

TCEQ Analysis of TCEQ Contractor Surface Water Quality Sampling Data Collected on April 18, 2019 (Final Lab Results)

The Texas Commission on Environmental Quality (TCEQ) received final surface water quality data for 162 constituents at one site and 129 constituents at four (4) different sites. One sample was collected at each site on April 18, 2019 by the TCEQ's contractor. The constituents consist of inorganics, organics, metals, nutrients, chemical oxygen demand (COD), total suspended solids, and oil and grease in water. The sampling sites were the following:

- Mouth of Tucker Bayou & Buffalo Bayou
- Tidal Rd @ Gate #13
- Tidal Rd @ Gate #13 No. 2
- Tidal Td @ Tucker Bayou
- Upstream Tucker Bayou Clean

This assessment is based on final results received from the laboratory. As additional water quality sampling is completed, the data will be assessed, and results made available.

The TCEQ used the Texas Water Quality Standards and the Texas Risk Reduction Program as references for determining the known health protective concentration levels (PCLs) in surface water. PCLs are very conservative and below levels where we would expect any health impacts. The TCEQ is using these PCLs to evaluate impacts to aquatic life and human health. No public drinking water system draws its source water from the Houston Ship Channel. This methodology was also used for previously reviewed data from samples collected by ITC and will be used to review samples from the TCEQ contractor. The TCEQ used the PCLs listed in the tables below to assess the surface water quality data.

Table 1: Assessment of Final Laboratory Results

	Mouth of Tucker Bayou @ Buffalo Bayou	Tidal Rd @ Gate #13	Tidal Rd @ Gate #13 No. 2	Tidal Rd @ Tucker Bayou	Upstream Tucker Bayou Clean
Number of Constituents	129	162*	129	129*	129
Number of constituents analyzed but not detected (not detected above the method detection limit or quantitation limit)	117	138	106	106	119
Number of constituents detected above the method detection limit or quantitation limit	12	23	23	22	10
Number of constituents detected but below their known PCLs	6	10	9	10	4
Number of constituents that exceeded their known PCLs	1	6	7	5	2
Number of constituents that are still pending further TCEQ evaluation	0	0	0	0	0
Number of constituents that do not have a PCL or are assessed with other constituents**	5	7	7	7	4

*Two constituents, Total Phosphate collected at Tidal Rd @ Tucker Bayou and Benzene collected at Tidal Rd @ Gate 13, included samples where the MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix/chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD. Therefore, they were excluded from the assessment of preliminary laboratory results.

**The water quality parameters ammonia nitrogen (as N), total Kjeldahl nitrogen, total phosphate, total organic nitrogen, and total suspended solids are not related to human health; therefore it is not appropriate to develop human health comparison values to evaluate these parameters. Three chemicals on the laboratory target analyte list (4-bromophenyl phenyl ether, 4-chlorophenyl phenyl ether, and benzo(g,h,i)perylene) do not have surface water comparison values and consequently will not be evaluated. These water quality parameters and chemicals are not directly related to the ITC incident, and the TCEQ is evaluating the chemicals that are directly related to the ITC incident (benzene and toluene, for example). C6-12, C12-28 and C28-35 range hydrocarbons, as well as total petroleum hydrocarbons, are included in the assessment of oil and grease. Therefore, these constituents are not assessed individually.

Below are tables of the constituents that exceeded their known PCL at the sampling site(s).

Table 2: Mouth of Tucker Bayou @ Buffalo Bayou

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Copper	4.24	3.6

Table 3: Tidal Road @ Gate #13

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Benzene	783	581
COD	176000	150000*
Copper	18.7	3.6
Lead	10.8	3.83
Oil & Grease, HEM	32100	28000
Zinc	286	84.2

Table 4: Tidal Road @ Gate #13 No. 2

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
2-Methylnaphthalene	41.3	30
COD	274000	150000*
Copper	17.8	3.6
Lead	10.5	3.83
Oil & Grease, HEM	61300	28000
Phenolic	10.2	0.29
Zinc	286	84.2

Table 5: Tidal Road @ Tucker Bayou

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Benzene	691	581
Copper	13.7	3.6
Lead	3.96	3.83
Phenolic	20.5	0.29
Zinc	124	84.2

Table 6: Upstream Tucker Bayou Clean

Constituent	Maximum (micrograms/L)	PCL (micrograms/L)
Copper	5.41	3.6
Zinc	102	84.2

Footnote:

*COD is a measure of the oxygen demand exerted by chemical constituents in water. There was not a known PCL for COD, therefore the permitted technology-based limit was used for comparison purposes. Although COD levels for treated process wastewater vary 150000 micrograms/L for noncontact stormwater was provided for comparison purposes.