       iii. an affiliate (as that term is defined in 11 USC, §101(2)) of the permittee.

    b. This notification must indicate:

       i. the name of the permittee;
       ii. the permit number(s);
       iii. the bankruptcy court in which the petition for bankruptcy was filed; and
       iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge use and disposal and 30 TAC §§319.21 - 319.29 concerning the discharge of certain hazardous metals.

3. Domestic wastewater treatment facilities shall comply with the following provisions:

   a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.

   b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment or other treatment unit regulated by this permit.

4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, or retention of inadequately treated wastewater.

5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC §7.302(b)(6).

7. Documentation

   For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words "confidential business information" on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.

   a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion or upgrading of the domestic wastewater treatment or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment or collection facilities. In the case of a domestic wastewater treatment facility that reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

      If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 149) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission, and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.

10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.

11. Facilities that generate industrial solid waste as defined in 30 TAC §335.1 shall comply with these provisions:

a. Any solid waste, as defined in 30 TAC §335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.

b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.

c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC §335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.

d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Remediation Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC §335.5.

e. The term "industrial solid waste management unit" means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well, container, drum, salt dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC Chapter 335 and must include the following, as it pertains to wastewater treatment and discharge:

i. volume of waste and date(s) generated from treatment process;
ii. volume of waste disposed of on-site or shipped off-site;
iii. date(s) of disposal;

iv. identity of hauler or transporter;
v. location of disposal site; and
vi. method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

12. For industrial facilities to which the requirements of 30 TAC Chapter 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC Code Chapter 361.

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OTHER REQUIREMENTS

1. Violations of daily maximum limitations for the following pollutants shall be reported orally or by facsimile to TCEQ Region 12 within 24 hours from the time the permittee becomes aware of the violation, followed by a written report within five working days to TCEQ Region 12 and Compliance Monitoring Team (MC 224):

Pollutant	MAL[1] (mg/L)
Copper (Total)	0.002
Iron (Total)	0.007
Selenium (Total)	0.005
Chromium (Total)	0.003
Zinc (Total)	0.005

Test methods used must be sensitive enough to demonstrate compliance with the permit effluent limitations. If an effluent limit for a pollutant is less than the MAL, then the test method for that pollutant must be sensitive enough to demonstrate compliance at the MAL. Permit compliance/noncompliance determinations will be based on the effluent limitations contained in this permit, with consideration given to the MAL for the pollutants specified above.

When an analysis of an effluent sample for a pollutant listed above indicates no detectable levels above the MAL and the test method detection level is as sensitive as the specified MAL, a value of zero shall be used for that measurement when making calculations for the self-reporting form. This applies to determinations of daily maximum concentration, calculations of loading and daily averages, and other reportable results.

When a reported value is zero based on this MAL provision, the permittee shall submit the following statement with the self-reporting form either as a separate attachment to the form or as a statement in the comments section of the form:

> "The reported value(s) of zero for ____[list pollutant(s)]____ on the self-reporting form for [monitoring period date range]___ is based on the following conditions: (1) the analytical method used had a method detection level as sensitive as the MAL specified in the permit, and (2) the analytical results contained no detectable levels above the specified MAL."

When an analysis of an effluent sample for a pollutant indicates no detectable levels and the test method detection level is not as sensitive as the MAL specified in the permit, or an MAL is not specified in the permit for that pollutant, the level of detection achieved shall be used for that measurement when making calculations for the self-reporting form. A zero may not be used.

2. The term *low volume waste sources* means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations or standards are otherwise established in this part. Low volume waste sources include, but are not limited to, the following: Wastewaters from ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, boiler blowdown, floor drains, cooling tower basin cleaning wastes, recirculating house service water systems, and wet scrubber air pollution control systems whose primary purpose is particulate removal. Sanitary wastes, air conditioning wastes, and wastewater from carbon capture or sequestration systems are not included in this definition.

[1] Minimum analytical level.

3. The term *metal cleaning waste* means any wastewater resulting from cleaning [with or without chemical cleaning compounds] any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air preheater cleaning.

4. The term *fly ash* means the ash that is carried out of the furnace by a gas stream and collected by a capture device such as a mechanical precipitator, electrostatic precipitator, or fabric filter. Economizer ash is included in this definition when it is collected with fly ash. Ash is not included in this definition when it is collected in wet scrubber air pollution control systems whose primary purpose is particulate removal.

   The term *bottom ash* means the ash, including boiler slag, which settles in the furnace or is dislodged from furnace walls. Economizer ash is included in this definition when it is collected with bottom ash.

   The term *transport water* means any wastewater that is used to convey fly ash, bottom ash, or economizer ash from the ash collection or storage equipment, or boiler, and has direct contact with the ash. Transport water does not include low volume, short duration discharges of wastewater from minor leaks (*e.g.*, leaks from valve packing, pipe flanges, or piping) or minor maintenance events (*e.g.*, replacement of valves or pipe sections).

5. The term *coal pile runoff* means the rainfall runoff from or through any coal pile.

   Any untreated overflow from facilities designed, constructed and operated to treat the volume of "coal pile runoff" which is associated with a 10-year, 24-hour rainfall event is not subject to the total suspended solids limitations specified at Page 2a of this permit.

   The term *10 year, 24/hour rainfall event* means a rainfall event with a probable recurrence interval of once in ten years as defined by the National Weather Service in Technical Paper No. 40. *Rainfall Frequency Atlas of the United States,* May 1961 or equivalent regional rainfall probability information developed therefrom.

6. The term *flue gas desulfurization (FGD) wastewater* means any wastewater generated specifically from the wet flue gas desulfurization scrubber system that comes into contact with the flue gas or the FGD solids, including but not limited to, the blowdown from the FGD scrubber system, overflow or underflow from the solids separation process, FGD solids wash water, and the filtrate from the solids dewatering process. Wastewater generated from cleaning the FGD scrubber, cleaning FGD solids separation equipment, cleaning FGD solids dewatering equipment, or that is collected in floor drains in the FGD process area is not considered FGD wastewater.

7. The term *total residual chlorine* (or total residual oxidants for intake water with bromides) means the value obtained using any of the "chlorine—total residual" methods in Table IB in 40 CFR 136.3(a), or other methods approved by the permitting authority.

   Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control.

   Simultaneous multi-unit chlorination is not permitted other than in accordance with Other Requirement 8.B.

8. FREE AVAILABLE CHLORINE

   A. The term *free available chlorine* (FAC) means the value obtained using any of the "chlorine—free available" methods in Table IB in 40 CFR §136.3(a) where the method has the capability of measuring free available chlorine, or other methods approved by the permitting authority.

   B. Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day, and not more than one unit in any plant may discharge free available or total residual chlorine at any one time unless the permittee can demonstrate to the permitting agency that the units in a particular location cannot operate at or below this level of chlorination.

   C. Daily mass loading of FAC must be calculated using the following equation:

   FAC (lbs/day) = FAC (mg/L) × flow (MGD) × 8.345 × (2 hours/24 hours)

   where: FAC (mg/L) = concentration of FAC measured in the effluent during representative period of chlorination.

   flow (MGD) = total actual flow of discharge via outfall during sampling day

9. There shall be no discharge of polychlorinated biphenyl compounds such as those used for transformer fluid.

10. The flow weighted average temperature (FWAT) must be computed and recorded on a daily basis. FWAT must be computed at equal time intervals not greater than two hours. The method of calculating FWAT is as follows:

$$\text{FWAT} = \frac{\sum (\text{INSTANTANEOUS FLOW} \times \text{INSTANTANEOUS TEMPERATURE})}{\sum (\text{INSTANTANEOUS FLOW})}$$

   The *daily average temperature* must be calculated as the arithmetic average of all FWATs calculated during the calendar month.

   The *daily maximum temperature* must be established as the highest FWAT calculated during the calendar month.

11. The 126 priority pollutants (Appendix A of Part 423) contained in chemicals added for cooling tower maintenance, except chromium and zinc, must be limited in the discharge to "no detectable amount." If used, total chromium must be limited to a daily average of 0.2 mg/L and a daily maximum of 0.2 mg/L and total zinc must be limited to a daily average of 1.0 mg/L and a daily maximum of 1.0 mg/L. The use of other chemical additives is not authorized unless approval is obtained and limitations are established on a case-by-case basis in accordance with 40 CFR §122.62(a).

12. There is no chronic aquatic life mixing zone established for the Outfall 002 discharge to an intermittent stream with perennial pools. Chronic toxic criteria apply at the point of discharge.

The chronic aquatic life mixing zone for Outfalls 003, 004, 005, and 006 is defined as a volume within a radius of 100 feet from the point of discharge. Chronic toxic criteria apply at the edge of the mixing zone.

13. This provision supersedes and replaces Provision 1, Paragraph 1 of Monitoring and Reporting Requirements found on Page 4 of this permit.

    Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the TCEQ Compliance Monitoring Team (MC-224), by the 25th day of the following month for each discharge that is described by this permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.

14. The permittee has previously performed a study of aluminum concentrations in Smithers Lake, and has prepared and submitted the document *Aluminum Concentrations in Smithers Lake and Associated Water Sources for the W.A. Parish Steam Electric Generating Station* (November 1994) to the TCEQ. The results of the study were approved by TCEQ in 1994 and resulted in a calculated total aluminum bioavailable fraction of 0.02 for Smithers Lake. Calculated water quality-based effluent limitations for the protection of aquatic life for Outfalls 003-006 incorporate this 0.02 bioavailable fraction for total aluminum.

15. The permittee shall maintain the diffuser at Outfall 004 to achieve a dilution of at least 14.1% effluent at the edge of the zone of initial dilution (ZID).

16. COOLING WATER INTAKE STRUCTURE REQUIREMENTS: 316(b) of the Clean Water Act (CWA)

    A. Specialized Definitions

    (1) Actual Intake Flow (AIF), as defined at 40 CFR § 125.92(a), means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the past three years. After October 14, 2019, AIF means the average volume of water withdrawn on an annual basis by the cooling water intake structures over the previous five years. Actual intake flow is measured at a location within the *cooling water intake structure* that the Director deems appropriate. The calculation of actual intake flow includes days of zero flow. AIF does not include flows associated with emergency and fire suppression capacity.

    (2) Closed Cycle Recirculating System (CCRS), as defined as 40 CFR § 125.92(c), means a system designed and properly operated using minimized make-up and blowdown flows withdrawn from a water of the United States to support contact or non-contact cooling uses within a facility, or a system designed to include certain impoundments. A closed-cycle recirculating system passes cooling water through the condenser and other components of the cooling system and reuses the water for cooling multiple times.

    i. CCRS includes a facility with wet, dry, or hybrid cooling towers, a system of impoundments that are not waters of the United States, or any combination thereof. A properly operated and maintained CCRS withdraws new source water (make-up

water) only to replenish losses that have occurred due to blowdown, drift, and evaporation. If waters of the United States are withdrawn for purposes of replenishing losses to a closed-cycle recirculating system other than those due to blowdown, drift, and evaporation from the cooling system, the Director may determine a cooling system is a CCRS if the facility demonstrates to the satisfaction of the Director that make-up water withdrawals attributed specifically to the cooling portion of the cooling system have been minimized.

ii. CCRS also includes a system with impoundments of waters of the United States (WOTUS). where the impoundment was constructed prior to October 14, 2014 and created for the purpose of serving as part of the cooling water system as documented in the project purpose statement for any required Clean Water Act section 404 permit obtained to construct the impoundment. In the case of an impoundment whose construction pre-dated the CWA requirement to obtain a section 404 permit, documentation of the project's purpose must be demonstrated to the satisfaction of the Director. This documentation could be some other license or permit obtained to lawfully construct the impoundment for the purposes of a cooling water system, or other such evidence as the Director finds necessary. For impoundments constructed in uplands or not in WOTUS, no documentation of a section 404 or other permit is required. If WOTUS are withdrawn for purposes of replenishing losses to a CCRS other than those due to blowdown, drift, and evaporation from the cooling system, the Director may determine a cooling system is a CCRS if the facility demonstrates to the satisfaction of the Director that make-up water withdrawals attributed specifically to the cooling portion of the cooling system have been minimized.

B. Monitoring Requirements

The permittee shall adhere to the requirements of 40 CFR § 125.96 when the CWIS is in operation. Specifically, the facility shall:

(1) monitor actual intake flow, as defined at 40 CFR § 125.92(a), withdrawn by CWIS for cooling purposes, including cooling water withdrawals, make-up water withdrawals, and blowdown volumes, on a daily basis; and

(2) conduct visual or remote inspections on a weekly basis, as required by 40 CFR § 125.96(e).

Alternatives to the procedures described at 40 CFR § 125.96(e) have not been approved by the TCEQ. Requests for alternative procedures must be submitted in writing to the TCEQ Industrial Permits Team (MC 148) for review and approval.

Results of monitoring activities conducted during the term of this permit must be submitted to the TCEQ with the subsequent renewal permit application, as required by 40 CFR § 122.21(r).

C. Record-Keeping Requirements

Records (e.g. electronic logs, data acquisition system records, operating procedures, operator logs, etc.) documenting the operation and maintenance described above shall be kept on site until the subsequent permit is issued, per the requirements of 40 CFR § 125.97(d), and made available to TCEQ personnel upon request.

D. Changes to the Cooling Water Intake Structure

The facility must notify the TCEQ Industrial Permits Team (MC 148) and Region 12 Office in writing at least 30 days prior to any changes or modifications of the design or in the operation of the CWIS.

If it is determined that the proposed CWIS configuration does not meet best technology available standards for impingement mortality and entrainment, the permit may be reopened to incorporate additional requirements.

17. Wastewater discharged via Outfall 002 must be sampled and analyzed as directed below for those parameters listed in Tables 1, 2, and 3 of Attachment A of this permit. Analytical testing for Outfall 002 must be completed within 60 days of initial discharge. Results of the analytical testing must be submitted within 90 days of initial discharge to the TCEQ Region 12 Office and Industrial Wastewater Permits Team (MC-148). Based on a technical review of the submitted analytical results, an amendment may be initiated by TCEQ staff to include additional effluent limitations, monitoring requirements, or both.

Table 1: Analysis is required for all pollutants in Table 1. Wastewater must be sampled and analyzed for those parameters listed in Table 1 for a minimum of four sampling events that are each at least one week apart.

Table 2: Analysis is required for those pollutants in Table 2 that are used at the facility that could in any way contribute to contamination in the Outfall 002 discharge. Sampling and analysis must be conducted for a minimum of four sampling events that are each at least one week apart.

Tables 3 and 4: For all pollutants listed in Table 3 and 4, the permittee shall indicate whether each pollutant is believed to be present or absent in the discharge. Sampling and analysis must be conducted for each pollutant believed present for a minimum of one sampling event.

The permittee shall report the flow at Outfall 002 in MGD in the attachment. The permittee shall indicate on each table whether the samples are composite (C) or grab (G) by checking the appropriate box.

18. The permittee has submitted total dissolved solids (TDS) sampling data to determine whether the discharge of once-through cooling water via Outfall 003 measurably alters the intake concentrations. Statistical analyses were run in the form of a paired, two-tailed t-test, which demonstrated no statistically significant difference at a 95 percent confidence level between the TDS content of the influent water from Smithers Lake and the effluent discharge to Smithers Lake. The permittee shall monitor TDS concentrations (mg/L) in the intake water and effluent from Outfall 003 quarterly via grab sample. The permittee shall submit the paired-sampling data for TDS at the next permit action as part of the application materials.

19. The permittee shall comply with the following schedule of activities for the attainment of the Whole Effluent Toxicity (WET) Limitation(s) on Page 2 for Outfall 003:

A. Within 90 days of permit issuance- The permittee shall develop a WET compliance schedule plan (Plan) to initiate a toxicity identification strategy based upon: knowledge of their treatment system, influent/effluent characterization, Significant Industrial Users (SIUs),

source waters, housekeeping practices, etc. The permittee shall submit the Plan to the TCEQ Standards Implementation Team (MC 150).

B. Addition of Plan Milestones- The permittee shall submit an addendum to the Plan which includes milestones as pending studies dictate. The milestones below are provided as an example. Actual Plan milestones shall be based upon the previously prepared toxicity identification strategy and include the estimated date of completion.

Example
1. The permittee shall perform characterization studies to identify the possible cause of toxicity. Multiple studies may be necessary to correctly identify and confirm the cause.
2. The permittee shall select and evaluate corrective action(s).
3. The permittee shall implement the selected corrective action(s). Subsequent failures will require the permittee to re-evaluate the effectiveness of the correct action(s) or the possibility of an additional source of toxicity.

The Plan addendum shall be submitted to the TCEQ Standards Implementation Team (MC 150) with a quarterly progress report indicated below.

C. The permittee shall comply with the final WET limit(s) within 34 months from the date of permit issuance or one day before the permit expires, whichever comes first.

D. If the toxicant or a best management practice is identified prior to the effective date of the permit, the permittee may submit a major amendment application requesting the addition of a chemical-specific limit or best management practice.

E. The permittee shall submit quarterly progress reports in accordance with the following compliance schedule. The requirement to submit quarterly progress reports shall expire 34 months from the date of permit issuance.

PROGRESS REPORT DATES
January 1
April 1
July 1
October 1

The quarterly progress reports shall include a discussion of the milestones completed at the time of the report and shall address the progress towards attaining the final Whole Effluent Toxicity limit(s) at Outfall 003 no later than 34 months from the date of permit issuance or one day before the permit expires, whichever comes first.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 14 days following each scheduled due date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled milestone identified within the submitted plan.

All progress reports shall be submitted to the TCEQ Standards Implementation Team (MC 150) and Compliance Monitoring Team (MC-224). Copies of all progress reports and related documents shall be submitted to the Whole Effluent Toxicity Coordinator (6WQ-P), U.S. Environmental Protection Agency, 1445 Ross Avenue, Dallas, TX 75202.

20. SCHEDULE OF COMPLIANCE FOR WATER QUALITY BASED EFFLUENT LIMITS

The permittee shall comply with the following schedule of activities for the attainment of water quality-based final effluent limitations for total copper at Outfall 002:

a. Determine exceedance cause(s);
b. Develop control options;
c. Evaluate and select control mechanisms;
d. Implement corrective action; and
e. Attain final effluent limitations no later than three years from the date of permit issuance.

The permittee shall submit quarterly progress reports in accordance with the following schedule. The requirement to submit quarterly progress reports expires three years from the date of permit issuance.

PROGRESS REPORT DATE
January 1
April 1
July 1
October 1

The quarterly progress reports must include a discussion of the interim requirements that have been completed at the time of the report and must address the progress towards attaining the water quality-based final effluent limitations for total copper at Outfall 002 no later than three years from the date of permit issuance.

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit must be submitted no later than 14 days following each schedule date. Any reports of noncompliance shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

All reports must be submitted to the TCEQ Region 12 Office and to the Compliance Monitoring Team (MC-224).

Attachment A

Table 1 – Conventionals and Non-conventionals

Outfall No.: ☐C ☐G	Effluent Concentration (mg/L)					
Pollutant	**Samp.**	**Samp.**	**Samp.**	**Samp.**	**Average**	
Flow (MGD)						
BOD (5-day)						
CBOD (5-day)						
Chemical Oxygen Demand						
Total Organic Carbon						
Dissolved Oxygen						
Ammonia Nitrogen						
Total Suspended Solids						
Nitrate Nitrogen						
Total Organic Nitrogen						
Total Phosphorus						
Oil and Grease						
Total Residual Chlorine						
Total Dissolved Solids						
Sulfate						
Chloride						
Fluoride						
Total Alkalinity (mg/L as $CaCO_3$)						
Temperature (°F)						
pH (Standard Units; min/max)						

Table 2 – Metals

Pollutant	Effluent Concentration (µg/L)[1]					MAL[2] (µg/L)
	Samp.	**Samp.**	**Samp.**	**Samp.**	**Average**	
Aluminum, Total						2.5
Antimony, Total						5
Arsenic, Total						0.5
Barium, Total						3
Beryllium, Total						0.5
Cadmium, Total						1
Chromium, Total						3
Chromium, Hexavalent						3
Chromium, Trivalent						N/A
Copper, Total						2
Cyanide, Free						10
Lead, Total						0.5

1 Indicate units if different than µg/L.
2 Minimum Analytical Level

Pollutant	Effluent Concentration (µg/L)[1]					MAL[2] (µg/L)
	Samp.	Samp.	Samp.	Samp.	Average	
Mercury, Total						0.005
Nickel, Total						2
Selenium, Total						5
Silver, Total						0.5
Thallium, Total						0.5
Zinc, Total						5.0

Table 3 – Toxic Pollutants with Water Quality Criteria

Outfall No.: ☐C ☐G Pollutant	Samp. 1 (µg/L)[3]	Samp. 2 (µg/L)[3]	Samp. 3 (µg/L)[3]	Samp. 4 (µg/L)[3]	Avg. (µg/L)[3]	MAL (µg/L)
Acrolein						0.7
Acrylonitrile						50
Anthracene						10
Benzene						10
Benzidine						50
Benzo(*a*)anthracene						5
Benzo(*a*)pyrene						5
Bis(2-chloroethyl)ether						10
Bis(2-ethylhexyl) phthalate						10
Bromodichloromethane						10
Bromoform						10
Carbon Tetrachloride						2
Chlorobenzene						10
Chlorodibromomethane						10
Chloroform						10
Chrysene						5
Cresols						10
1,2-Dibromoethane						10
m-Dichlorobenzene						10
o-Dichlorobenzene						10
p-Dichlorobenzene						10
3,3'-Dichlorobenzidine						5
1,2-Dichloroethane						10
1,1-Dichloroethylene						10
Dichloromethane						20
1,2-Dichloropropane						10
1,3-Dichloropropylene						10
2,4-Dimethylphenol						10
Di-*n*-Butyl Phthalate						10
Epichlorohydrin						1,000
Ethylbenzene						10

3 Indicate units if different than µg/L.

Outfall No.: ☐C ☐G Pollutant	Samp. 1 (µg/L)[3]	Samp. 2 (µg/L)[3]	Samp. 3 (µg/L)[3]	Samp. 4 (µg/L)[3]	Avg. (µg/L)[3]	MAL (µg/L)
Ethylene Glycol						—
Fluoride						500
Hexachlorobenzene						5
Hexachlorobutadiene						10
Hexachlorocyclopentadiene						10
Hexachloroethane						20
4,4′-Isopropylidenediphenol [bisphenol A]						—
Methyl Ethyl Ketone						50
Methyl *tert*-butyl ether [MTBE]						—
Nitrobenzene						10
N-Nitrosodiethylamine						20
N-Nitroso-di-*n*-Butylamine						20
Nonylphenol						333
Pentachlorobenzene						20
Pentachlorophenol						5
Phenanthrene						10
Polychlorinated Biphenyls (PCBs)[4]						0.2
Pyridine						20
1,2,4,5-Tetrachlorobenzene						20
1,1,2,2-Tetrachloroethane						10
Tetrachloroethylene						10
Toluene						10
1,1,1-Trichloroethane						10
1,1,2-Trichloroethane						10
Trichloroethylene						10
2,4,5-Trichlorophenol						50
TTHM (Total Trihalomethanes)						10
Vinyl Chloride						10

4 Total of detects for PCB-1242, PCB-1254, PCB-1221, PCB-1232, PCB-1248, PCB-1260, PCB-1016. If all values are non-detects, enter the highest non-detect preceded by a "<" symbol.

Table 4 – Additional Pollutants Believed Present

Outfall No. ☐C ☐G Pollutant	Believed Present	Believed Absent	Average Concentration (mg/L)	Maximum Concentration (mg/L)	No. of Samples	MAL (mg/L)
Bromide						0.400
Color (PCU)						—
Nitrate-Nitrite (as N)						—
Sulfide (as S)						—
Sulfite (as SO_3)						—
Surfactants						—
Boron, total						0.020
Cobalt, total						0.0003
Iron, total						0.007
Magnesium, total						0.020
Manganese, total						0.0005
Molybdenum, total						0.001
Tin, total						0.005
Titanium, total						0.030

BIOMONITORING REQUIREMENTS

CHRONIC BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfall 003 for whole effluent toxicity (WET) testing.

1. Scope, Frequency, and Methodology

   a. The permittee shall test the effluent for toxicity in accordance with the provisions below. Such testing will determine if an appropriately dilute effluent sample adversely affects the survival, reproduction, or growth of the test organisms.

   b. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this part of this permit and in accordance with "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms," fourth edition (EPA-821-R-02-013) or its most recent update:

      1) Chronic static renewal survival and reproduction test using the water flea (*Ceriodaphnia dubia*) (Method 1002.0). This test should be terminated when 60% of the surviving adults in the control produce three broods or at the end of eight days, whichever occurs first. This test shall be conducted once per quarter.

      2) Chronic static renewal 7-day larval survival and growth test using the fathead minnow (*Pimephales promelas*) (Method 1000.0). A minimum of five replicates with eight organisms per replicate shall be used in the control and in each dilution. This test shall be conducted once per quarter.

   The permittee is exempted from performing and reporting a valid test for each test species during the prescribed reporting period if the invalid test is due to failure to meet acceptability criteria in the control when the control is intake water. This provision applies solely to once-through cooling-water facilities that use intake water as the control. This provision exempts permittee from performing additional tests when Smithers Lake itself is already toxic to one or both test organisms due to high total dissolved solids (TDS), pathogenic bacteria (PB) or toxic algae blooms. An invalid test is herein defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit. All test results, valid or invalid, must be submitted.

   c. The permittee shall use five effluent dilution concentrations and a control in each toxicity test. These effluent dilution concentrations are 32%, 42%, 56%, 80%, and 100% effluent. The critical dilution, defined as 100% effluent, is the effluent concentration representative of the proportion of effluent in the receiving water during critical low flow or critical mixing conditions.

   d. This permit may be amended to require a WET limit, a chemical-specific effluent limit, a best management practice, or other appropriate actions to address toxicity to the fathead minnow. The permittee may be required to conduct a toxicity reduction evaluation (TRE) after multiple toxic events.

e. Testing Frequency Reduction

1) If none of the first four consecutive quarterly fathead minnow tests demonstrates significant toxicity, the permittee may submit this information in writing and, upon approval, reduce the testing frequency to once per year.

2) If one or more of the first four consecutive quarterly fathead minnow tests demonstrates significant toxicity, the permittee shall continue quarterly testing for that species until this permit is reissued. If a testing frequency reduction had been previously granted and a subsequent test demonstrates significant toxicity, the permittee shall resume a quarterly testing frequency for until this permit is reissued.

f. The lethal No Observed Effect Concentration (NOEC) effluent limitation of not less than 100% and the sublethal NOEC of not less than 80% (see the EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS section) are effective thirty-four months from the permit issue date for the water flea.

g. Thirty-four months from the permit issue date, if a water flea test fails to pass the sublethal endpoint at the 80% effluent concentration or the lethal effluent limitation at 100% effluent limitation, the testing frequency will increase to monthly until such time compliance with the NOEC effluent limitation is demonstrated for a period of three consecutive months, at which time the quarterly testing frequency may be resumed.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control and all effluent dilutions, which fail to meet the following criteria:

1) a control mean survival of 80% or greater;

2) a control mean number of water flea neonates per surviving adult of 15 or greater;

3) a control mean dry weight of surviving fathead minnow larvae of 0.25 mg or greater;

4) a control coefficient of variation percent (CV%) of 40 or less in between replicates for the young of surviving females in the water flea test; and the growth and survival endpoints in the fathead minnow test;

5) a critical dilution CV% of 40 or less for the young of surviving females in the water flea test; and the growth and survival endpoints for the fathead minnow test. However, if statistically significant lethal or nonlethal effects are exhibited at the critical dilution, a CV% greater than 40 shall not invalidate the test;

6) a percent minimum significant difference of 47 or less for water flea reproduction; and

7) a percent minimum significant difference of 30 or less for fathead minnow growth.

b. Statistical Interpretation

1) For the water flea survival test, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be the Fisher's exact test as described in the manual referenced in in Part 1.b.

2) For the water flea reproduction test and the fathead minnow larval survival and growth tests, the statistical analyses used to determine if there is a significant difference between the control and an effluent dilution shall be in accordance with the manual referenced in Part 1.b..

3) The permittee is responsible for reviewing test concentration-response relationships to ensure that calculated test-results are interpreted and reported correctly. The document entitled "Method Guidance and Recommendation for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136)" (EPA 821-B-00-004) provides guidance on determining the validity of test results.

4) If significant lethality is demonstrated (that is, there is a statistically significant difference in survival at the critical dilution when compared to the survival in the control), the conditions of test acceptability are met, and the survival of the test organisms are equal to or greater than 80% in the critical dilution and all dilutions below that, then the permittee shall report a survival No Observed Effect Concentration (NOEC) of not less than the critical dilution for the reporting requirements.

5) The NOEC is defined as the greatest effluent dilution at which no significant effect is demonstrated. The Lowest Observed Effect Concentration (LOEC) is defined as the lowest effluent dilution at which a significant effect is demonstrated. A significant effect is defined as a statistically significant difference between the survival, reproduction, or growth of the test organism in a specified effluent dilution when compared to the survival, reproduction, or growth of the test organism in the control (0% effluent).

6) The use of NOECs and LOECs assumes either a monotonic (continuous) concentration-response relationship or a threshold model of the concentration-response relationship. For any test result that demonstrates a non-monotonic (non-continuous) response, the NOEC should be determined based on the guidance manual referenced in Item 3.

7) Pursuant to the responsibility assigned to the permittee in Part 2.b.3), test results that demonstrate a non-monotonic (non-continuous) concentration-response relationship may be submitted, prior to the due date, for technical review. The guidance manual referenced in Item 3 will be used when making a determination of test acceptability.

8) TCEQ staff will review test results for consistency with rules, procedures, and permit requirements.

c. Dilution Water

1) Dilution water used in the toxicity tests must be the lake water collected as close to the point of intake as possible and concurrently with the effluent sample.

2) Total dissolved solids (TDS) shall be measured and reported for each sample collected for the testing, both intake water and effluent.

d. Samples and Composites

1) The permittee shall collect a minimum of three composite samples from Outfall 003. The second and third composite samples will be used for the renewal of the dilution concentrations for each toxicity test.

2) The permittee shall collect the composite samples such that the samples are representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged on an intermittent basis.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the first composite sample. The holding time for any subsequent composite sample shall not exceed 72 hours. Samples shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

4) If Outfall 003 ceases discharging during the collection of effluent samples, the requirements for the minimum number of effluent samples, the minimum number of effluent portions, and the sample holding time are waived during that sampling period. However, the permittee must have collected an effluent composite sample volume sufficient to complete the required toxicity tests with renewal of the effluent. When possible, the effluent samples used for the toxicity tests shall be collected on separate days if the discharge occurs over multiple days. The sample collection duration and the static renewal protocol associated with the abbreviated sample collection must be documented in the full report.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated whether carried to completion or not.

b. The permittee shall routinely report the results of each biomonitoring test on the Table 1 forms provided with this permit.

1) Annual biomonitoring test results are due on or before January 20th for biomonitoring conducted during the previous 12-month period.

2) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.

3) Quarterly biomonitoring test results are due on or before April 20th, July 20th, October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.

4) Monthly biomonitoring test results are due on or before the 20th day of the month following sampling.

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the water flea, Parameter TLP3B, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."

2) For the water flea, Parameter TOP3B, report the NOEC for survival.

3) For the water flea, Parameter TXP3B, report the LOEC for survival.

4) For the water flea, Parameter TWP3B, enter a "1" if the NOEC for reproduction is less than the critical dilution; otherwise, enter a "0."

5) For the water flea, Parameter TPP3B, report the NOEC for reproduction.

6) For the water flea, Parameter TYP3B, report the LOEC for reproduction.

7) For the fathead minnow, Parameter TLP6C, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."

8) For the fathead minnow, Parameter TOP6C, report the NOEC for survival.

9) For the fathead minnow, Parameter TXP6C, report the LOEC for survival.

10) For the fathead minnow, Parameter TWP6C, enter a "1" if the NOEC for growth is less than the critical dilution; otherwise, enter a "0."

11) For the fathead minnow, Parameter TPP6C, report the NOEC for growth.

12) For the fathead minnow, Parameter TYP6C, report the LOEC for growth.

d. Enter the following codes for fathead minnow retests only:

1) For retest number 1, Parameter 22415, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."

2) For retest number 2, Parameter 22416, enter a "1" if the NOEC for survival is less than the critical dilution; otherwise, enter a "0."

e. The permittee shall report the lethal and sublethal WET values for the 30-day average and the 7-day minimum under Parameter No. 51710 for the appropriate reporting period for the water flea. If more than one valid test was performed during the reporting period, the NOECs will be averaged arithmetically and reported as the 30-day average. The 7-day minimum value submitted should reflect the lowest NOEC results for the water flea during the reporting period.

4. Persistent Toxicity

The requirements of this Part apply only to the fathead minnow and only when a test demonstrates a significant effect at the critical dilution. Significant lethality and significant

effect were defined in Part 2.b. Significant sublethality is defined as a statistically significant difference in growth/reproduction at the critical dilution when compared to the growth/reproduction in the control.

a. The permittee shall conduct a total of 2 additional tests (retests) for any test that demonstrates a significant effect (lethal or sublethal) at the critical dilution. The two retests shall be conducted monthly during the next two consecutive months. The permittee shall not substitute either of the two retests in lieu of routine toxicity testing. All reports shall be submitted within 20 days of test completion. Test completion is defined as the last day of the test.

b. If the retests are performed due to a demonstration of significant lethality, and one or both of the two retests specified in Part 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5. The provisions of Part 4.a. are suspended upon completion of the two retests and submittal of the TRE action plan and schedule defined in Part 5.

If neither test demonstrates significant lethality and the permittee is testing under the reduced testing frequency provision of Part 1.e., the permittee shall return to a quarterly testing frequency for that species.

c. If the two retests are performed due to a demonstration of significant sublethality, and one or both of the two retests specified in Part 4.a. demonstrates significant lethality, the permittee shall again perform two retests as stipulated in Part 4.a.

d. If the two retests are performed due to a demonstration of significant sublethality, and neither test demonstrates significant lethality, the permittee shall continue testing at the quarterly frequency.

e. Regardless of whether retesting for lethal or sublethal effects, or a combination of the two, no more than one retest per month is required.

5. Toxicity Reduction Evaluation

a. Within 45 days of the retest that demonstrates significant lethality, or within 45 days of being so instructed due to multiple toxic events, the permittee shall submit a general outline for initiating a TRE. The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.

b. Within 90 days of the retest that demonstrates significant lethality, or within 90 days of being so instructed due to multiple toxic events, the permittee shall submit a TRE action plan and schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analyses to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall describe an approach for the reduction or elimination of lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:

1) Specific Activities - The TRE action plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity

characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I" (EPA/600/6-91/005F) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aquatic Toxicity Identification Evaluations, Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

2) Sampling Plan - The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures, and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects a specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;

3) Quality Assurance Plan - The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and

4) Project Organization - The TRE action plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.

c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.

d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:

1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;

2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;

3) any data and substantiating documentation which identifies the pollutant(s) and source of effluent toxicity;

4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;

5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to meet no significant lethality at the critical dilution; and

6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.

Copies of the TRE activities report shall also be submitted to the U.S. EPA Region 6 office.

e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.

f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive months with at least monthly testing. At the end of the 12 months, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 28 months from the last test day of the retest that confirmed significant lethal effects at the critical dilution. The permittee may petition the Executive Director (in writing) for an extension of the 28-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall provide information pertaining to the specific control mechanism selected that will, when implemented, result in the reduction of effluent toxicity to no significant lethality at the critical dilution. The report shall also provide a specific corrective action schedule for implementing the selected control mechanism. A copy of the TRE final report shall also be submitted to the U.S. EPA Region 6 office.

h. Based on the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements, where necessary, require a

compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.

TABLE 1 (SHEET 1 OF 4)

BIOMONITORING REPORTING

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION

Dates and Times Composites Collected

Date Time Date Time

No. 1 FROM: _____ TO: _____

No. 2 FROM: _____ TO: _____

No. 3 FROM: _____ TO: _____

Test initiated: _____ am/pm _____ date

Dilution water used: _____ Receiving water _____ Synthetic Dilution water

NUMBER OF YOUNG PRODUCED PER ADULT AT END OF TEST

REP	Percent effluent					
	0%	32%	42%	56%	80%	100%
A						
B						
C						
D						
E						
F						
G						
H						
I						
J						
Survival Mean						
Total Mean						
CV%*						
PMSD						

*Coefficient of Variation = standard deviation x 100/mean (calculation based on young of the surviving adults)
Designate males (M), and dead females (D), along with number of neonates (x) released prior to death.

TABLE 1 (SHEET 2 OF 4)

CERIODAPHNIA DUBIA SURVIVAL AND REPRODUCTION TEST

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean number of young produced per adult significantly less than the number of young per adult in the control for the % effluent corresponding to significant nonlethal effects?

   CRITICAL DILUTION (100%): _____ YES _____ NO

PERCENT SURVIVAL

	Percent effluent					
Time of Reading	0%	32%	42%	56%	80%	100%
24h						
48h						
End of Test						

2. Fisher's Exact Test:

   Is the mean survival at test end significantly less than the control survival for the % effluent corresponding to lethality?

   CRITICAL DILUTION (100%): _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEC\LOEC below:

   a.) NOEC survival = _____% effluent

   b.) LOEC survival = _____% effluent

   c.) NOEC reproduction = _____% effluent

   d.) LOEC reproduction = _____% effluent

TABLE 1 (SHEET 3 OF 4)

BIOMONITORING REPORTING

FATHEAD MINNOW LARVAE GROWTH AND SURVIVAL

Dates and Times Composites Collected

Date Time Date Time

No. 1 FROM: _____ TO: _____

No. 2 FROM: _____ TO: _____

No. 3 FROM: _____ TO: _____

Test initiated: _____ am/pm _____ date

Dilution water used: _____ Receiving water _____ Synthetic dilution water

FATHEAD MINNOW GROWTH DATA

Effluent Concentration	Average Dry Weight in replicate chambers					Mean Dry Weight	CV%*
	A	B	C	D	E		
0%							
32%							
42%							
56%							
80%							
100%							
PMSD							

* Coefficient of Variation = standard deviation x 100/mean

1. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean dry weight (growth) at 7 days significantly less than the control's dry weight (growth) for the % effluent corresponding to significant nonlethal effects?

   CRITICAL DILUTION (100%): _____ YES _____ NO

TABLE 1 (SHEET 4 OF 4)

BIOMONITORING REPORTING

FATHEAD MINNOW GROWTH AND SURVIVAL TEST

FATHEAD MINNOW SURVIVAL DATA

Effluent Concentration	Percent Survival in replicate chambers					Mean percent survival			CV%*
	A	B	C	D	E	24h	48h	7 day	
0%									
32%									
42%									
56%									
80%									
100%									

* Coefficient of Variation = standard deviation x 100/mean

2. Dunnett's Procedure or Steel's Many-One Rank Test or Wilcoxon Rank Sum Test (with Bonferroni adjustment) or t-test (with Bonferroni adjustment) as appropriate:

   Is the mean survival at 7 days significantly less than the control survival for the % effluent corresponding to lethality?

   CRITICAL DILUTION (100%): _____ YES _____ NO

3. Enter percent effluent corresponding to each NOEC\LOEC below:

   a.) NOEC survival = _____% effluent

   b.) LOEC survival = _____% effluent

   c.) NOEC growth = _____% effluent

   d.) LOEC growth = _____% effluent

24-HOUR ACUTE BIOMONITORING REQUIREMENTS: FRESHWATER

The provisions of this section apply to Outfall 003 for whole effluent toxicity (WET) testing.

1. Scope, Frequency, and Methodology

   a. The permittee shall test the effluent for lethality in accordance with the provisions in this section. Such testing will determine compliance with Texas Surface Water Quality Standard 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the appropriate test organisms in 100% effluent for a 24-hour period.

   b. The toxicity tests specified shall be conducted once per six months. The permittee shall conduct the following toxicity tests using the test organisms, procedures, and quality assurance requirements specified in this section of the permit and in accordance with "Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms," fifth edition (EPA-821-R-02-012) or its most recent update:

      1) Acute 24-hour static toxicity test using the water flea (*Daphnia pulex* or *Ceriodaphnia dubia*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

      2) Acute 24-hour static toxicity test using the fathead minnow (*Pimephales promelas*). A minimum of five replicates with eight organisms per replicate shall be used in the control and each dilution.

      A valid test result must be submitted for each reporting period. The permittee must report, and then repeat, an invalid test during the same reporting period. The repeat test shall include the control and the 100% effluent dilution and use the appropriate number of organisms and replicates, as specified above. An invalid test is defined as any test failing to satisfy the test acceptability criteria, procedures, and quality assurance requirements specified in the test methods and permit.

   c. In addition to an appropriate control, a 100% effluent concentration shall be used in the toxicity tests. Except as discussed in item 2.b., the control and dilution water shall consist of standard, synthetic, moderately hard, reconstituted water.

   d. This permit may be amended to require a WET limit, a Best Management Practice (BMP), Chemical-Specific (CS) limits, or other appropriate actions to address toxicity. The permittee may be required to conduct a Toxicity Reduction Evaluation after multiple toxic events.

   e. As the dilution series specified in the Chronic Biomonitoring Requirements includes a 100% effluent concentration, the results from those tests may fulfill the requirements of this Section; any tests performed in the proper time interval may be substituted. Compliance will be evaluated as specified in item a. The 50% survival in 100% effluent for a 24-hour period standard applies to all tests utilizing a 100% effluent dilution, regardless of whether the results are submitted to comply with the minimum testing frequency defined in item b.

2. Required Toxicity Testing Conditions

a. Test Acceptance - The permittee shall repeat any toxicity test, including the control, if the control fails to meet a mean survival equal to or greater than 90%.

b. Dilution Water - In accordance with item 1.c., the control and dilution water shall normally consist of standard, synthetic, moderately hard, reconstituted water. If the permittee utilizes the results of a chronic test to satisfy the requirements in item 1.e., the permittee may use the receiving water or dilution water that meets the requirements of item 2.a as the control and dilution water.

c. Samples and Composites

1) The permittee shall collect one composite sample from Outfall 003.

2) The permittee shall collect the composite sample such that the sample is representative of any periodic episode of chlorination, biocide usage, or other potentially toxic substance being discharged.

3) The permittee shall initiate the toxicity tests within 36 hours after collection of the last portion of the composite sample. The sample shall be maintained at a temperature of 0-6 degrees Centigrade during collection, shipping, and storage.

4) If Outfall 003 ceases discharging during the collection of the effluent composite sample, the requirements for the minimum number of effluent portions are waived. However, the permittee must have collected a composite sample volume sufficient for completion of the required test. The abbreviated sample collection, duration, and methodology must be documented in the full report.

3. Reporting

All reports, tables, plans, summaries, and related correspondence required in this section shall be submitted to the attention of the Standards Implementation Team (MC 150) of the Water Quality Division.

a. The permittee shall prepare a full report of the results of all tests conducted in accordance with the manual referenced in Part 1.b. for every valid and invalid toxicity test initiated.

b. The permittee shall routinely report the results of each biomonitoring test on the Table 2 forms provided with this permit.

1) Semiannual biomonitoring test results are due on or before July 20th and January 20th for biomonitoring conducted during the previous 6-month period.

2) Quarterly biomonitoring test results are due on or before April 20th, July 20th, and October 20th, and January 20th for biomonitoring conducted during the previous calendar quarter.

c. Enter the following codes for the appropriate parameters for valid tests only:

1) For the water flea, Parameter TIE3D, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

2) For the fathead minnow, Parameter TIE6C, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

d. Enter the following codes for retests only:

1) For retest number 1, Parameter 22415, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

2) For retest number 2, Parameter 22416, enter a "0" if the mean survival at 24 hours is greater than 50% in the 100% effluent dilution; if the mean survival is less than or equal to 50%, enter a "1."

4. Persistent Mortality

The requirements of this part apply when a toxicity test demonstrates significant lethality, which is defined as a mean mortality of 50% or greater of organisms exposed to the 100% effluent concentration for 24 hours.

a. The permittee shall conduct 2 additional tests (retests) for each species that demonstrates significant lethality. The two retests shall be conducted once per week for 2 weeks. Five effluent dilution concentrations in addition to an appropriate control shall be used in the retests. These effluent concentrations are 6%, 13%, 25%, 50% and 100% effluent. The first retest shall be conducted within 15 days of the laboratory determination of significant lethality. All test results shall be submitted within 20 days of test completion of the second retest. Test completion is defined as the 24th hour.

b. If one or both of the two retests specified in Part 4.a. demonstrates significant lethality, the permittee shall initiate the TRE requirements as specified in Part 5.

5. Toxicity Reduction Evaluation

a. Within 45 days of the retest that demonstrates significant lethality, the permittee shall submit a general outline for initiating a TRE. The outline shall include, but not be limited to, a description of project personnel, a schedule for obtaining consultants (if needed), a discussion of influent and effluent data available for review, a sampling and analytical schedule, and a proposed TRE initiation date.

b. Within 90 days of the retest that demonstrates significant lethality, the permittee shall submit a TRE action plan and schedule for conducting a TRE. The plan shall specify the approach and methodology to be used in performing the TRE. A TRE is a step-wise investigation combining toxicity testing with physical and chemical analyses to determine actions necessary to eliminate or reduce effluent toxicity to a level not effecting significant lethality at the critical dilution. The TRE action plan shall lead to the successful elimination of significant lethality for both test species defined in Part 1.b. At a minimum, the TRE action plan shall include the following:

1) Specific Activities - The TRE action plan shall specify the approach the permittee intends to utilize in conducting the TRE, including toxicity characterizations, identifications, confirmations, source evaluations, treatability studies, and alternative approaches. When conducting characterization analyses, the permittee shall perform multiple characterizations and follow the procedures specified in the document entitled "Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures" (EPA/600/6-91/003) or alternate procedures. The permittee shall perform multiple identifications and follow the methods specified in the documents entitled "Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/080) and "Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity" (EPA/600/R-92/081). All characterization, identification, and confirmation tests shall be conducted in an orderly and logical progression;

2) Sampling Plan - The TRE action plan should describe sampling locations, methods, holding times, chain of custody, and preservation techniques. The effluent sample volume collected for all tests shall be adequate to perform the toxicity characterization/identification/confirmation procedures and chemical-specific analyses when the toxicity tests show significant lethality. Where the permittee has identified or suspects specific pollutant and source of effluent toxicity, the permittee shall conduct, concurrent with toxicity testing, chemical-specific analyses for the identified and suspected pollutant and source of effluent toxicity;

3) Quality Assurance Plan - The TRE action plan should address record keeping and data evaluation, calibration and standardization, baseline tests, system blanks, controls, duplicates, spikes, toxicity persistence in the samples, randomization, reference toxicant control charts, and mechanisms to detect artifactual toxicity; and

4) Project Organization - The TRE Action Plan should describe the project staff, project manager, consulting engineering services (where applicable), consulting analytical and toxicological services, etc.

c. Within 30 days of submittal of the TRE action plan and schedule, the permittee shall implement the TRE.

d. The permittee shall submit quarterly TRE activities reports concerning the progress of the TRE. The quarterly TRE activities reports are due on or before April 20th, July 20th, October 20th, and January 20th. The report shall detail information regarding the TRE activities including:

1) results and interpretation of any chemical-specific analyses for the identified and suspected pollutant performed during the quarter;

2) results and interpretation of any characterization, identification, and confirmation tests performed during the quarter;

3) any data and substantiating documentation that identifies the pollutant and source of effluent toxicity;

4) results of any studies/evaluations concerning the treatability of the facility's effluent toxicity;

5) any data that identifies effluent toxicity control mechanisms that will reduce effluent toxicity to the level necessary to eliminate significant lethality; and

6) any changes to the initial TRE plan and schedule that are believed necessary as a result of the TRE findings.

Copies of the TRE activities report shall also be submitted to the U.S. EPA Region 6 office.

e. During the TRE, the permittee shall perform, at a minimum, quarterly testing using the more sensitive species. Testing for the less sensitive species shall continue at the frequency specified in Part 1.b.

f. If the effluent ceases to effect significant lethality, i.e., there is a cessation of lethality, the permittee may end the TRE. A cessation of lethality is defined as no significant lethality for a period of 12 consecutive weeks with at least weekly testing. At the end of the 12 weeks, the permittee shall submit a statement of intent to cease the TRE and may then resume the testing frequency specified in Part 1.b.

This provision accommodates situations where operational errors and upsets, spills, or sampling errors triggered the TRE, in contrast to a situation where a single toxicant or group of toxicants cause lethality. This provision does not apply as a result of corrective actions taken by the permittee. Corrective actions are defined as proactive efforts that eliminate or reduce effluent toxicity. These include, but are not limited to, source reduction or elimination, improved housekeeping, changes in chemical usage, and modifications of influent streams and effluent treatment.

The permittee may only apply this cessation of lethality provision once. If the effluent again demonstrates significant lethality to the same species, the permit will be amended to add a WET limit with a compliance period, if appropriate. However, prior to the effective date of the WET limit, the permittee may apply for a permit amendment removing and replacing the WET limit with an alternate toxicity control measure by identifying and confirming the toxicant and an appropriate control measure.

g. The permittee shall complete the TRE and submit a final report on the TRE activities no later than 18 months from the last test day of the retest that demonstrates significant lethality. The permittee may petition the Executive Director (in writing) for an extension of the 18-month limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE. The report shall specify the control mechanism that will, when implemented, reduce effluent toxicity as specified in Part 5.h. The report shall also specify a corrective action schedule for implementing the selected control mechanism. A copy of the TRE final report shall also be submitted to the U.S. EPA Region 6 office.

h. Within 3 years of the last day of the test confirming toxicity, the permittee shall comply with 30 TAC § 307.6(e)(2)(B), which requires greater than 50% survival of the test organism in 100% effluent at the end of 24-hours. The permittee may petition the

Executive Director (in writing) for an extension of the 3-year limit. However, to warrant an extension the permittee must have demonstrated due diligence in its pursuit of the toxicity identification evaluation/TRE and must prove that circumstances beyond its control stalled the toxicity identification evaluation/TRE.

The permittee may be exempted from complying with 30 TAC § 307.6(e)(2)(B) upon proving that toxicity is caused by an excess, imbalance, or deficiency of dissolved salts. This exemption excludes instances where individually toxic components (e.g., metals) form a salt compound. Following the exemption, this permit may be amended to include an ion-adjustment protocol, alternate species testing, or single species testing.

i. Based upon the results of the TRE and proposed corrective actions, this permit may be amended to modify the biomonitoring requirements where necessary, require a compliance schedule for implementation of corrective actions, specify a WET limit, specify a best management practice, and specify a chemical-specific limit.

TABLE 2 (SHEET 1 OF 2)

WATER FLEA SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent

TABLE 2 (SHEET 2 OF 2)

FATHEAD MINNOW SURVIVAL

GENERAL INFORMATION

	Time	Date
Composite Sample Collected		
Test Initiated		

PERCENT SURVIVAL

Time	Rep	Percent effluent					
		0%	6%	13%	25%	50%	100%
24h	A						
	B						
	C						
	D						
	E						
	MEAN						

Enter percent effluent corresponding to the LC50 below:

24 hour LC50 = _____% effluent