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:	Mont Belvieu NGL
TPDES Permit No.:	TX0140091
Outfall No.:	001
Prepared by:	Nichole Young
Date:	5/24/2018

DISCHARGE INFORMATION

Intermittent Receiving Waterbody:	unnamed ditch - Stream Gulley (perennial)
Perennial Stream/River within 3 Miles:	Cedar Bayou Tidal
Segment No.:	0901
TSS (mg/L):	18
pH (Standard Units):	7.4
Hardness (mg/L as $CaCO_3$):	930
Chloride (mg/L):	2875
Effluent Flow for Aquatic Life (MGD):	0.16
Critical Low Flow [7Q2] (cfs) for intermittent:	
Critical Low Flow [7Q2] (cfs) for perennial:	0.14
% Effluent for Chronic Aquatic Life (Mixing Zone):	63.88
% Effluent for Acute Aquatic Life (ZID):	87.72
Effluent Flow for Human Health (MGD):	0.16
Harmonic Mean Flow (cfs) for perennial:	0.42
% Effluent for Human Health:	37.084
Public Water Supply Use?	**no**

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

Stream/River Metal	*Intercept (b)*	*Slope (m)*	*Partition Coefficient (Kp)*	*Dissolved Fraction (Cd/Ct)*		*Water Effect Ratio (WER)*	
Aluminum	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Arsenic	5.68	-0.73	58029.80	0.49		1	Assumed
Cadmium	6.60	-1.13	151894.51	0.27		1	Assumed
Chromium (Total)	6.52	-0.93	225214.62	0.20		1	Assumed
Chromium (+3)	6.52	-0.93	225214.62	0.20		1	Assumed
Chromium (+6)	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Copper	6.02	-0.74	123338.41	0.31		1	Assumed
Lead	6.45	-0.80	279114.24	0.17		1	Assumed
Mercury	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Nickel	5.69	-0.57	94296.30	0.37		1	Assumed
Selenium	N/A	N/A	N/A	1.00	Assumed	1	Assumed
Silver	6.38	-1.03	122199.47	0.31		1	Assumed
Zinc	6.10	-0.70	166459.75	0.25		1	Assumed

AQUATIC LIFE

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*FW Acute Criterion (ug/L)*	*FW Chronic Criterion (ug/L)*	*WLAa*	*WLAc*	*LTAa*	*LTAc*	*Daily Avg. (ug/L)*	*Daily Max. (ug/L)*
Aldrin	3.0	N/A	3.42	N/A	1.96	N/A	2.88	6.09
Aluminum	991	N/A	1130	N/A	647	N/A	952	2013
Arsenic	340	150	792.456	480.117	454.077	369.690	543.445	1149.737
Cadmium	74.638	1.152	317.724	6.734	182.056	5.185	7.623	16.127
Carbaryl	2.0	N/A	2.28	N/A	1.31	N/A	1.92	4.06
Chlordane	2.4	0.004	2.74	0.006	1.57	0.005	0.007	0.015
Chlorpyrifos	0.083	0.041	0.095	0.064	0.054	0.049	0.073	0.154
Chromium (+3)	3539.013	460.353	20389.519	3642.300	11683.195	2804.571	4122.719	8722.216
Chromium (+6)	15.7	10.6	17.9	16.595	10.26	12.778	15.076	31.895
Copper	116.104	63.659	426.204	320.915	244.215	247.105	358.996	759.509

Cyanide (free)	45.8	10.7	52.2	16.751	29.9	12.898	18.961	40.114
4,4'-DDT	1.1	0.001	1.25	0.002	0.719	0.001	0.002	0.004
Demeton	N/A	0.1	N/A	0.157	N/A	0.121	0.177	0.375
Diazinon	0.17	0.17	0.194	0.266	0.111	0.205	0.163	0.345
Dicofol	59.3	19.8	67.6	30.997	38.7	23.868	35.086	74.230
Dieldrin	0.24	0.002	0.274	0.003	0.157	0.002	0.004	0.007
Diuron	210	70	239	109.587	137	84.382	124.042	262.428
Endosulfan I (alpha)	0.22	0.056	0.251	0.088	0.144	0.068	0.099	0.210
Endosulfan II (beta)	0.22	0.056	0.251	0.088	0.144	0.068	0.099	0.210
Endosulfan sulfate	0.22	0.056	0.251	0.088	0.144	0.068	0.099	0.210
Endrin	0.086	0.002	0.098	0.003	0.056	0.002	0.004	0.007
Guthion	N/A	0.01	N/A	0.016	N/A	0.012	0.018	0.037
Heptachlor	0.52	0.004	0.593	0.006	0.340	0.005	0.007	0.015
Hexachlorocyclohexane (Lindane)	1.126	0.08	1.28	0.125	0.736	0.096	0.142	0.300
Lead	650.507	25.349	4467.274	239.066	2559.748	184.080	270.598	572.490
Malathion	N/A	0.01	N/A	0.016	N/A	0.012	0.018	0.037
Mercury	2.4	1.3	2.74	2.035	1.57	1.567	2.304	4.874
Methoxychlor	N/A	0.03	N/A	0.047	N/A	0.036	0.053	0.112
Mirex	N/A	0.001	N/A	0.002	N/A	0.001	0.002	0.004
Nickel	3088.881	343.079	9498.110	1448.740	5442.417	1115.530	1639.829	3469.299
Nonylphenol	28	6.6	31.9	10.332	18.3	7.956	11.695	24.743
Parathion (ethyl)	0.065	0.013	0.074	0.020	0.042	0.016	0.023	0.049
Pentachlorophenol	13.040	10.004	14.865	15.662	8.518	12.060	12.521	26.490
Phenanthrene	30	30	34.2	46.966	19.6	36.164	28.807	60.945
Polychlorinated Biphenyls (PCBs)	2.0	0.014	2.28	0.022	1.31	0.017	0.025	0.052
Selenium	20	5	22.8	7.828	13.1	6.027	8.860	18.745
Silver	0.8	N/A	32.491376	N/A	18.618	N/A	27.368	57.901
Toxaphene	0.78	0.0002	0.889	0.000	0.510	0.000	0.000	0.001
Tributyltin (TBT)	0.13	0.024	0.148	0.038	0.085	0.029	0.043	0.090
2,4,5 Trichlorophenol	136	64	155	100.194	88.8	77.149	113.409	239.934
Zinc	775.266	781.608	3531.893	4889.964	2023.775	3765.272	2974.949	6293.940

HUMAN HEALTH

CALCULATE DAILY AVERAGE AND DAILY MAXIMUM EFFLUENT LIMITATIONS:

Parameter	*Water and Fish Criterion (ug/L)*	*Fish Only Criterion (ug/L)*	*WLAh*	*LTAh*	*Daily Avg. (ug/L)*	*Daily Max. (ug/L)*
Acrylonitrile	0.80	3.8	10.247	9.530	14.009	29.638
Aldrin	0.00094	0.0010	0.003	0.003	0.004	0.008
Anthracene	5,569	N/A	N/A	N/A	N/A	N/A
Antimony	6	1,071	2888.048	2685.885	3948.250	8353.101
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	1383.351	1286.516	1891.179	4001.065
Benzidine	0.00086	0.0020	0.005	0.005	0.007	0.016
Benzo(a)anthracene	0.68	3.28	8.845	8.226	12.092	25.582
Benzo(a)pyrene	0.068	0.33	0.890	0.828	1.217	2.574
Bis(chloromethyl)ether	0.0024	0.44	1.186	1.103	1.622	3.432
Bis(2-chloroethyl)ether	0.57	10.06	27.128	25.229	37.086	78.461
Bis(2-ethylhexyl)phthalate	6	41	110.560	102.821	151.147	319.773
Bromodichloromethane (Dichlorobromomethane)	10.2	322	868.302	807.521	1187.056	2511.390
Bromoform	69.1	2,175	5865.083	5454.527	8018.155	16963.580
Cadmium	5	N/A	N/A	N/A	N/A	N/A
Carbon Tetrachloride	4.3	30.5	82.246	76.489	112.438	237.880
Chlordane	0.0080	0.0081	0.022	0.020	0.030	0.063
Chlorobenzene	100	5,201	14024.965	13043.217	19173.529	40564.405
Chlorodibromomethane (Dibromochloromethane)	7.6	239	644.485	599.371	881.075	1864.044
Chloroform	70	7,143	19261.742	17913.420	26332.728	55710.737
Chromium (+6)	62	502	1353.688	1258.930	1850.627	3915.272
Chrysene	68.13	327	881.785	820.060	1205.488	2550.387
Cresols (Methylphenols)	1,041	9,301	25080.984	23325.315	34288.213	72541.729
Cyanide (free)	200	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	0.0059	0.0059	0.016	0.015	0.022	0.046
4,4'-DDE	0.0040	0.0040	0.011	0.010	0.015	0.031

4,4'-DDT	0.0040	0.0040	0.011	0.010	0.015	0.031
2,4'-D	70	N/A	N/A	N/A	N/A	N/A
Danitol	262	473	1275.487	1186.203	1743.718	3689.091
1,2-Dibromoethane	0.17	4.24	11.434	10.633	15.631	33.069
m-Dichlorobenzene (1,3-Dichlorobenzene)	473	1,445	3896.573	3623.812	5327.004	11270.057
o-Dichlorobenzene (1,2-Dichlorobenzene)	600	4,336	11692.414	10873.945	15984.700	33817.970
p-Dichlorobenzene (1,4-Dichlorobenzene)	75	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	0.32	0.44	1.186	1.103	1.622	3.432
1,2-Dichloroethane	5	553	1491.214	1386.829	2038.639	4313.039
1,1-Dichloroethylene	7	23,916	64491.646	59977.231	88166.530	186529.189
Dichloromethane (Methylene Chloride)	5	22,222	59923.623	55728.969	81921.585	173317.095
1,2-Dichloropropane	5	226	609.429	566.769	833.151	1762.652
1,3-Dichloropropene (1,3- Dichloropropylene)	3.4	211	568.980	529.152	777.853	1645.662
Dicofol	0.30	0.30	0.809	0.752	1.106	2.340
Dieldrin	0.001	0.001	0.003	0.003	0.004	0.008
2,4-Dimethylphenol	257	571	1539.753	1431.970	2104.996	4453.427
Di-n-Butyl Phthalate	1,318	3,010	8116.736	7548.564	11096.390	23476.035
Dioxins/Furans (TCDD Equivalents)	7.80E-08	7.97E-08	0.000	2.00E-07	2.94E-07	6.22E-07
Endrin	0.20	0.20	0.539	0.502	0.737	1.560
Ethylbenzene	700	7,143	19261.742	17913.420	26332.728	55710.737
Fluoride	4,000	N/A	N/A	N/A	N/A	N/A
Heptachlor	0.0015	0.0015	0.004	0.004	0.006	0.012
Heptachlor Epoxide	0.00074	0.00075	0.002	0.002	0.003	0.006
Hexachlorobenzene	0.0044	0.0045	0.012	0.011	0.017	0.035
Hexachlorobutadiene	6.5	274	738.866	687.145	1010.103	2137.021
Hexachlorocyclohexane (alpha)	0.050	0.093	0.251	0.233	0.343	0.725
Hexachlorocyclohexane (beta)	0.17	0.33	0.890	0.828	1.217	2.574
Hexachlorocyclohexane (gamma) (Lindane)	0.2	6.2	16.719	15.549	22.856	48.356
Hexachlorocyclopentadiene	50	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	4.97	11.51	31.038	28.865	42.432	89.770
Hexachlorophene	2.05	2.90	7.820	7.273	10.691	22.618
Lead	1.15	3.83	62.216	57.861	85.056	179.948
Mercury	0.0122	0.0122	0.033	0.031	0.045	0.095
Methoxychlor	1.59	1.61	4.342	4.038	5.935	12.557
Methyl Ethyl Ketone	13,865	992,000	2675017	2487766	3657016	7736952
Nickel	332	1,140	8291.907	7711.473	11335.866	23982.682
Nitrate-Nitrogen (as Total Nitrogen)	10,000	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	45	1,853	4996.781	4647.007	6831.100	14452.190
N-Nitrosodiethylamine	0.0037	2.1	5.663	5.266	7.742	16.379
N-Nitroso-di-n-Butylamine	0.119	4.2	11.326	10.533	15.483	32.757
Pentachlorobenzene	1.0	1.0	2.697	2.508	3.687	7.799
Pentachlorophenol	0.80	9.1	24.539	22.821	33.547	70.974
Polychlorinated Biphenyls (PCBs)	6.4E-04	6.4E-04	1.73E-03	1.61E-03	2.36E-03	4.99E-03
Pyridine	23	947	2553.671	2374.914	3491.123	7385.982
Selenium	50	N/A	N/A	N/A	N/A	N/A
1,2,4,5-Tetrachlorobenzene	0.65	0.71	1.915	1.781	2.617	5.538
1,1,2,2-Tetrachloroethane	1.7	40	107.864	100.313	147.460	311.974
Tetrachloroethylene	5	525	1415.710	1316.610	1935.417	4094.657
Thallium	0.12	0.23	0.620	0.577	0.848	1.794
Toluene	1,000	N/A	N/A	N/A	N/A	N/A
Toxaphene	0.0053	0.0053	0.014	0.013	0.020	0.041
2,4,5-TP (Silvex)	19	21	56.628	52.664	77.417	163.786
1,1,1-Trichloroethane	200	956,663	2579728	2399147	3526746	7461347
1,1,2-Trichloroethane	5	295	795.494	739.809	1087.520	2300.807
Trichloroethylene	5	82	221.120	205.642	302.294	639.546
2,4,5-Trichlorophenol	1,194	2,435	6566.197	6106.563	8976.647	18991.411
TTHM (Sum of Total Trihalomethanes)	80	N/A	N/A	N/A	N/A	N/A
Vinyl Chloride	0.25	24	64.718	60.188	88.476	187.184

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

Aquatic Life

Parameter	***70%***	***85%***
Aldrin	2.02	2.45

Aluminum	666	809
Arsenic	380.411	461.928
Cadmium	5.336	6.479
Carbaryl	1.34	1.63
Chlordane	0.005	0.006
Chlorpyrifos	0.051	0.062
Chromium (+3)	2885.904	3504.311
Chromium (+6)	10.553	12.814
Copper	251.297	305.147
Cyanide (free)	13.272	16.117
4,4'-DDT	0.001	0.002
Demeton	0.124	0.151
Diazinon	0.114	0.139
Dicofol	24.560	29.823
Dieldrin	0.002	0.003
Diuron	86.829	105.435
Endosulfan (alpha)	0.069	0.084
Endosulfan (beta)	0.069	0.084
Endosulfan sulfate	0.069	0.084
Endrin	0.002	0.003
Guthion	0.012	0.015
Heptachlor	0.005	0.006
Hexachlorocyclohexane (Lindane)	0.099	0.120
Lead	189.419	230.009
Malathion	0.012	0.015
Mercury	1.613	1.958
Methoxychlor	0.037	0.045
Mirex	0.001	0.002
Nickel	1147.880	1393.855
Nonylphenol	8.187	9.941
Parathion (ethyl)	0.016	0.020
Pentachlorophenol	8.765	10.643
Phenanthrene	20.165	24.486
Polychlorinated Biphenyls (PCBs)	0.017	0.021
Selenium	6.202	7.531
Silver	19.157	23.263
Toxaphene	0.000	0.000
Tributyltin (TBT)	0.030	0.036
2,4,5 Trichlorophenol	79.387	96.398
Zinc	2082.464	2528.707

Human Health

Parameter	***70%***	***85%***
Acrylonitrile	9.806	11.907
Aldrin	0.003	0.003
Anthracene	N/A	N/A
Antimony	2763.775	3356.013
Arsenic	N/A	N/A
Barium	N/A	N/A
Benzene	1323.825	1607.502
Benzidine	0.005	0.006
Benzo(a)anthracene	8.464	10.278
Benzo(a)pyrene	0.852	1.034
Bis(chloromethyl)ether	1.135	1.379
Bis(2-chloroethyl)ether	25.960	31.523
Bis(2-ethylhexyl)phthalate	105.803	128.475
Bromodichloromethane (Dichlorobromomethane)	830.939	1008.997
Bromoform	5612.709	6815.432
Cadmium	N/A	N/A
Carbon Tetrachloride	78.707	95.573
Chlordane	0.021	0.025
Chlorobenzene	13421.470	16297.500
Chlorodibromomethane (Dibromochloromethane)	616.753	748.914
Chloroform	18432.910	22382.819

Chromium (+6)	1295.439	1573.033
Chrysene	843.842	1024.665
Cresols (Methylphenols)	24001.749	29144.981
Cyanide (free)	N/A	N/A
4,4'-DDD	0.015	0.018
4,4'-DDE	0.010	0.013
4,4'-DDT	0.010	0.013
2,4'-D	N/A	N/A
Danitol	1220.603	1482.161
1,2-Dibromoethane	10.942	13.286
m-Dichlorobenzene (1,3-Dichlorobenzene)	3728.903	4527.954
o-Dichlorobenzene (1,2-Dichlorobenzene)	11189.290	13586.995
p-Dichlorobenzene (1,4-Dichlorobenzene)	N/A	N/A
3,3'-Dichlorobenzidine	1.135	1.379
1,2-Dichloroethane	1427.047	1732.843
1,1-Dichloroethylene	61716.571	74941.550
Dichloromethane (Methylene Chloride)	57345.109	69633.347
1,2-Dichloropropane	583.206	708.178
1,3-Dichloropropene (1,3- Dichloropropylene)	544.497	661.175
Dicofol	0.774	0.940
Dieldrin	0.003	0.003
2,4-Dimethylphenol	1473.497	1789.247
Di-n-Butyl Phthalate	7767.473	9431.931
Dioxins/Furans (TCDD Equivalents)	2.06E-07	2.50E-07
Endrin	0.516	0.627
Ethylbenzene	18432.910	22382.819
Fluoride	N/A	N/A
Heptachlor	0.004	0.005
Heptachlor Epoxide	0.002	0.002
Hexachlorobenzene	0.012	0.014
Hexachlorobutadiene	707.072	858.588
Hexachlorocyclohexane (alpha)	0.240	0.291
Hexachlorocyclohexane (beta)	0.852	1.034
Hexachlorocyclohexane (gamma) (Lindane)	15.999	19.428
Hexachlorocyclopentadiene	N/A	N/A
Hexachloroethane	29.702	36.067
Hexachlorophene	7.484	9.087
Lead	59.539	72.297
Mercury	0.031	0.038
Methoxychlor	4.155	5.045
Methyl Ethyl Ketone	2559911	3108464
Nickel	7935.106	9635.486
Nitrate-Nitrogen (as Total Nitrogen)	N/A	N/A
Nitrobenzene	4781.770	5806.435
N-Nitrosodiethylamine	5.419	6.580
N-Nitroso-di-n-Butylamine	10.838	13.161
Pentachlorobenzene	2.581	3.134
Pentachlorophenol	23.483	28.515
Polychlorinated Biphenyls (PCBs)	1.65E-03	2.01E-03
Pyridine	2443.786	2967.455
Selenium	N/A	N/A
1,2,4,5-Tetrachlorobenzene	1.832	2.225
1,1,2,2-Tetrachloroethane	103.222	125.341
Tetrachloroethylene	1354.792	1645.104
Thallium	0.594	0.721
Toluene	N/A	N/A
Toxaphene	0.014	0.017
2,4,5-TP (Silvex)	54.192	65.804
1,1,1-Trichloroethane	2468722	2997734
1,1,2-Trichloroethane	761.264	924.392
Trichloroethylene	211.606	256.950
2,4,5-Trichlorophenol	6283.653	7630.150
TTHM (Sum of Total Trihalomethanes)	N/A	N/A
Vinyl Chloride	61.933	75.205