

TEXTOX MENU #7 - INTERMITTENT STREAM WITH PERENNIAL POOLS

HUMAN HEALTH LIMITS HAVE BEEN MULTIPLIED BY 10 FOR INCIDENTAL FRESHWATER FISH TISSUE.

IF THIS DOES NOT APPLY TO THIS FACILITY, ADJUST THE FORMULAS ACCORDINGLY.

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, 2014 Texas Surface Water Quality Standards for Human Health

"Procedures to Implement the Texas Surface Water Quality Standards," TCEQ, June 2010

PERMIT INFORMATION

Permittee Name:	CMR 1044 & 4014H
NPDES Permit No.:	TX0134063
Outfall No.:	001
Prepared by:	Maria Okpala
Date:	6/18/2018

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	Unnamed
Segment No.:	2105
TSS (mg/L):	5
pH (Standard Units):	7.6
Hardness (mg/L as CaCO ₃):	160
Chloride (mg/L):	49
Effluent Flow for Aquatic Life (MGD):	0.019
Critical Low Flow [7Q2] (cfs):	0
% Effluent for Chronic Aquatic Life:	100
% Effluent for Acute Aquatic Life:	100
Effluent Flow for Human Health (MGD):	0.019
Harmonic Mean Flow (cfs):	0.03
% Effluent for Human Health:	49.493

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

<i>Stream/River Metal</i>	<i>Intercept</i>	<i>(b)</i>	<i>Slope (m)</i>	<i>Partition Coefficient (Kp)</i>	<i>Dissolved Fraction (Cd/Ct)</i>	<i>Water Effect Ratio (WER)</i>	
Aluminum		N/A	N/A	N/A	1.00	Assumed	1.00 Assumed
Arsenic		5.68	-0.73	147826.36	0.57		1.00 Assumed
Cadmium		6.60	-1.13	645897.93	0.24		1.00 Assumed
Chromium (Total)		6.52	-0.93	741238.38	0.21		1.00 Assumed
Chromium (+3)		6.52	-0.93	741238.38	0.21		1.00 Assumed
Chromium (+6)		N/A	N/A	N/A	1.00	Assumed	1.00 Assumed
Copper		6.02	-0.74	318245.45	0.39		1.00 Assumed
Lead		6.45	-0.80	777721.31	0.20		1.00 Assumed
Mercury		N/A	N/A	N/A	1.00	Assumed	1.00 Assumed

Nickel	5.69	-0.57	195698.32	0.51		1.00	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1.00	Assumed
Silver	6.38	-1.03	457152.29	0.30		1.00	Assumed
Zinc	6.10	-0.70	408057.15	0.33		1.00	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	FW Chronic						Daily Avg. (ug/L)	Daily Max. (ug/L)
	FW Acute Criterion (ug/L)	Criterion (ug/L)	WLAa	WLAc	LTAa	LTAc		
Aldrin	3.0	N/A	3.00	N/A	1.72	N/A	2.53	5.35
Aluminum	991	N/A	991	N/A	568	N/A	835	1766
Arsenic	340	150	591.3048199	260.8697735	338.8176618	200.869726	295.2785	624.704847
Cadmium	13.55076514	0.340928366	57.31282113	1.441953	32.84024651	1.11030381	1.6321466	3.45304485
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.004	1.38	0.003	0.005	0.010
Chlorpyrifos	0.083	0.041	0.083	0.041	0.048	0.032	0.046	0.098
Chromium (+3)	837.2764388	108.9124627	3940.383578	512.5629476	2257.83979	394.67347	580.17	1227.43449
Chromium (+6)	15.7	10.6	15.7	10.6	9.00	8.16	12.0	25.4
Copper	22.11390894	14.14857667	57.30216292	36.66217709	32.83413935	28.2298764	41.497918	87.7949155
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	0.001	0.630	0.001	0.001	0.002
Demeton	N/A	0.1	N/A	0.100	N/A	0.077	0.113	0.239
Diazinon	0.17	0.17	0.170	0.170	0.097	0.131	0.143	0.303
Dicofol	59.3	19.8	59.3	19.8	34.0	15.2	22.4	47.4
Dieldrin	0.24	0.002	0.240	0.002	0.138	0.002	0.002	0.005
Diuron	210	70	210	70.0	120	53.9	79.2	168
Endosulfan I (alpha)	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endosulfan II (beta)	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endosulfan sulfate	0.22	0.056	0.220	0.056	0.126	0.043	0.063	0.134
Endrin	0.086	0.002	0.086	0.002	0.049	0.002	0.002	0.005
Guthion	N/A	0.01	N/A	0.010	N/A	0.008	0.011	0.024
Heptachlor	0.52	0.004	0.520	0.004	0.298	0.003	0.005	0.010
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.080	0.645	0.062	0.091	0.192
Lead	107.3056099	4.181545566	524.5749051	20.44193095	300.5814206	15.7402868	23.138222	48.952292
Malathion	N/A	0.01	N/A	0.010	N/A	0.008	0.011	0.024
Mercury	2.4	1.3	2.40	1.30	1.38	1.00	1.47	3.11
Methoxychlor	N/A	0.03	N/A	0.030	N/A	0.023	0.034	0.072
Mirex	N/A	0.001	N/A	0.001	N/A	0.001	0.001	0.002
Nickel	696.8673277	77.40044568	1378.746154	153.1361316	790.0215465	117.914821	173.33479	366.715094
Nonylphenol	28	6.6	28	6.60	16.0	5.08	7.47	15.8
Parathion (ethyl)	0.065	0.013	0.065	0.013	0.037	0.010	0.015	0.031

Pentachlorophenol	15.943	12.231	15.943	12.231	9.135	9.418	13.429	28.410
Phenanthrene	30	30	30.0	30.0	17.2	23.1	25.3	53.5
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.00	0.014	1.15	0.011	0.016	0.034
Selenium	20	5	20.0	5.00	11.5	3.85	5.66	12.0
Silver	0.8	N/A	11.26257116	N/A	6.453453275	N/A	9.4865763	20.0702397
Toxaphene	0.78	0.0002	0.780	0.0002	0.447	0.0002	0.0002	0.0005
Tributyltin (TBT)	0.13	0.024	0.130	0.024	0.074	0.018	0.027	0.057
2,4,5 Trichlorophenol	136	64	136	64.0	77.9	49.3	72.4	153
Zinc	174.5042619	175.9316996	530.5428248	534.8826434	304.0010386	411.859635	446.88153	945.44323

HUMAN HEALTH (APPLIES FOR INCIDENTAL FRESHWATER FISH TISSUE)

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Fish Only Criterion (ug/L)</i>	<i>WLAh</i>	<i>LTAh</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
Acrylonitrile	3.8	7.68	7.14	104.96	222.07
Aldrin	0.0010	0.00	0.00	0.03	0.06
Anthracene	N/A	N/A	N/A	N/A	N/A
Antimony	1,071	2163.96	2012.48	29583.51	62588.25
Arsenic	N/A	N/A	N/A	N/A	N/A
Barium	N/A	N/A	N/A	N/A	N/A
Benzene	513	1036.52	963.96	14170.25	29979.24
Benzidine	0.0020	0.00	0.00	0.06	0.12
Benzo(a)anthracene	3.28	6.63	6.16	90.60	191.68
Benzo(a)pyrene	0.33	0.67	0.62	9.12	19.28
Bis(chloromethyl)ether	0.44	0.89	0.83	12.15	25.71
Bis(2-chloroethyl)ether	10.06	20.33	18.90	277.88	587.90
Bis(2-ethylhexyl)phthalate	41	82.84	77.04	1132.52	2396.00
Bromodichloromethane (Dichlorobromomethane)	322	650.60	605.06	8894.39	18817.38
Bromoform	2,175	4394.60	4086.98	60078.56	127104.99
Cadmium	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	30.5	61.63	57.31	842.48	1782.39
Chlordane	0.0081	0.02	0.02	0.22	0.47
Chlorobenzene	5,201	10508.65	9773.04	143663.73	303941.62
Chlorodibromomethane (Dibromochloromethane)	239	482.90	449.10	6601.74	13966.94
Chloroform	7,143	14432.47	13422.20	197306.28	417430.30
Chromium (+6)	502	1014.29	943.29	13866.41	29336.42
Chrysene	327	660.71	614.46	9032.50	19109.58
Cresols (Methylphenols)	9,301	18792.72	17477.23	256915.27	543541.82
Cyanide (free)	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0059	0.01	0.01	0.16	0.34
4,4'-DDE	0.0040	0.01	0.01	0.11	0.23

4,4'-DDT	0.0040	0.01	0.01	0.11	0.23
2,4'-D	N/A	N/A	N/A	N/A	N/A
Danitol	473	955.70	888.80	13065.36	27641.68
1,2-Dibromoethane	4.24	8.57	7.97	117.12	247.78
m-Dichlorobenzene (1,3-Dichlorobenzene)	1,445	2919.63	2715.26	39914.26	84444.46
o-Dichlorobenzene (1,2-Dichlorobenzene)	4,336	8760.91	8147.65	119770.41	253391.82
p-Dichlorobenzene (1,4-Dichlorobenzene)	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.44	0.89	0.83	12.15	25.71
1,2-Dichloroethane	553	1117.34	1039.13	15275.15	32316.81
1,1-Dichloroethylene	23,916	48322.40	44939.84	660615.58	1397628.89
Dichloromethane (Methylene Chloride)	22,222	44899.67	41756.69	613823.36	1298633.10
1,2-Dichloropropane	226	456.63	424.67	6242.65	13207.23
1,3-Dichloropropene (1,3- Dichloropropylene)	211	426.33	396.48	5828.31	12330.64
Dicofol	0.30	0.61	0.56	8.29	17.53
Dieldrin	0.001	0.00	0.00	0.03	0.06
2,4-Dimethylphenol	571	1153.71	1072.95	15772.35	33368.71
Di-n-Butyl Phthalate	3,010	6081.72	5656.00	83143.21	175901.61
Dioxins/Furans (TCDD Equivalents)	7.97E-08	1.61E-07	1.50E-07	2.20E-06	4.66E-06
Endrin	0.20	0.40	0.38	5.52	11.69
Ethylbenzene	7,143	14432.47	13422.20	197306.28	417430.30
Fluoride	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.00	0.00	0.04	0.09
Heptachlor Epoxide	0.00075	0.00	0.00	0.02	0.04
Hexachlorobenzene	0.0045	0.01	0.01	0.12	0.26
Hexachlorobutadiene	274	553.62	514.87	7568.52	16012.31
Hexachlorocyclohexane (alpha)	0.093	0.19	0.17	2.57	5.43
Hexachlorocyclohexane (beta)	0.33	0.67	0.62	9.12	19.28
Hexachlorocyclohexane (gamma) (Lindane)	6.2	12.53	11.65	171.26	362.32
Hexachlorocyclopentadiene	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	11.51	23.26	21.63	317.93	672.63
Hexachlorophene	2.90	5.86	5.45	80.10	169.47
Lead	3.83	37.83	35.18	517.18	1094.18
Mercury	0.0122	0.02	0.02	0.34	0.71
Methoxychlor	1.61	3.25	3.03	44.47	94.09
Methyl Ethyl Ketone	992,000	2.00E+06	1.86E+06	2.74E+07	5.80E+07
Nickel	1,140	4557.21	4238.21	62301.62	131808.19
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	1,853	3744.00	3481.92	51184.17	108287.60
N-Nitrosodiethylamine	2.1	4.24	3.95	58.01	122.72
N-Nitroso-di-n-Butylamine	4.2	8.49	7.89	116.01	245.44
Pentachlorobenzene	1.0	2.02	1.88	27.62	58.44
Pentachlorophenol	9.1	18.39	17.10	251.36	531.80

Polychlorinated Biphenyls (PCBs)	6.4E-04	0.00	0.00	0.02	0.04
Pyridine	947	1913.42	1779.48	26158.34	55341.80
Selenium	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.71	1.43	1.33	19.61	41.49
1,1,2,2-Tetrachloroethane	40	80.82	75.16	1104.89	2337.56
Tetrachloroethylene	525	1060.77	986.51	14501.72	30680.51
Thallium	0.23	0.46	0.43	6.35	13.44
Toluene	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.01	0.01	0.15	0.31
2,4,5-TP (Silvex)	21	42.43	39.46	580.07	1227.22
1,1,1-Trichloroethane	956,663	1932942.63	1797636.64	26425258.65	55906499.59
1,1,2-Trichloroethane	295	596.05	554.33	8148.59	17239.53
Trichloroethylene	82	165.68	154.08	2265.03	4792.00
2,4,5-Trichlorophenol	2,435	4919.93	4575.54	67260.37	142299.14
TTHM (Sum of Total Trihalomethanes)	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	24	48.49	45.10	662.94	1402.54

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

Aquatic Life

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Aldrin	1.77	2.15
Aluminum	584	710
Arsenic	206.695	250.987
Cadmium	1.143	1.387
Carbaryl	1.18	1.43
Chlordane	0.0032	0.0038
Chlorpyrifos	0.032	0.039
Chromium (+3)	406.119	493.145
Chromium (+6)	8.40	10.2
Copper	29.049	35.273
Cyanide (free)	8.48	10.3
4,4'-DDT	0.0008	0.0010
Demeton	0.079	0.096
Diazinon	0.100	0.122
Dicofol	15.7	19.0
Dieldrin	0.0016	0.0019
Diuron	55.5	67.3
Endosulfan (alpha)	0.044	0.054
Endosulfan (beta)	0.044	0.054
Endosulfan sulfate	0.044	0.054
Endrin	0.0016	0.0019

Guthion	0.0079	0.0096
Heptachlor	0.0032	0.0038
Hexachlorocyclohexane (Lindane)	0.063	0.077
Lead	16.197	19.667
Malathion	0.0079	0.0096
Mercury	1.03	1.25
Methoxychlor	0.024	0.029
Mirex	0.0008	0.0010
Nickel	121.334	147.335
Nonylphenol	5.23	6.35
Parathion (ethyl)	0.010	0.013
Pentachlorophenol	9.4001	11.4144
Phenanthrene	17.7	21.5
Polychlorinated Biphenyls (PCBs)	0.011	0.013
Selenium	3.96	4.81
Silver	6.641	8.064
Toxaphene	0.00016	0.00019
Tributyltin (TBT)	0.019	0.023
2,4,5 Trichlorophenol	50.7	61.6
Zinc	312.817	379.849

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Human Health

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Acrylonitrile	73.475	89.220
Aldrin	0.019	0.023
Anthracene	N/A	N/A
Antimony	20708.459	25145.986
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	9919.178	12044.716
Benzidine	0.039	0.047
Benzo(a)anthracene	63.421	77.011
Benzo(a)pyrene	6.381	7.748
Bis(chloromethyl)ether	8.508	10.331
Bis(2-chloroethyl)ether	194.516	236.199
Bis(2-ethylhexyl)phthalate	792.761	962.638
Bromodichloromethane (Dichlorobromomethane)	6226.073	7560.231
Bromoform	42054.994	51066.778
Cadmium	N/A	N/A
Carbon Tetrachloride	589.737	716.109
Chlordane	0.157	0.190
Chlorobenzene	100564.608	122114.166

Chlorodibromomethane (Dibromochloromethane)	4621.215	5611.476
Chloroform	138114.399	167710.342
Chromium (+6)	9706.486	11786.447
Chrysene	6322.751	7677.626
Cresols (Methylphenols)	179840.69	218377.98
Cyanide (free)	N/A	N/A
4,4'-DDD	0.114	0.139
4,4'-DDE	0.077	0.094
4,4'-DDT	0.077	0.094
2,4'-D	N/A	N/A
Danitol	9145.753	11105.557
1,2-Dibromoethane	81.983	99.551
m-Dichlorobenzene (1,3-Dichlorobenzene)	27939.984	33927.124
o-Dichlorobenzene (1,2-Dichlorobenzene)	83839.288	101804.850
p-Dichlorobenzene (1,4-Dichlorobenzene)	N/A	N/A
3,3'-Dichlorobenzidine	8.508	10.331
1,2-Dichloroethane	10692.603	12983.875
1,1-Dichloroethylene	462430.908	561523.246
Dichloromethane (Methylene Chloride)	429676.352	521749.857
1,2-Dichloropropane	4369.852	5306.249
1,3-Dichloropropene (1,3- Dichloropropylene)	4079.818	4954.064
Dicofol	5.801	7.044
Dieldrin	0.019	0.023
2,4-Dimethylphenol	11040.644	13406.497
Di-n-Butyl Phthalate	58200.244	70671.725
Dioxins/Furans (TCDD Equivalents)	1.54E-06	1.87E-06
Endrin	3.867	4.696
Ethylbenzene	138114.399	167710.342
Fluoride	N/A	N/A
Heptachlor	0.029	0.035
Heptachlor Epoxide	0.015	0.018
Hexachlorobenzene	0.087	0.106
Hexachlorobutadiene	5297.962	6433.240
Hexachlorocyclohexane (alpha)	1.798	2.184
Hexachlorocyclohexane (beta)	6.381	7.748
Hexachlorocyclohexane (gamma) (Lindane)	119.881	145.570
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	222.553	270.243
Hexachlorophene	56.073	68.089
Lead	362.028	439.605
Mercury	0.236	0.286
Methoxychlor	31.130	37.801

Methyl Ethyl Ketone	1.92E+07	2.33E+07
Nickel	43611.133	52956.376
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	35828.921	43506.547
N-Nitrosodiethylamine	40.605	49.306
N-Nitroso-di-n-Butylamine	81.210	98.612
Pentachlorobenzene	19.336	23.479
Pentachlorophenol	175.954	213.659
Polychlorinated Biphenyls (PCBs)	0.012	0.015
Pyridine	18310.841	22234.592
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	13.728	16.670
1,1,2,2-Tetrachloroethane	773.425	939.159
Tetrachloroethylene	10151.205	12326.464
Thallium	4.447	5.400
Toluene	N/A	N/A
Toxaphene	0.102	0.124
2,4,5-TP (Silvex)	406.048	493.059
1,1,1-Trichloroethane	18497681.053	22461469.851
1,1,2-Trichloroethane	5704.011	6926.299
Trichloroethylene	1585.522	1925.276
2,4,5-Trichlorophenol	47082.257	57171.312
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	464.055	563.495