

## Handout 2

### Water Quality Standards Approvals for 2016 Integrated Report

#### §307.6. Toxic Materials

Table 2 – Criteria in Water for Specific Toxic Materials (Table 3.11 in Assessment Guidance)

	Previous	Revised	Previous	Revised
	A	A	B	B
	Water and Fish	Water and Fish	Fish Only	Fish Only
COMPOUND	µg/L	µg/L	µg/L	µg/L
Benzo(a)anthracene	0.068	0.68	0.33	0.328
Bis(2-chloroethyl)ether	0.3	0.57	5.27	10.06
Carbon Tetrachloride	4.1	4.3	29	30.5
Cresols	736	1041	1,981	9,301
4,4' - DDD	166.16 ug/kg	0.0059	166.16 ug/kg	0.0059
4,4' - DDE	214.4 ug/kg	0.0040	214.4 ug/kg	0.0040
4,4' - DDT	209.04 ug/kg	0.0040	209.04 ug/kg	0.0040
Danitol	5.39	262	5.44	473
1,2 - Dibromoethane	0.16	17	2.13	4.24
Dichloromethane			5,926	22,222
Dicofol	0.076	0.30	0.076	0.30
Dieldrin	0.0005	0.001	0.0005	0.001
Dioxins/Furans(TCDD Equivalents, tissue)	4.0E-04 ug/kg	7.80E-8	4.0E-04 ug/kg	7.97E-8
Hexachloroethane	27	4.97	62	11.51
Hexachlorophene	0.0080	2.05	0.0080	2.90
Mercury in freshwater	700 µg/kg	0.0122	700 µg/kg	0.0122
Mercury in saltwater	700 µg/kg	N/A	700 µg/kg	0.0250
Methoxychlor	0.33	1.59	0.33	1.61
Methyl Ethyl Ketone	13,932	13,865	1.50E+6	9.92E+5
Nitrobenzene	11	45	463	1,853
Pentachlorophenol	1.0*	0.80	57	9.1
Polychlorinated Biphenyls (PCBs)	19.96 ug/kg	6.4E-4	19.96 ug/kg	6.4E-4
Pyridine			2,014	947
1,1,2,2-Tetrachloroethane	3.2	1.7	76	40
Tetrachloroethylene			49	525
Thallium	0.75	0.12	1.50	0.23
2,4,5 - TP (Silvex)	7.3	19	7.6	21
Trichloroethylene			649	82

These criteria incorporate updated toxicological information and bioconcentration factors, where available. The criteria were calculated using the exposure factors which were approved in the 2010 revision of the Texas WQS. The tissue-based criteria for DDD, DDE, DDT, dioxin/furans and polychlorinated biphenyls, which were approved in the 2010 revision, were replaced with water-column criteria in the 2014 Texas WQS.

**§307.8. Application of Standards**

The exemption for application of recreational and minerals criteria below seven-day two year (7Q2) stream flows in classified segments and unclassified streams was removed in the 2010 Texas WQS. The exemption for assessment of human health criteria below the harmonic mean flow was removed in the 2010 Texas WQS.

A new provision was adopted to provide increased protection of aquatic species in streams and rivers dominated by springflow. The critical low flow for streams that contain aquatic threatened or endangered species is calculated as the 0.1 percentile low flow. In springflow-dominated rivers and streams, without federally-listed species, the critical low flow value is calculated as the 5<sup>th</sup> percentile value. These flows will be used in place of the 7Q2 low flow values.

**§307.9. Determination of Standards Attainment**

Exemption of the application of criteria to protect human health in Table 2, recreational uses, total dissolved solids, chlorides and sulfates at flows below 0.1 cfs in perennial streams. The provision also exempts the application in intermittent streams when less than 20% of the stream bed is covered by pools or extremely dry conditions exist, based on TCEQ’s flow severity index.

**Appendix A - Site-specific Uses and Criteria for Classified Segments**

Segment	Water body	Counties	Aquatic Life Use	Dissolved oxygen criteria * (average)
0406	Black Bayou	Cass	High	DO = 12.11 - 0.309 T + 1.05 logQ - 1.02 logWS where: DO = 24-hour average DO criterion T = temperature in degrees Celsius (C) Q = flow in cubic feet per second (ft3/s) WS = watershed size in square kilometers (up to 1000 km2)
0407	James Bayou	Cass, Marion	High	See above
0409	Little Cypress Creek	Gregg, Harrison, Marion, Upsher	No revision	See above
0410	Black Cypress Bayou	Cass, Marion	High	See above

\* A 24-hour average DO criterion of 5 mg/L is the upper bounds if the indicated DO equation predicts DO values that are higher than 5.0 mg/L. When the 24-hour average DO is predicted to be lower than 1.5 mg/L, then the DO criterion is set as 1.5 mg/L. When the 24-hour average DO criterion is greater than 2.0 mg/L, the corresponding 24-hour minimum DO criterion should be 1.0 mg/L less than the calculated 24-hour average criterion. When the 24-hour average DO criterion is less than or equal to 2.0 mg/L, the corresponding 24-hour minimum DO criterion should be 0.5 mg/L less than the calculated 24-hour average criterion. When stream flow is below 0.1 cfs, then 0.1 cfs is the presumed flow that should be used in the equation.

EPA also approves footnote 2 under the Cypress Creek basin in Appendix A which describes segment 0406 –Black Bayou and segment 0407 – James’ Bayou as intermittent streams with perennial pools. TCEQ’s assessment of physical habitat, flow regime, and the biological community support the revisions to aquatic life uses.

**Revised pH Criteria:**

0306	Upper South Sulphur River	6.5 – 9.0 (6.5-8.0)
0307	Jim Chapman Lake	6.5 – 9.0 (6.5-8.0)
0401	Caddo Lake	5.5 - 9.0 (6.0-8.5)
0402	Big Cypress Creek below Lake O' the Pines	5.5 - 8.0 (6.0-8.5)
0406	Black Bayou	5.5 - 8.0 (6.0-8.5)

0407	James' Bayou	5.5 - 8.0 (6.0-8.5)
0410	Black Cypress Creek	5.5 - 8.0
0608	Village Creek	5.5 - 8.0 (6.0-8.5)

A site-specific zinc acute criterion of 29 ug/l was adopted for Segment 2482- Nueces Bay under footnote 2 to protect the oyster waters use and is approved.

Footnotes were added to identify the segments for which the critical low flow is calculated in accordance with §307.8(a)(2) (springflow provisions). These segments include the following water bodies:

0218 – Little Wichita River	1814 – Upper San Marcos River
1243 – Salado Creek	1817 – North Fork Guadalupe River
1415 – South Llano River	1905 – Medina River above Medina Lake
1424 – South Concho River	2109 – Leona River
1430 – Barton Creek	2113 – Upper Frio River
1808 – Lower San Marcos River	2309 – Devils River
1811 – Comal River	2313 - San Felipe Creek
1813 – Upper Blanco River	

The site-specific critical low flow of 58 cfs for segment 1814 San Marcos River, adopted in the 1995 Texas WQS, was replaced by the reference to the flow provision at §307.8(a)(2).

**Appendix B – Sole-source Surface Drinking Water Supplies**

The designation of sole-source drinking water supply was removed from the following water bodies, which no longer fit this description.

Caney Creek Reservoir (0302)	Lake Amon G. Carter (0834)
Cooper Lake (0307)	Lake J.B. Thomas (1413)
Trinity River (0803)	O.H. Ivie Reservoir (1433)
Lake Waxahachie (0816)	Terminal Reservoir (1802)
Lake Weatherford (0832)	

**Appendix C – Segment Boundary Descriptions**

**Segment 0410** – Black Cypress Bayou (Creek) was added as a classified segment in the 2010 Texas WQS and includes approximately 40 miles of the water body from the confluence with Big Cypress Creek upstream to the confluence with Kelly Creek.

**Segment 0801** – Trinity River Tidal was revised to account for the saltwater barrier constructed near Wallisville.

**Segment 1258** – Middle Oyster Creek was created from the upper reach of segment 1110, Oyster Creek above Tidal.

**Segment 1221**- Leon River below Lake Proctor was moved upstream to the confluence with Plum Creek.

**Segment 1259** - Leon River above Belton Lake was created from the reach removed from segment 1221.

**Segment 1401**- Colorado River Tidal was revised to account for the diversion channel to Matagorda Bay. The boundary between segment 2303, International Falcon Reservoir, and segment 2304, Rio Grande below Amistad Reservoir, was moved upstream to reflect the pool elevation of the lake.

Updated information on elevation level was incorporated in the description of segment 1404, Lake Travis.

**Appendix D – Site-specific Uses and Criteria for Unclassified Water Bodies**

Segment	Water body	County	Aquatic Life Use	Dissolved oxygen criteria (average, minimum)	Segment Description
0401	Harrison Bayou	Harrison	High	See table under Appendix A	Intermittent stream with perennial pools from the confluence with Caddo Lake within the Caddo Lake National Wildlife Refuge (also known as the Longhorn Ordinance Works facility) east of the City of Karnack upstream to FM 1998 east of the City of Marshall
0410*	Black Cypress Creek/Bayou	Cass	High	See table under Appendix A	Intermittent stream with perennial pools from the confluence with Kelly Creek upstream to FM 250 north of the City of Hughes Springs
1602	Lavaca River	Lavaca	No revision	Footnote 15 – 3.0 mg/L, 2.0 mg/L, applicable March 15-October 15 [no revision for October 16-March 14]	No revision

\* Segment number for Black Cypress Creek/Bayou in Appendix D is revised from 0402 to 0410, with the creation of the classified segment in Appendix A and Appendix C for the lower reach of this water body.

The entry for Walnut Creek, previously identified as within segment 0809 was corrected to segment 0409, based on an earlier receiving water assessment that confirmed the presumed high aquatic life use. Corrections in segment descriptions, based on previously-conducted receiving water assessments or use attainability analyses (UAAs) were made for the following water bodies: Spring Branch (segment 0801), Pin Oak Creek (segment 0836), Dry Creek (segment 1009), South Mayde Creek (segment 1014), Garners Bayou (segment 1016), Gilleland Creek (two reaches in segment 1428), Dry Creek (segment 1428), and Wilson Creek (segment 1501).

**Appendix E- Site-specific Toxic Criteria**

Site-specific lead criteria for segment 0404 – Big Cypress Creek were revised to account for the dissolved portion of the metal. The conversion factor for the dissolved portion is calculated with the formula previously approved in Table 1 of the Texas WQS and a site-specific hardness of 40.1 mg/L. Site-specific copper criteria for a portion of Mill Creek, within segment 0506 of the Sabine River Basin, were developed based on a water effect ratio (WER).

Segment	Site Description	Facility	Parameter	Site-Specific Adjustment Factor	Additional Site-Specific Considerations
0404	Big Cypress Creek in Camp, Titus and Morris counties	Lone Star Steel	Lead	Acute Criterion = 38.3µg/L Chronic Criterion = 5.3µg/L	Hardness = 40.1 mg/L [ no change] Criteria listed in "Sitespecific Adjustment Factor" column includes a correction factor of 0.924152
0506	Mill Creek from CR 1106 upstream to the permitted outfall in Van Zandt County	City of Canton	Copper	7.71	

**Appendix F – Site-specific Nutrient Criteria for Selected Reservoirs**

Segment	Reservoir Name	Site ID	Chlorophyll a Criteria (µg/L)
0208	Lake Crook	10137	7.38
0209	Pat Mayse Lake	10138	12.40
0213	Lake Kickapoo	10143	6.13
0217	Lake Kemp	10159	8.83
0223	Greenbelt Lake	10173	5.00 (4.59)
0405	Lake Cypress Springs	10312	17.54
0510	Lake Cherokee	10445	8.25
0603	B. A. Steinhagen Lake	10582	11.67
0610	Sam Rayburn Reservoir	14906	6.22
0613	Lake Tyler	10637	13.38
0613	Lake Tyler East	10638	10.88
0614	Lake Jacksonville	10639	5.60
0811	Bridgeport Reservoir	10970	5.32
0813	Houston County Lake	10973	11.10
0816	Lake Waxahachie	10980	19.77
0817	Navarro Mills Lake	10981	15.07
1207	Possum Kingdom Lake	11865	10.74
1216	Stillhouse Hollow Lake	11894	5.00 (2.07)
1220	Belton Lake	11921	6.38
1228	Lake Pat Cleburne	11974	19.04
1231	Lake Graham	11979	6.07
1233	Hubbard Creek Reservoir	12002	5.61
1234	Lake Cisco	12005	5.00 (4.64)
1235	Lake Stamford	12006	16.85
1240	White River Lake	12027	13.85

Segment	Reservoir Name	Site ID	Chlorophyll a Criteria ( $\mu\text{g/L}$ )
1249	Lake Georgetown	12111	5.00 (3.87)
1403	Lake Austin	12294	5.00 (3.58)
1404	Lake Travis	12302	5.00 (3.66)
1405	Marble Falls Lake	12319	10.48
1406	Lake Lyndon B. Johnson	12324	10.29
1408	Lake Buchanan	12344	9.82
1419	Lake Coleman	12398	6.07
1422	Lake Nasworthy	12418	16.91
(1426)	Oak Creek Reservoir	12180	6.93
1429	Lady Bird Lake (Town Lake)	12476	7.56
1433	O.H. Ivie Reservoir	12511	5.77
1805	Canyon Lake	12597	5.00 (4.11)
1904	Medina Lake	12826	5.00 (2.15)
2116	Choke Canyon Reservoir	13019	12.05

**Appendix G - Site-specific Recreational Uses and Criteria for Unclassified Water Bodies**

Segment	Water body	Use	E. coli criterion (geometric mean)
0810	Big Sandy Creek	SCR 1	630
0810	Garrett Creek	SCR 1	630
0810	Salt Creek	SCR 1	630
1210	Navasota River Above Lake Mexia	SCR 1	630
1212	East Yegua Creek	SCR 1	630
1221	Walnut Creek	SCR 2	1030
1245	Bullhead Bayou	SCR 1	630
1245	Unnamed tributary of Bullhead Bayou	SCR 1	630