



April 2021 Update to the Texas Water Quality Management Plan

Prepared by
Water Quality Division, Office of Water

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Prepared by the
Office of Water
Water Quality Division

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Developed in accordance with Sections 205(j), 208,
and 303 of the Federal Clean Water Act
and applicable regulations thereto.

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Introduction

The Texas Water Quality Management Plan (WQMP) is the product of a wastewater treatment facility (WWTF) planning process developed and updated in accordance with provisions of Sections 205(j), 208, and 303 of the federal Clean Water Act (CWA), as amended. The WQMP is an important part of the State’s program for accomplishing its clean water goals.¹

The Texas Department of Water Resources, a predecessor agency of the Texas Commission on Environmental Quality (TCEQ), prepared the initial WQMP for waste treatment management during the late 1970s. The Clean Water Act mandates that the WQMP be updated as needed to fill information gaps and revise earlier certified and approved plans. Any updates to the plan need involve only the elements of the plan that require modification. The original plan and its subsequent updates are collectively referred to as the “State of Texas Water Quality Management Plan.”

The WQMP is tied to the State’s water quality assessments that identify priority water quality problems. WQMPs are used to direct planning for implementation measures that control and/or prevent water quality problems. Several elements may be contained in the WQMP, such as effluent limitations of wastewater facilities, total maximum daily loads (TMDLs), nonpoint source management controls, identification of designated management agencies, and groundwater and source-water protection planning. Some of these elements may be contained in separate documents, which are prepared independently of the current WQMP update process, but may be referenced as needed to address planning for water quality control measures.

This document, as with previous updates², will become part of the WQMP after completion of the public comment period, certification by TCEQ, and approval by the United States Environmental Protection Agency (EPA).

The materials presented in this document revise only the information specifically addressed in the following sections. Previously certified and approved WQMPs remain in effect.

¹ See the formal definition of a water quality management plan in Title 40 Code of Federal Regulations (CFR) 130.2(k).

² Fiscal Years 1974, 1975, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984/85, 1986/88, 1989, 1990, 1991, 1992, 1993/94, 1995, 1996, 1997/98, 02/1999, 05/1999, 07/1999, 10/1999, 01/2000, 04/2000, 07/2000, 10/2000, 01/2001, 04/2001, 07/2001, 10/2001, 01/2002, 04/2002, 07/2002, 10/2002, 01/2003, 04/2003, 07/2003, 10/2003, 01/2004, 04/2004, 07/2004, 10/2004, 01/2005, 04/2005, 07/2005, 10/2005, 01/2006, 04/2006, 07/2006, 10/2006, 01/2007, 04/2007, 07/2007, 10/2007, 01/2008, 04/2008, 07/2008, 10/2008, 01/2009, 04/2009, 07/2009, 10/2009, 01/2010, 04/2010, 07/2010, 10/2010, 01/2011, 04/2011, 07/2011, 10/2011, BPUB 2011, 01/2012, 04/2012, 07/2012, 10/2012, 01/2013, 04/2013, 07/2013, 10/2013, 01/2014, 04/2014, 07/2014, 10/2014, 01/2015, 04/2015, 07/2015, 10/2015, 01/2016, 04/2016, 07/2016, 10/2016, 01/2017, 04/2017, 07/2017, 10/2017, 01/2018, 04/2018, 07/2018, 10/2018, 01/2019, Terra Verde 2019, 04/2019, 07/2019, 10/2019, 01/2020, 04/2020, 07/2020, 10/2020, and 01/2021.

The draft April 2021 WQMP update addresses the following topics for water quality planning purposes:

1. Projected Effluent Limits Updates
2. Service Area Population for Municipal Wastewater Facilities
3. Designation of Management Agencies for Municipal Wastewater Facilities
4. Total Maximum Daily Load Update

The public comment period for the draft April 2021 WQMP update is from May 7, 2021 through June 8, 2021.

The “Projected Effluent Limit Update” section provides information compiled from February 1, 2021 through April 30, 2021 and is based on water quality standards (WQS). Projected effluent limits may be used for water quality planning purposes in Texas Pollutant Discharge Elimination System (TPDES) permit actions.

The “Service Area Population” and “Designation of Management Agencies” sections for municipal wastewater facilities were developed and evaluated by TCEQ in cooperation with the Texas Water Development Board (TWDB) and regional water quality management planning agencies.

The “Total Maximum Daily Load Update” section provides information on proposed wasteload allocations for new dischargers and revisions to existing TMDLs and was developed by the TCEQ TMDL Program in the Water Quality Planning Division.

Projected Effluent Limit Updates

Table 1 reflects proposed effluent limits for new dischargers and preliminary revisions to original proposed effluent limits for preexisting dischargers. Abbreviations used in the table heading include: MGD-Million Gallons per Day; CBOD₅ – 5 Day Carbonaceous Biochemical Oxygen Demand; NH₃-N – Ammonia-Nitrogen; BOD₅ – 5 Day Biochemical Oxygen Demand; and DO – Dissolved Oxygen.

Effluent flows indicated in Table 1 reflect future needs and do not reflect current permits for these facilities. These revisions may be useful for water quality management planning purposes. The effluent flows and constituent limits indicated in the table have been preliminarily determined to be appropriate to satisfy the stream standards for dissolved oxygen in their respective receiving waters. These flow volumes and effluent sets may be modified at the time of permit action. These limits are based on the WQS effective at the time of the production of this update. The WQS are subject to revision on a triennial basis.

Table 1. Projected Effluent Limit Updates

State Permit Number	Segment Number	EPA ID Number	Permittee Name/ County	Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	NH3-N (mg/L)	NH3-N (lbs/day)	BOD5 (mg/L)	BOD5 (lbs/day)	DO (mg/L)	Months/ Comments
10006-001	1227	TX0047155	City of Cleburne Johnson	7.5	10	625.50	3	187.65			4	Outfalls 001A / 001B. Concurrent discharge is not allowed
			Note TOTAL COMBINED FLOW for Outfalls 001A/001B & 002 shall not exceed 7.5 MGD	0.30	10	25.02	3	7.51			4	Outfall 002
			TOTAL COMBINED FLOW for Outfalls 001A/001B, 002, & 003 shall not exceed 9.5 MGD	6.0	5	250.20	1.1	55.04			6	Outfall 003
10245-001	2311	TX0137693	Town of Pecos City Reeves	3.50	5	145.95	2	58.38			6	
10277-003	1804	TX0103535	City of Seguin Guadalupe	12.00					20	2001.60	2	
10549-002	1813	TX0054623	City of Blanco Blanco	0.45	10	37.53	2	7.51			6	Outfall 003 with effluent polishing pond

State Permit Number	Segment Number	EPA ID Number	Permittee Name/ County	Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	NH3-N (mg/L)	NH3-N (lbs/day)	BOD5 (mg/L)	BOD5 (lbs/day)	DO (mg/L)	Months/ Comments
11179-001	0505	TX0077771	Liberty City Water Supply Corp. Gregg	0.36	10	30.02	3	9.01			4	
11304-001	0612	TX0076503	City of Garrison Nacogdoches	0.12	30	30.02	8	8.01			4	
12376-001	0611	TX0087360	City of New London Rusk	0.1	30	25.02	8	6.67			4	
13725-001	0507	TX0022331	City of Quinlan Hunt	0.30	10	25.02	12	30.02			4	
13791-001	0507	TX0072508	City of Campbell Hunt	0.116	20	19.35	12	11.61			2	
14215-001	0507	TX0123528	Mallard Point WWTP, L.L.C. Hunt	0.02250	10	1.88	12	2.25			4	
14905-003	1014	TX0136611	Harris County MUD #165 Harris	1.99	10	165.97	2	33.19			6	Relocate Outfall 001
14977-001	0809	TX0132691	Rolling V Ranch WCID #1 Wise	1.00	10	83.40	2	16.68			4	
15841-001	1008	TX0139751	South Central Water Co. Waller	0.10	10	8.34	3	2.50			4	

State Permit Number	Segment Number	EPA ID Number	Permittee Name/ County	Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	NH3-N (mg/L)	NH3-N (lbs/day)	BOD5 (mg/L)	BOD5 (lbs/day)	DO (mg/L)	Months/ Comments
15877-001	1008	TX0140236	PBar Interests, L.L.C. Montgomery	0.15	10	12.51	3	3.75			6	
15892-001	2111	TX0140384	Young Life Bandera	0.060	5	2.50	2	1.00			4	
15895-001	1009	TX0140392	Grand Prairie Utilities, L.L.C. Harris	0.99	10	82.57	2	16.51			4	
15897-001	1002	TX0140422	Utilities Investment Co., Inc. Liberty	0.975	10	81.32	2	16.26			6	
15918-001	1808	TX0140554	Walton Texas, L.P. Caldwell	0.42	10	35.03	2	7.01			6	
15921-001	1015	TX0140589	1486 Asset, L.L.C. Montgomery	0.08	10	6.67	3	2.00			6	
15922-001	0229	TX0140597	P Dub Land Holdings, Ltd. Randall	0.50	10	41.70	3	12.51			4	
15927-001	1205	TX0140619	Hood County Granbury MUD No. 1 Hood	1.50	10	125.10	3	37.53			4	

State Permit Number	Segment Number	EPA ID Number	Permittee Name/ County	Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	NH3-N (mg/L)	NH3-N (lbs/day)	BOD5 (mg/L)	BOD5 (lbs/day)	DO (mg/L)	Months/ Comments
15930-001	1209	TX0140635	City of Bryan Brazos	12.0	5	500.40	1.7	170.14			6	
15931-001	1008	TX0140643	Bridgestone MUD Harris	0.60	10	50.04	3	15.01			4	
15932-001	0815	TX0140694	Selinger, Stephen Richard Ellis	0.405	10	33.78	3	10.13			4	
15933-000	1810	TX0140686	Studio Estates, L.L.C. Hays	0.15					10	12.51	4	
15938-001	1302	TX0140716	ILS Properties II GP, L.L.C. Fort Bend	0.48	10	40.03	3	12.01			4	
15939-001	1911	TX0140732	EC Enterprises, L.L.C. Bexar	0.125	10	10.43	3	3.13			4	
15940-001	1810	TX0140741	Continental Homes of Texas, L.P. & Ky-Tex Properties, L.L.C.	0.495	7	28.90	2	8.26			6	
15942-001	1009	TX0140767	South Central Water Co. Harris	0.24	10	20.02	3	6.00			5	

State Permit Number	Segment Number	EPA ID Number	Permittee Name/ County	Flow (MGD)	CBOD5 (mg/L)	CBOD5 (lbs/day)	NH3-N (mg/L)	NH3-N (lbs/day)	BOD5 (mg/L)	BOD5 (lbs/day)	DO (mg/L)	Months/ Comments
15946-001	2456	TX0140821	Serenity RV Resort L.P. Jackson	0.02	10	1.67	3	0.50			4	
15948-001	1434	TX0140856	Continental Homes of Texas, L.P. Travis	0.20	5	8.34	2	3.34			4	
15949-001	1908	TX0140881	Ocean View Property Group, Ltd. Comal	0.38	5	15.85	2	6.34			4	
15950-001	1011	TX0140872	Forestar (USA) Real Estate Group, Inc. Montgomery	0.60	5	25.02	1.2	6.00			6	
15951-001	1011	TX0140864	Townsend Reserve, Ltd. Montgomery	0.35	5	14.60	1.2	3.50			6	
15954-001	0838	TX0140911	The Development Corp. of Tarrant County Tarrant	0.057					20	9.51	2	
15962-001	1911	TX0140996	City of Elmendorf Bexar	0.99	10	82.57	3	24.77			6	
15966-001	1808	TX0141054	Crystal Clear SUD Comal	0.20	5	8.34	2	3.34			2	

Planning Information Summary

The Water Quality Planning Division of TCEQ coordinated with TWDB and regional planning agencies to compile the wastewater facility information in this section. Domestic facility financing decisions under the State Revolving Fund (SRF) loan program must be consistent with the certified and approved WQMP.

The purpose of this section is to present data reflecting facility-planning needs, including previous water quality management plan needs requiring revision. Data are also presented to update other plan information for TWDB's SRF projects. Table 2 contains the updated service area population information. The table is organized in alphabetical order and includes the following 10 categories of information:

1. Planning Area – Area for which facility needs are proposed. The facility planning areas are subject to change during the facility planning process and any such changes will be documented in a later water quality management plan update. All planning areas listed are also designated management agencies (DMAs) unless otherwise noted in the “Comments” column.
2. Service Area – Area that receives the provided wastewater service.
3. Needs – A “T” indicates a need for either initial construction of a WWTF, additional treatment capacity, or the upgrading of a WWTF to meet existing or more stringent effluent requirements. A “C” indicates a need for improvements to, expansion of, rehabilitation of, or the initial construction of a wastewater collection system in the facility planning area. “T/C” indicates a need for both treatment and collection system facilities. More detailed facility planning conducted during a construction project may define additional needs and those needs will be reflected in a future update to the WQMP. A “F” indicates a need for flood mitigation.
4. Needs Year – The year in which the needs were identified for the planning area.
5. Basin Name – The river basin or designated planning area where the entity is located. The seven water quality management planning areas designated by the Governor, each administered by a Council of Governments (COG) or Development Council, are Corpus Christi [Coastal Bend COG (CBCOG)], Killeen-Temple [Central Texas COG (CTCOG)], Texarkana [Ark-Tex COG (ATCOG)], Southeast Texas [South East Texas Regional Planning Council (SETRPC)], Lower Rio Grande Valley [Lower Rio Grande Valley Development Council (LRGVDC)], Dallas-Fort Worth [North Central Texas COG (NCTCOG)] and Houston [Houston-Galveston Area Council (H-GAC)]. Basin names are shown for agencies outside one of these seven designated areas.
6. Segment – The classified stream segment or tributary into which any recommended facility may discharge existing or projected wastewater. In the case of no-discharge facilities, this is the classified stream segment drainage area in which the facilities are located.
7. County – The county in which the facility planning area is located.

8. **Date** – The date the planning information was reviewed by TCEQ.
9. **Comments** – Additional explanation or other information concerning the facility planning area.
10. **Population** – The base year and projected populations for each facility planning area. Population projections presented are consistent with the latest available statewide population projections or represent the most current information obtained from facility planning analyses.

The facility information in this section is intended to be used in the preparation of facility plans and the subsequent design and construction of wastewater facilities. Design capacities of the treatment and collection systems will be based upon the population projections contained in this document, plus any additional needed capacity established for commercial/industrial flows and documented infiltration/inflow volumes (treatment or rehabilitation).

The probable needs shown under the “Needs” heading are preliminary findings; specific needs for an area must be as established in the completed and certified, detailed engineering studies conducted during facility planning under the SRF and other state loan programs.

Specific recommended effluent quality for any wastewater discharges resulting from any of the facilities in this document will be in accordance with the rule in the WQS in effect at the time the permit is issued for a specific facility.

Table 2. Service Area Population Updates

Planning Agency	Service Area	Needs	Needs Year	Basin Name / COG	Segment	County	WQMP Date	Comments	Year	Population
City of Bay City	City limits	T/C	2050	Bays and Estuaries/ H-GAC	2441	Matagorda	2/2/2021	WWTF and collection system improvements	2020	17,681
									2025	18,797
									2030	19,786
									2040	20,827
City of Bowie	City limits	C	2050	Trinity River Basin	0810	Montague	2/2/2021	Collection system rehabilitation	2020	5,828
									2025	5,935
									2030	6,091
									2040	6,139
City of Sweetwater	City limits	T/C	2050	Brazos River Basin	1232	Nolan	2/2/2021	WWTF expansion and WWTF improvements	2020	10,158
									2025	11,186
									2030	12,213
									2040	12,656
Sienna Plantation MUD #1	District boundary	T	2040	Brazos River Basin/ H-GAC	1245	Fort Bend	2/2/2021	WWTF expansion	2020	42,000
									2025	44,500
									2030	47,000
									2040	52,000

Designated Management Agencies

In order to be designated as a management agency for wastewater collection or treatment, an entity must demonstrate the legal, institutional, managerial and financial capability necessary to carry out the entity's responsibilities in accordance with Section 208(c) of the Clean Water Act (see below list of requirements). Before an entity can apply for an SRF loan, it must be recommended for designation as the management agency in the approved WQMP. Designation as a management agency does not require the designated entity to provide wastewater services, but enables it to apply for grants and loans to provide those services. The facilities listed in Table 3 have submitted DMA Resolutions to TCEQ. TCEQ submits this DMA information to EPA for approval as an update to the WQMP.

Section 208 (c) (2) Requirements for Management Agency

- 208(c)(2)(A): to carry out portions of an area-wide waste treatment plan.
- 208(c)(2)(B): to manage waste treatment works.
- 208(c)(2)(C): directly or by contract to design and construct new works.
- 208(c)(2)(D): to accept and utilize grants.
- 208(c)(2)(E): to raise revenues, including assessment of waste treatment charges.
- 208(c)(2)(F): to incur short and long term indebtedness.
- 208(c)(2)(G): to assure community pays proportionate cost.
- 208(c)(2)(H): to refuse to receive waste from non-compliant dischargers.
- 208(c)(2)(I): to accept for treatment industrial wastes.

Table 3. Designated Management Agencies

Planning Agency	Service Area	DMA Needs	DMA Date
City of Bay City	City limits	T/C	7/29/2020
City of Bowie	City limits	C	11/25/2019
City of Sweetwater	City limits	T/C	1/17/2020
Sienna Plantation MUD #1	District boundary	T	1/26/2017

Total Maximum Daily Load Updates

The TMDL Program works to improve water quality in impaired or threatened waters bodies in Texas. The program is authorized by and created to fulfill the requirements of Section 303(d) of the federal Clean Water Act.

The goal of a TMDL is to restore the full use of a water body that has limited quality in relation to one or more of its uses. The TMDL defines an environmental target, and based on that target, TCEQ and stakeholders develop an implementation plan with wasteload allocations for point source dischargers to mitigate human-caused sources of pollution within the watershed and restore full use of the water body.

TMDLs are developed based on intensive data collection and scientific analysis. After adoption by TCEQ, TMDLs are submitted to EPA for review and approval.

The attached appendixes may reflect proposed wasteload allocations for new dischargers and revisions to TMDLs. Updates will be provided in the same units of measure used in the original TMDL document. Also, note that for bacteria TMDLs, loads will typically be expressed as colony-forming units per day (cfu/day). On occasion, other expressions may be used due to different laboratory methods, such as counts or most probable number per day. For the purposes of the TMDL program, these terms are considered to be synonymous.

Appendix I. Updates to Eighteen Total Maximum Daily Loads for Bacteria in Buffalo and Whiteoak Bayous and Tributaries

Segments 1013, 1013A, 1013C, 1014, 1014A, 1014B, 1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D, and 1017E

This appendix provides updates to TMDLs previously submitted through the state's WQMP for: Buffalo and Whiteoak Bayous and Tributaries.

The report *Eighteen Total Maximum Daily Loads for Bacteria in Buffalo and Whiteoak Bayous and Tributaries For Segment Numbers 1013, 1013A, 1013C, 1014, 1014A, 1014B, 1014E, 1014H, 1014K, 1014L, 1014M, 1014N, 1014O, 1017, 1017A, 1017B, 1017D, and 1017E* was adopted by TCEQ on 04/08/09 and approved by EPA on 06/11/09. Upon EPA approval, the TMDLs became part of the state's WQMP.

The Texas WQMP has since been updated 27 times prior to this update for this TMDL. The previous updates have revised the list of individual wasteload allocations (WLAs) in the original TMDL document. Additionally, TCEQ submitted addenda to the original TMDL in the April 2013, April 2015, and January 2021 WQMP updates. These addenda added three new AUs to the original TMDL project.

The purpose of this update is to make the following changes to the TMDL:

update the WLA for one facility that has increased its permitted discharge and update the permittee name (presented in Table I-1)

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for future growth (FG) in one AU. This was originally presented in Table 53 in the original TMDL document. The affected AU in this update is included here as Table I-2.

In Table 54 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for FG within each AU. These overall numbers did not change; Table 54 of the original TMDL remains the same.

Table I-1. Changes to individual WLAs for the Buffalo and Whiteoak Bayous watershed

Updates Table 45, pp. 99-103 in the original TMDL document.

The WLA is expressed in billion MPN/day *E. coli*.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA	TMDL Comments
14905-003	001	TX0136611	1014E_02	HARRIS CO MUD 165	1.99	4.746	Increased discharge and updated name

Table I-2. TMDL summary calculations for one AU in the Buffalo and Whiteoak Bayous watershed

Updates Table 53, pp. 116-117 in the original TMDL document.

All loads expressed as billion MPN/day *E. coli*.

AU	Segment Name	TMDL	WLA WWTF	WLA SW	Load Allocation (LA)	Margin of Safety (MOS)	Upstream Load	FG
1014E_01	Langham Creek	236.83	74.72	145	7.78	0	0	9.33

Appendix II. Updates to One Total Maximum Daily Load for Indicator Bacteria in Carancahua Bay Segment 2456

This appendix provides updates to TMDLs previously submitted through the state’s WQMP for: Carancahua Bay.

The report *One Total Maximum Daily Load for Indicator Bacteria in Carancahua Bay For Segment 2456* was adopted by TCEQ on 08/26/20 and approved by EPA on 10/09/20. Upon EPA approval, the TMDL became part of the state’s WQMP.

It has not had any WQMP updates prior to this one.

The purpose of this update is to make the following change to the TMDL:

- add one new permit (presented in Table II-1)

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for FG in one AU. This was originally presented in Table 16 in the original TMDL document. The affected AU in this update is included here as Table II-2.

In Table 17 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for FG within each AU. These overall numbers did not change; Table 17 of the original TMDL remains the same.

Table II-1. Changes to individual WLAs in the Carancahua Bay watershed

Updates Table 10, p. 35 in the original TMDL document The WLA is expressed in billion cfu/day.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	<i>E. coli</i> WLA	Enterococci WLA	TMDL Comments
15946-001	001	TX0140821	2456_02	SERENITY RV RESORT LP	0.02	0.095	0.026	New permit

Table II-2. TMDL summary calculations for one AU in the Carancahua Bay watershed

Updates Table 16, p. 41 in the original TMDL document. All loads expressed as billion cfu/day Enterococci.

AU	Segment Name	TMDL	WLA _{WWTF}	WLA _{SW}	LA	FG	MOS
2456_02	Carancahua Bay	947.387	0.058	1.440	898.514	0.006	47.369

Appendix III. Updates to Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston Segments 1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010, and 1011

This appendix provides updates to TMDLs previously submitted through the state's WQMP for: Watersheds Upstream of Lake Houston.

The report *Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston For Segment Numbers 1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010, and 1011* was adopted by TCEQ on 04/06/11 and approved by EPA on 06/29/11. Upon EPA approval, the TMDLs became part of the state's WQMP.

The Texas WQMP has since been updated 33 times prior to this update for this TMDL. The previous updates have revised the list of individual WLAs in the original TMDL document. Additionally, TCEQ submitted three addenda to the original TMDL in the October 2013, October 2019, and October 2020 WQMP updates. These addenda added nine new AUs to the original TMDL project.

The purpose of this update is to make the following changes to the TMDL:

- add six new permits (presented in Table III-1)

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for FG in nine AUs. This was originally presented in Table 18 in the original TMDL document. The nine affected AUs in this update are included here as Table III-2.

For AUs 1008_02 and 1009_01, the existing future growth allocations were insufficient to cover the increased flow to the AUs for this update. However, ample loading is available in the WLA_{StormWater} and LA terms. Loading was taken from each of those terms (in a way that maintains the proportions for them as updated in the July 2016 WQMP update) and allotted to future growth for both AUs. This results in no changes to the overall TMDL allocations.

In Table 19 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for FG within each AU. Because loading was moved from the WLA_{StormWater} and LA terms to be used for future growth for AUs 1008_02 and

1009_01, these AUs are updated in Table III-3. These overall numbers for the other AUs did not change, and again this results in no changes to the overall TMDL allocations.

Table III-1. Changes to individual WLAs in the Lake Houston watershed

Updates Table 16, pp. 49-56 in the original TMDL document.

The WLA is expressed in billion MPN/day *E. coli*.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA	TMDL Comments
15877-001	001	TX0140236	1008_02	PBar Interests, LLC	0.15	0.358	New permit
15931-001	001	TX0140643	1008_03	Bridgestone MUD	0.6	1.431	New permit
15895-001	001	TX0140392	1009_01	GRAND PRAIRIE UTILITIES LLC	0.99	2.361	New permit
15942-001	001	TX0140767	1009E_01	South Central Water Company	0.24	0.572	New permit
15950-001	001	TX0140872	1011_02	Forestar (USA) Real Estate Group, Inc.	0.6	1.431	New permit
15951-001	001	TX0140864	1011_02	Townsend Reserve, Ltd	0.35	0.835	New permit

Table III-2. TMDL summary calculations for nine AUs in the Lake Houston watershed

Updates Table 18, p. 61 in the original TMDL document.

All loads expressed as billion MPN/day *E. coli*.

AU	Sampling Location	Segment Name	TMDL	WLA _{WWTF}	WLA _{SW}	LA	MOS	FG
1008_02	11314	Spring Creek	287	10.89	70.65	191.0	14.4	0.06
1008_03	11313	Spring Creek	1420	106.93	322	869	70.9	51.17
1008_04	11312	Spring Creek	1510	142.60	334	902	75.7	55.70
1009_01	11333	Cypress Creek	227	22.92	80.87	111.68	11.4	0.13
1009_02	11331	Cypress Creek	615	106.99	196	270	30.8	11.21
1009_03	11328	Cypress Creek	1340	190.77	415	574	67.0	93.23
1009_04	11324	Cypress Creek	1550	229.95	469	648	77.4	125.65
1009E_01	14159	Little Cypress Creek	91.1	19.16	16.14	48.42	4.56	2.82
1011_02	17746	Peach Creek	422	12.88	34.5	348.5	21.1	5.02

Table III-3. TMDL final calculations

Updates Table 19, p. 62 in the original TMDL document.
 All loads expressed as billion MPN/day *E. coli*.

AU	TMDL	WLA <i>wwtf</i>	WLA <i>sw</i>	LA	MOS
1008_02	287	10.95	70.65	191.0	14.4
1009_01	227	23.05	80.87	111.68	11.4

In addition, Table III-4 below provides an update to Table 11 found in the October 2013 addendum to this TMDL project (Addendum One to Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston: Six Additional Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston For Segments 1008B, 1008C, 1008E, and 1011 Assessment Units 1008B_01, 1008B_02, 1008C_01, 1008C_02, 1008E_01, and 1011_01). Two of the new permits discussed earlier in this update also affect one AU in this addendum.

Table III-5 below provides updates to Table 12 found in the October 2013 addendum to this TMDL project. The addendum added six AUs that were not included in the original TMDL. Five of these (1008B_01, 1008B_02, 1008C_01, 1008C_02, and 1008E_01) were lumped together as contributing loading to 1008_03 and 1008_04 in the original TMDL. The sixth additional AU (1011_01) was treated as an upstream contributing load to 1011_02 in the original TMDL. Two of the new permits (15950-001/ TX0140872 and 15951-001/ TX0140864) affect the loading of 1011_01 as well as the original TMDL AU 1011_02.

In Table 13 of the October 2013 TMDL addendum, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each AU. Therefore, these overall numbers did not change, and Table 13 of the TMDL addendum remains the same.

Table III-4. Changes to individual WLAs in the Lake Houston watershed

Updates Table 11, p. 23 in the TMDL addendum one document.
 The WLA is expressed in billion MPN/day *E. coli*.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA	TMDL Comments
15950-001	001	TX0140872	1011_01	FORESTAR (USA) REAL ESTATE GROUP, INC.	0.6	1.431	New permit
15951-001	001	TX0140864	1011_01	TOWNSEND RESERVE, LTD	0.35	0.835	New permit

Table III-5. TMDL summary calculations for one AU in the Lake Houston watershed

Updates Table 12, p. 26 in the TMDL addendum document.

All loads expressed as billion MPN/day *E. coli*.

AU	Segment Name	TMDL	MOS	WLA _{wwTF}	WLA _{sw}	LA _{AU}	LA _{RES}	LA _{TOTAL}	FG
1011_01	Peach Creek	214.1	10.7	8.56	2.87	186.77	0	186.77	5.20

In addition, Table III-6 below provides an update to Table 8 found in the October 2020 addendum to this TMDL project (Addendum Three to Fifteen Total Maximum Daily Loads for Indicator Bacteria in Watersheds Upstream of Lake Houston: One Total Maximum Daily Load for Indicator Bacteria in Walnut Creek For AU 1008I_01). One of the new permits discussed earlier in this update also affects one AU in this addendum.

Table III-7 below provides updates to Table 9 found in the October 2020 addendum to this TMDL project. The addendum added one AU that was not included in the original TMDL. This AU (1008I_01) was included as an upstream loading to 1008_02 in the original TMDL. One of the new permits (15877-001/ TX0140236) affects the loading of 1008I_01 as well as the original TMDL AU 1008_02.

In Table 10 of the October 2020 TMDL addendum, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within the single AU. Therefore, these overall numbers did not change, and Table 10 of the TMDL addendum remains the same.

Table III-6. Changes to individual WLAs in the Lake Houston watershed

Updates Table 8, p. 16 in the TMDL addendum document.

The WLA is expressed in billion cfu/day *E. coli*.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA	TMDL Comments
15877-001	001	TX0140236	1008I_01	PBAR INTERESTS, LLC	0.15	0.358	New permit

Table III-7. TMDL summary calculations for one AU in the Lake Houston watershedUpdates Table 9, p. 17 in the TMDL addendum document. All loads expressed as billion cfu/day *E. coli*.

AU	Segment Name	TMDL	WLA _{wwTF}	WLA _{sw}	LA	FG	MOS
1008I_01	Walnut Creek	335.982	8.287	40.845	254.706	15.345	16.799

Appendix IV. Updates to Seven Total Maximum Daily Loads for Indicator Bacteria in Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds Segments 1002, 1003, 1004, and 1004D

This appendix provides updates to TMDLs previously submitted through the state's WQMP for: Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds.

The report *Seven Total Maximum Daily Loads for Indicator Bacteria in Lake Houston, East Fork San Jacinto River, West Fork San Jacinto River, and Crystal Creek Watersheds For Segments 1002, 1003, 1004, and 1004D* was adopted by TCEQ on 08/24/16 and approved by EPA on 10/07/16. Upon EPA approval, the TMDLs became part of the state's WQMP.

The Texas WQMP has since been updated seven times prior to this update for this TMDL. The previous updates have revised the list of individual WLAs in the original TMDL document. Additionally, TCEQ submitted an addendum to the original TMDL in the October 2018 WQMP update. This addendum added one new AU to the original TMDL project.

The purpose of this update is to make the following change to the TMDL:

- add one new permit (presented in Table IV-1)

The changes reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for FG in three AUs. This was originally presented in Table 17 in the original TMDL document. The three affected AUs in this update are included here as Table IV-2.

In Table 18 of the original TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for FG within each AU. These overall numbers did not change; Table 18 of the original TMDL remains the same.

Table IV-1. Changes to individual WLAs within the TMDL watersheds

Updates Table 13, pp. 54-55 in the original TMDL document. The WLA is expressed in billion MPN/day *E. coli*.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA	TMDL Comments
15921-001	001	TX0140589	1015_02	1486 ASSET, LLC	0.08	0.1908	New permit

Table IV-2. TMDL summary calculations for three AUs within the TMDL watersheds

Updates Table 17, p. 59 in the original TMDL document. All loads expressed as billion MPN/day *E. coli*.

AU	Segment Name	TMDL	MOS	WLA _{WWTF}	WLA _{SW}	LA _{AU}	LA _{TRIB}	LA _{RES}	LA _{TOTAL}	FG
1002_06	Lake Houston	6,197	106.57	98.37	288.17	1,535.70	3,106.90	958.7	5,601.30	102.59
1004_01	West Fork San Jacinto River	2,779	88.77	95.15	196.81	1,294.21	44.86	958.7	2,297.77	100.50
1004_02	West Fork San Jacinto River	1,141	9.12	44.75	4.04	75.26	0	958.7	1,033.96	49.13

Appendix V. Updates to Two Total Maximum Daily Loads for Indicator Bacteria in the Tidal Segments of the Mission and Aransas Rivers

Segments 2001 and 2003

This appendix provides updates to TMDLs previously submitted through the state’s WQMP for: Mission and Aransas Rivers.

The report *Two Total Maximum Daily Loads for Indicator Bacteria in the Tidal Segments of the Mission and Aransas Rivers for Segments 2001 and 2003* was adopted by TCEQ on 05/25/16 and approved by EPA on 08/09/16. Upon EPA approval, the TMDLs became part of the state’s WQMP.

The Texas WQMP has since been updated one time prior to this update for this TMDL. The previous updates have revised the list of individual WLAs in the original TMDL document. Additionally, TCEQ submitted an addendum to the original TMDL in the October 2017 WQMP update. This addendum added two new AUs to the original TMDL project.

The purpose of this update is to make the following change to the TMDL:

- replace an expired permit with a new permit (presented in Table V-1)

Because there is no change in permitted discharge, there are no changes to the TMDL equations.

Table V-1. Changes to individual WLAs in the Aransas River Tidal watershed

Updates Table 14, p. 35 in the original TMDL document.

State Permit Number	Outfall	EPA Permit Number	AU	Permittee Name	Flow (MGD)	WLA – Enterococci in Billion MPN/day	WLA – <i>E. coli</i> in Billion MPN/day	TMDL Comments
13412-002	001	TX0141003	2003_01	TEXAS DEPARTMENT OF TRANSPORTATION	0.00038	0.0005	0.0017	New permit (Replaces expired permit WQ0013412001/ TX0102920; flow and WLA numbers did not change)

Appendix VI. Update to Three Total Maximum Daily Loads for Chloride, Sulfate, and Total Dissolved Solids in Petronila Creek Above Tidal Segment 2204

This appendix provides an update to TMDLs previously submitted through the state’s WQMP for: Petronila Creek Above Tidal.

The report *Three Total Maximum Daily Loads for Chloride, Sulfate, and Total Dissolved Solids in Petronila Creek Above Tidal For Segment Number 2204* was adopted by TCEQ on 01/10/07 and approved by EPA on 03/14/07. Upon EPA approval, the TMDL became part of the state’s WQMP.

The Texas WQMP has since been updated three times prior to this update for this TMDL. The previous updates have revised the list of individual WLAs in the original TMDL document.

The purpose of this update is to make the following change to the TMDL:

- replace an expired permit with a new permit (presented in Table VI-1)

Because there is no change in permitted discharge, there are no changes to the TMDL equations.

Table VI-1. Changes to individual WLAs for the Petronila Creek Above Tidal watershed

Updates Table 7, p. 28 in the original TMDL document. The WLAs are expressed in lb/day.

State Permit Number	Outfall	EPA Permit Number	Permittee Name	Flow (MGD)	Permit Implementation	WLA	TMDL Comments
14981-002	001	TX0140562	KB FOUNDATION OF TX	0.009	Chloride Limit	107	New permit (Replaces expired permit 14981-001/ TX0132756; flow and WLA numbers did not change)
					Sulfate Limit	36	
					Total Dissolved Solids Limit	285	

Appendix VII. Updates to Three Total Maximum Daily Loads for Bacteria in the San Antonio Area Segments 1910, 1910A, and 1911

This appendix provides updates to TMDLs previously submitted through the state’s WQMP for: Salado Creek, Walzem Creek, and Upper San Antonio River.

The report *Three Total Maximum Daily Loads for Bacteria in the San Antonio Area, For Segment Numbers: 1910 – Salado Creek, 1910A – Walzem Creek, and 1911 – Upper San Antonio River* was adopted by TCEQ on 07/25/07 and approved by EPA on 09/25/07. Upon EPA approval, the TMDLs became part of the state’s WQMP.

The Texas WQMP has since been updated five times prior to this update for this TMDL. The previous updates have revised the list of individual WLAs in the original TMDL document. Additionally, TCEQ submitted addenda to the original TMDL in the April 2016 and October 2019 WQMP updates. These addenda added eight assessment units to the original TMDL project.

The purpose of this update is to make the following changes to the TMDL:

- add two new permits (presented in Table VII-1)

Tables VII-2 and VII-3 provide the updated TMDL equation for the affected segment. The original TMDL used fecal coliform as the primary indicator, along with a procedure for converting fecal coliform to *E. coli*. The criteria ratio of 0.63 ($126/200 = 0.63$) was applied to convert fecal coliform to *E. coli*. The original TMDL did not separate regulated stormwater loadings (WLA-MS4) from WWTF loadings, but that was addressed in the April 2009 WQMP update. Additionally, because this TMDL was developed without a specific allocation for future growth, a small amount was moved proportionately from the WLA-MS4 and LA terms to the WLA-WWTF term to accommodate the new facilities and maintain the overall TMDL allocation.

Table VII-1. Changes to individual WLAs for the Upper San Antonio River watershed

State Permit Number	Outfall	EPA Permit Number	Segment	Permittee Name	Flow (MGD)	WLA – Fecal Coliform 10 ⁶ org/day	WLA – <i>E. coli</i> 10 ⁶ org/day	TMDL Comments
15939-001	001	TX0140732	1911	EC ENTERPRISE, LLC	0.125	473.18	298.10	New permit
15962-001	001	TX0140996	1911	CITY OF ELMENDORF	0.99	3,747.56	2,360.96	New permit

Table VII-2. Summary of Fecal Coliform TMDL for Impaired Reach (10⁶ org/day)

Updates Table 12, p. 30 in the original TMDL document.

Segment	Segment Name	WLA_{WWTF}	WLA_{MS4}	LA	MOS	TMDL
1911	Upper San Antonio River	271,092	17,160,513	10,120,488	1,450,110	29,002,203

Table VII-3. Summary of *E. coli* TMDL for Impaired Reach (10⁶ org/day)

Updates Table 13, p. 30 in the original TMDL document.

Segment	Segment Name	WLA_{WWTF}	WLA_{MS4}	LA	MOS	TMDL
1911	Upper San Antonio River	170,788	10,811,124	6,375,907	913,570	18,271,389