

TEXTOX MENU #2 - INTERMITTENT STREAM WITHIN 3 MILES OF A FRESHWATER PERENNIAL STREAM/RIVER

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:	Sarah E. Ferry
TPDES Permit No.:	TX0134021
Outfall No.:	001
Prepared by:	Maria Okpala
Date:	3/12/2018

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	Intermittent Creek at the Atascosa River
Perennial Stream/River within 3 Miles:	Atascosa River
Segment No.:	2107
TSS (mg/L):	13
pH (Standard Units):	7.5
Hardness (mg/L as CaCO ₃):	130
Chloride (mg/L):	242
Effluent Flow for Aquatic Life (MGD):	0.011
Critical Low Flow [7Q2] (cfs) for intermittent:	0
Critical Low Flow [7Q2] (cfs) for perennial:	0.03
% Effluent for Chronic Aquatic Life (Mixing Zone):	36.20
% Effluent for Acute Aquatic Life (ZID):	100
Effluent Flow for Human Health (MGD):	0.01
Harmonic Mean Flow (cfs) for perennial:	0.8
% Effluent for Human Health:	1.897
Public Water Supply Use?	yes

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

<i>Stream/River Metal</i>	<i>Intercept (b)</i>	<i>Slope</i>	<i>(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 Assumed
Arsenic	5.68	-0.73	73590.43	0.51			1 Assumed
Cadmium	6.60	-1.13	219403.73	0.26			1 Assumed
Chromium (Total)	6.52	-0.93	304812.44	0.20			1 Assumed
Chromium (+3)	6.52	-0.93	304812.44	0.20			1 Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed		1 Assumed
Copper	6.02	-0.74	156921.31	0.33			1 Assumed

Lead	6.45	-0.80	362114.00	0.18		1 Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1 Assumed
Nickel	5.69	-0.57	113514.75	0.40		1 Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1 Assumed
Silver	6.38	-1.03	170859.19	0.31		1 Assumed
Zinc	6.10	-0.70	209044.94	0.27		1 Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>FW Acute Criterion (ug/L)</i>	<i>FW Chronic Criterion (ug/L)</i>	<i>WLAa</i>	<i>WLAc</i>	<i>LTAa</i>	<i>LTAc</i>	<i>Daily Avg. (ug/L)</i>	<i>Daily Max. (ug/L)</i>
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	665.270	810.853	381.200	624.357	560.363	1185.531
Cadmium	11.075	0.295	42.665	3.141	24.447	2.419	3.556	7.523
Carbaryl	2.0	N/A	2.00	N/A	1.15	N/A	1.68	3.56
Chlordane	2.4	0.004	2.40	0.011	1.38	0.009	0.013	0.026
Chlorpyrifos	0.083	0.041	0.083	0.113	0.048	0.087	0.070	0.148
Chromium (+3)	706.341	91.880	3505.259	1259.683	2008.513	969.956	1425.835	3016.562
Chromium (+6)	15.7	10.6	15.7	29.285	9.00	22.549	13.224	27.978
Copper	18.184	11.848	55.280	99.508	31.676	76.621	46.563	98.511
Cyanide (free)	45.8	10.7	45.8	29.561	26.2	22.762	33.460	70.789
4,4'-DDT	1.1	0.001	1.10	0.003	0.630	0.002	0.003	0.007
Demeton	N/A	0.1	N/A	0.276	N/A	0.213	0.313	0.662
Diazinon	0.17	0.17	0.170	0.470	0.097	0.362	0.143	0.303
Dicofol	59.3	19.8	59.3	54.701	34.0	42.120	49.949	105.674
Dieldrin	0.24	0.002	0.240	0.006	0.138	0.004	0.006	0.013
Diuron	210	70	210	193.388	120	148.909	176.885	374.226
Endosulfan I (alpha)	0.22	0.056	0.220	0.155	0.126	0.119	0.175	0.370
Endosulfan II (beta)	0.22	0.056	0.220	0.155	0.126	0.119	0.175	0.370
Endosulfan sulfate	0.22	0.056	0.220	0.155	0.126	0.119	0.175	0.370
Endrin	0.086	0.002	0.086	0.006	0.049	0.004	0.006	0.013
Guthion	N/A	0.01	N/A	0.028	N/A	0.021	0.031	0.066
Heptachlor	0.52	0.004	0.520	0.011	0.298	0.009	0.013	0.026
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.13	0.221	0.645	0.170	0.250	0.529
Lead	85.831	3.345	489.878	52.739	280.700	40.609	59.696	126.295
Malathion	N/A	0.01	N/A	0.028	N/A	0.021	0.031	0.066
Mercury	2.4	1.3	2.40	3.591	1.38	2.765	2.022	4.277
Methoxychlor	N/A	0.03	N/A	0.083	N/A	0.064	0.094	0.198
Mirex	N/A	0.001	N/A	0.003	N/A	0.002	0.003	0.007
Nickel	584.603	64.931	1447.296	444.102	829.300	341.959	502.679	1063.491

Nonylphenol	28	6.6	28.0	18.234	16.0	14.040	20.639	43.664
Parathion (ethyl)	0.065	0.013	0.065	0.036	0.037	0.028	0.041	0.086
Pentachlorophenol	14.418	11.062	14.418	30.560	8.262	23.532	12.145	25.694
Phenanthrene	30	30	30.0	82.881	17.2	63.818	25.269	53.461
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.00	0.039	1.15	0.030	0.044	0.093
Selenium	20	5	20.0	13.813	11.5	10.636	15.635	33.079
Silver	0.8	N/A	28.69365763	N/A	16.441	N/A	24.169	51.133
Toxaphene	0.78	0.0002	0.780	0.001	0.447	0.000	0.001	0.001
Tributyltin (TBT)	0.13	0.024	0.130	0.066	0.074	0.051	0.075	0.159
2,4,5 Trichlorophenol	136	64	136	176.812	77.9	136.145	114.554	242.356
Zinc	146.352	147.549	544.077	1515.411	311.756	1166.867	458.281	969.561

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

<i>Parameter</i>	<i>Water and Fish Criterion (ug/L)</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	0.80	3.8	200.281	186.262	273.805	579.274
Aldrin	0.00094	0.0010	0.053	0.049	0.072	0.152
Anthracene	5,569	N/A	N/A	N/A	N/A	N/A
Antimony	6	1,071	56447.698	52496.359	77169.647	163263.676
Arsenic	10	N/A	N/A	N/A	N/A	N/A
Barium	2,000	N/A	N/A	N/A	N/A	N/A
Benzene	5	513	27037.973	25145.315	36963.613	78201.929
Benzidine	0.00086	0.0020	0.105	0.098	0.144	0.305
Benzo(a)anthracene	0.68	3.28	172.874	160.773	236.337	500.005
Benzo(a)pyrene	0.068	0.33	17.393	16.175	23.778	50.305
Bis(chloromethyl)ether	0.0024	0.44	23.190	21.567	31.704	67.074
Bis(2-chloroethyl)ether	0.57	10.06	530.218	493.103	724.861	1533.550
Bis(2-ethylhexyl)phthalate	6	41	2160.930	2009.665	2954.207	6250.057
Bromodichloromethane (Dichlorobromomethane)	10.2	322	16971.203	15783.219	23201.332	49085.811
Bromoform	69.1	2,175	114634.680	106610.252	156717.071	331557.885
Cadmium	5	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.3	30.5	1607.521	1494.994	2197.642	4649.432
Chlordane	0.0080	0.0081	0.427	0.397	0.584	1.235
Chlorobenzene	100	5,201	274121.826	254933.298	374751.948	792842.556
Chlorodibromomethane (Dibromochloromethane)	7.6	239	12596.638	11714.874	17220.864	36433.257
Chloroform	70	7,143	376476.101	350122.774	514680.477	1088881.826
Chromium (+6)	62	502	26458.211	24606.136	36171.021	76525.084
Chrysene	68.13	327	17234.731	16028.300	23561.601	49848.013
Cresols (Methylphenols)	1,041	9,301	490214.786	455899.751	670172.633	1417848.224
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A

4,4'-DDD	0.0059	0.0059	0.311	0.289	0.425	0.899
4,4'-DDE	0.0040	0.0040	0.211	0.196	0.288	0.610
4,4'-DDT	0.0040	0.0040	0.211	0.196	0.288	0.610
2,4'-D	70	N/A	N/A	N/A	N/A	N/A
Danitol	262	473	24929.749	23184.666	34081.460	72104.312
1,2-Dibromoethane	0.17	4.24	223.472	207.829	305.508	646.347
m-Dichlorobenzene (1,3-Dichlorobenzene)	473	1,445	76159.592	70828.421	104117.778	220276.388
o-Dichlorobenzene (1,2-Dichlorobenzene)	600	4,336	228531.482	212534.278	312425.388	660981.604
p-Dichlorobenzene (1,4-Dichlorobenzene)	75	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.32	0.44	23.190	21.567	31.704	67.074
1,2-Dichloroethane	5	553	29146.197	27105.963	39845.766	84299.545
1,1-Dichloroethylene	7	23,916	1260507.130	1172271.631	1723239.297	3645764.771
Dichloromethane (Methylene Chloride)	5	22,222	1171223.843	1089238.174	1601180.116	3387530.722
1,2-Dichloropropane	5	226	11911.466	11077.663	16284.165	34451.532
1,3-Dichloropropene (1,3- Dichloropropylene)	3.4	211	11120.882	10342.420	15203.357	32164.926
Dicofol	0.30	0.30	15.812	14.705	21.616	45.732
Dieldrin	0.001	0.001	0.053	0.049	0.072	0.152
2,4-Dimethylphenol	257	571	30094.898	27988.255	41142.735	87043.472
Di-n-Butyl Phthalate	1,318	3,010	158643.856	147538.786	216882.016	458845.625
Dioxins/Furans (TCDD Equivalents)	7.80E-08	7.97E-08	0.000	3.91E-06	5.74E-06	1.21E-05
Endrin	0.20	0.20	10.541	9.803	14.411	30.488
Ethylbenzene	700	7,143	376476.101	350122.774	514680.477	1088881.826
Fluoride	4,000	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0015	0.079	0.074	0.108	0.229
Heptachlor Epoxide	0.00074	0.00075	0.040	0.037	0.054	0.114
Hexachlorobenzene	0.0044	0.0045	0.237	0.221	0.324	0.686
Hexachlorobutadiene	6.5	274	14441.334	13430.441	19742.748	41768.671
Hexachlorocyclohexane (alpha)	0.050	0.093	4.902	4.559	6.701	14.177
Hexachlorocyclohexane (beta)	0.17	0.33	17.393	16.175	23.778	50.305
Hexachlorocyclohexane (gamma) (Lindane)	0.2	6.2	326.775	303.900	446.734	945.131
Hexachlorocyclopentadiene	50	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	4.97	11.51	606.641	564.177	829.340	1754.589
Hexachlorophene	2.05	2.90	152.846	142.147	208.956	442.077
Lead	1.15	3.83	1152.126	1071.477	1575.072	3332.295
Mercury	0.0122	0.0122	0.643	0.598	0.879	1.860
Methoxychlor	1.59	1.61	84.856	78.916	116.007	245.429
Methyl Ethyl Ketone	13,865	992,000	52283955	48624078	71477395	151220884
Nickel	332	1,140	148750.412	138337.883	203356.688	430230.817
Nitrate-Nitrogen (as Total Nitrogen)	10,000	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45	1,853	97663.477	90827.033	133515.739	282472.074
N-Nitrosodiethylamine	0.0037	2.1	110.682	102.934	151.313	320.125
N-Nitroso-di-n-Butylamine	0.119	4.2	221.364	205.868	302.626	640.250

Pentachlorobenzene	1.0	1.0	52.706	49.016	72.054	152.440
Pentachlorophenol	0.80	9.1	479.621	446.047	655.690	1387.208
Polychlorinated Biphenyls (PCBs)	6.4E-04	6.4E-04	3.37E-02	3.14E-02	4.61E-02	9.76E-02
Pyridine	23	947	49912.203	46418.349	68234.973	144361.065
Selenium	50	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.65	0.71	37.421	34.802	51.158	108.233
1,1,2,2-Tetrachloroethane	1.7	40	2108.224	1960.648	2882.153	6097.616
Tetrachloroethylene	5	525	27670.440	25733.509	37828.259	80031.214
Thallium	0.12	0.23	12.122	11.274	16.572	35.061
Toluene	1,000	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.0053	0.279	0.260	0.382	0.808
2,4,5-TP (Silvex)	19	21	1106.818	1029.340	1513.130	3201.249
1,1,1-Trichloroethane	200	956,663	50421497	46891993	68931229	145834097
1,1,2-Trichloroethane	5	295	15548.152	14459.781	21255.879	44969.920
Trichloroethylene	5	82	4321.859	4019.329	5908.414	12500.113
2,4,5-Trichlorophenol	1,194	2,435	128338.136	119354.466	175451.066	371192.391
TTHM (Sum of Total Trihalomethanes)	80	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.25	24	1264.934	1176.389	1729.292	3658.570

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

Aquatic Life

Parameter	70%	85%
Aldrin	1.77	2.15
Aluminum	584	710
Arsenic	392.254	476.309
Cadmium	2.489	3.022
Carbaryl	1.18	1.43
Chlordane	0.009	0.011
Chlorpyrifos	0.049	0.059
Chromium (+3)	998.084	1211.960
Chromium (+6)	9.257	11.241
Copper	32.594	39.579
Cyanide (free)	23.422	28.441
4,4'-DDT	0.002	0.003
Demeton	0.219	0.266
Diazinon	0.100	0.122
Dicofol	34.964	42.457
Dieldrin	0.004	0.005
Diuron	123.820	150.352
Endosulfan (alpha)	0.123	0.149
Endosulfan (beta)	0.123	0.149

Endosulfan sulfate	0.123	0.149
Endrin	0.004	0.005
Guthion	0.022	0.027
Heptachlor	0.009	0.011
Hexachlorocyclohexane (Lindane)	0.175	0.213
Lead	41.787	50.741
Malathion	0.022	0.027
Mercury	1.415	1.718
Methoxychlor	0.066	0.080
Mirex	0.002	0.003
Nickel	351.875	427.277
Nonylphenol	14.447	17.543
Parathion (ethyl)	0.028	0.035
Pentachlorophenol	8.501	10.323
Phenanthrene	17.689	21.479
Polychlorinated Biphenyls (PCBs)	0.031	0.037
Selenium	10.945	13.290
Silver	16.918	20.544
Toxaphene	0.000	0.001
Tributyltin (TBT)	0.053	0.064
2,4,5 Trichlorophenol	80.188	97.371
Zinc	320.797	389.539

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Human Health

<i>Parameter</i>	<i>70%</i>	<i>85%</i>
Acrylonitrile	191.663	232.734
Aldrin	0.050	0.061
Anthracene	N/A	N/A
Antimony	54018.753	65594.200
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	25874.529	31419.071
Benzidine	0.101	0.122
Benzo(a)anthracene	165.436	200.886
Benzo(a)pyrene	16.644	20.211
Bis(chloromethyl)ether	22.193	26.948
Bis(2-chloroethyl)ether	507.403	616.132
Bis(2-ethylhexyl)phthalate	2067.945	2511.076
Bromodichloromethane (Dichlorobromomethane)	16240.932	19721.132
Bromoform	109701.950	133209.510
Cadmium	N/A	N/A
Carbon Tetrachloride	1538.349	1867.995

Chlordane	0.409	0.496
Chlorobenzene	262326.363	318539.156
Chlorodibromomethane (Dibromochloromethane)	12054.605	14637.735
Chloroform	360276.334	437478.406
Chromium (+6)	25319.714	30745.367
Chrysene	16493.121	20027.361
Cresols (Methylphenols)	469120.843	569646.738
Cyanide (free)	N/A	N/A
4,4'-DDD	0.298	0.361
4,4'-DDE	0.202	0.245
4,4'-DDT	0.202	0.245
2,4'-D	N/A	N/A
Danitol	23857.022	28969.241
1,2-Dibromoethane	213.856	259.682
m-Dichlorobenzene (1,3-Dichlorobenzene)	72882.445	88500.111
o-Dichlorobenzene (1,2-Dichlorobenzene)	218697.772	265561.580
p-Dichlorobenzene (1,4-Dichlorobenzene)	N/A	N/A
3,3'-Dichlorobenzidine	22.193	26.948
1,2-Dichloroethane	27892.036	33868.901
1,1-Dichloroethylene	1206267.508	1464753.402
Dichloromethane (Methylene Chloride)	1120826.081	1361003.099
1,2-Dichloropropane	11398.915	13841.540
1,3-Dichloropropene (1,3- Dichloropropylene)	10642.350	12922.854
Dicofol	15.131	18.374
Dieldrin	0.050	0.061
2,4-Dimethylphenol	28799.914	34971.324
Di-n-Butyl Phthalate	151817.411	184349.713
Dioxins/Furans (TCDD Equivalents)	4.02E-06	4.88E-06
Endrin	10.088	12.249
Ethylbenzene	360276.334	437478.406
Fluoride	N/A	N/A
Heptachlor	0.076	0.092
Heptachlor Epoxide	0.038	0.046
Hexachlorobenzene	0.227	0.276
Hexachlorobutadiene	13819.924	16781.336
Hexachlorocyclohexane (alpha)	4.691	5.696
Hexachlorocyclohexane (beta)	16.644	20.211
Hexachlorocyclohexane (gamma) (Lindane)	312.714	379.724
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	580.538	704.939
Hexachlorophene	146.269	177.613
Lead	1102.550	1338.811

Mercury	0.615	0.747
Methoxychlor	81.205	98.606
Methyl Ethyl Ketone	50034177	60755786
Nickel	142349.682	172853.185
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	93461.017	113488.378
N-Nitrosodiethylamine	105.919	128.616
N-Nitroso-di-n-Butylamine	211.838	257.232
Pentachlorobenzene	50.438	61.246
Pentachlorophenol	458.983	557.336
Polychlorinated Biphenyls (PCBs)	3.23E-02	3.92E-02
Pyridine	47764.481	57999.727
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	35.811	43.484
1,1,2,2-Tetrachloroethane	2017.507	2449.830
Tetrachloroethylene	26479.781	32154.020
Thallium	11.601	14.087
Toluene	N/A	N/A
Toxaphene	0.267	0.325
2,4,5-TP (Silvex)	1059.191	1286.161
1,1,1-Trichloroethane	48251860	58591545
1,1,2-Trichloroethane	14879.115	18067.497
Trichloroethylene	4135.890	5022.152
2,4,5-Trichlorophenol	122815.746	149133.406
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	1210.504	1469.898

0.2