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FINAL

# **January 2016 Update to the Texas Water Quality Management Plan**





# **January 2016 Update to the Texas Water Quality Management Plan**

Prepared by the  
Office of Water  
Water Quality Division

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WQMP updates are also available on the TCEQ web site at:

< [http://www.tceq.texas.gov/permitting/wqmp/WQmanagement\\_updates.html](http://www.tceq.texas.gov/permitting/wqmp/WQmanagement_updates.html) >

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 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.<sup>1</sup>

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. The 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 ground water 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 updates<sup>2</sup>, will become part of the WQMP after completion of its public participation process, certification by the 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 water quality management plans remain in effect.

The January 2016 WQMP update addresses the following topics:

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

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<sup>1</sup> A formal definition for a water quality management plan is found in 40 Code of Federal Regulations (CFR) 130.2(k).

<sup>2</sup> 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, and 10/2015.

The public comment period for the January WQMP update was from February 5, 2016 through March 7, 2016.

The Projected Effluent Limit Update section provides information compiled from November 1, 2015 through January 31, 2016, and is based on water quality standards, and 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 Agency sections for municipal wastewater facilities has been developed and evaluated by the TCEQ in cooperation with the Texas Water Development Board (TWDB) and regional water quality management planning agencies.

The Total Maximum Daily Load (TMDL) Update section provides information on proposed waste load allocations for new dischargers and revisions to existing TMDLs and has been developed by the Water Quality Planning Division, TMDL Program.



## Projected Effluent Limit Updates

Table 1 reflects proposed effluent limits for new dischargers and preliminary revisions to original proposed effluent limits for preexisting dischargers (MGD-Million Gallons per Day, CBOD<sub>5</sub> – 5 Day Carbonaceous Biochemical Oxygen Demand, NH<sub>3</sub>-N – Ammonia-Nitrogen, BOD<sub>5</sub> – 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 water quality standards (WQS) effective at the time of the TCEQ production of this update. 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)	CBOD <sub>5</sub> (mg/L)	CBOD <sub>5</sub> (lbs/day)	NH <sub>3</sub> -N (mg/L)	NH <sub>3</sub> -N (lbs/day)	BOD <sub>5</sub> (mg/L)	BOD <sub>5</sub> (lbs/day)	DO (mg/L)	Months/ Comments
10008-002	1004	TX0022268	City of Conroe Montgomery	10	7	583.80	2	166.80			6	Relocation of outfall
13700-001	1004	TX0090123	Chateau Woods MUD Montgomery	0.40	7	23.35	2	6.67			4	
13847-001	0814	TX0118877	North Texas District Council Assemblies of God Ellis	0.10					20	16.68	3	
14625-001	1016	TX0127981	Generation Park Management District Harris	2.8	10	233.52	3	70.06			4	
15300-001	0818	TX0135801	Smith, William Donald Van Zandt	0.04	10	3.34	3	1.00			4	Revised outfall location and discharge route
15423-001	0605	TX0136743	Sundown Ranch Inc. Van Zandt	0.01					30	2.50	4	
15432-001	1002	TX0136816	Harris County MUD No. 525 Harris	0.390	10	32.53	3	9.76			4	
15434-001	1009	TX0136841	Texas Providence Investments, L.L.C. Harris	0.008	10	0.67	3	0.20			6	
15436-001	1008	TX0136859	Smith, Ronan Bailey Harris	0.015	10	1.25	3	0.38			6	
15440-001	1003	TX0136867	Plum Creek FWSD No. 1 Harris	0.80	10	66.72	3	20.02			4	

## Planning Information Summary

The Water Quality Planning Division of the TCEQ coordinated with the TWDB and regional planning agencies to compile the wastewater facility information in this section (40 CFR 130.6(c) (4), 40 CFR 130.6(c) (5), 40 CFR 130.6(e)). Domestic facility financing decisions under the State Revolving Loan Fund (SRF) program must be consistent with the certified and approved WQMP (40 CFR 130.6(a)).

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 the 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 wastewater treatment plant, additional treatment capacity, or the upgrading of a wastewater treatment plant 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.
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 are Corpus Christi [Coastal Bend Council of Governments (CBCOG)], Killeen-Temple [Central Texas Council of Governments (CTCOG)], Texarkana [Ark-Tex Council of Governments (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 Council of Governments (NCTCOG)] and Houston [Houston-Galveston Area Council (H-GAC)]. Basin names are shown for agencies outside one of these 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 the 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 utilized 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 shall be as established in the completed and certified detailed engineering studies conducted during facility planning under the SRF and other state loan programs.

Specific effluent quality for any wastewater discharges resulting from any of the facilities recommended in this document will be in accordance with the rule on the Texas Surface Water Quality Standards in effect at the time of permit issuance for the 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 Arlington	City of Arlington	C	2016	Trinity River/ NCTCOG	0841	Tarrant	1/4/2016	Collection system improvements.	2020	387,725
									2030	412,746
									2040	421,748
									2050	426,380
City of Glen Rose	City of Glen Rose	T	2016	Brazos River/ NCTCOG	1229	Somervell	1/22/2016	Wastewater treatment plant expansion.	2010	2,672
									2020	3,009
									2030	3,287
									2040	3,469
City of Sadler	City of Sadler	T	2016	Red River	0203	Grayson	1/22/2016	Wastewater treatment plant expansion.	2010	400
									2020	412
									2030	412
									2040	412
City of Sulphur Springs	City of Sulphur Springs	T	2016	Sulphur River/ ATCOG	0303	Hopkins	1/21/2016	Wastewater treatment plant expansion.	2020	16,240
									2030	17,059
									2040	17,806
									2050	18,664
City of Weatherford	City of Weatherford	T/C	2016	Trinity River/ NCTCOG	0831	Parker	1/21/2016	Wastewater treatment plant improvements and a new wastewater reuse system.	2010	25,250
									2020	30,184
									2030	36,157
									2040	42,908
Village of Vinton	Village of Vinton	C	2016	Rio Grande	2314	El Paso	1/21/2016	Design of a centralized wastewater collection system.	2010	3,708
									2020	5,769
									2030	7,578
									2040	9,138

## 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 a state revolving fund 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 the services. The facilities listed in Table 3 have submitted Designated Management Agencies (DMA) resolutions to the TCEQ. The TCEQ submits this DMA information to the 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	DMA Area Comments
City of Arlington	City of Arlington	C	8/6/2013	
City of Glen Rose	City of Glen Rose	T	2/13/2012	
City of Sadler	City of Sadler	T	11/3/2015	
City of Sulphur Springs	City of Sulphur Springs	T	12/1/2015	
City of Weatherford	City of Weatherford	T/C	10/30/1956	
Village of Vinton	Village of Vinton	C	8/22/2014	

## Total Maximum Daily Load Updates

The Total Maximum Daily Load (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, the State develops an implementation plan with waste load allocations for point source dischargers to mitigate anthropogenic (human-caused) sources of pollution within the watershed and restore full use of the water body.

The development of TMDLs is a process of intensive data collection and analysis. After adoption by the TCEQ, TMDLs are submitted to the EPA for review and approval.

The attached appendices may reflect proposed waste load allocations for new dischargers and revisions to TMDLs. To be consistent, updates will be provided in the same units of measure used in the original TMDL document. Also note that for bacteria TMDLs, loads may be expressed in counts for day, organisms per day, colony forming units per day, or similar expressions. These typically reflect different lab methods, but for the purposes of the TMDL program, these terms are considered synonymous.

# Appendix I. Five Total Maximum Daily Loads for Indicator Bacteria in Brays Bayou Above Tidal and Tributaries For Segment Numbers 1007B, 1007C, 1007E, and 1007L

TMDL Updates to the WQMP: Five Total Maximum Daily Loads for Indicator Bacteria in Brays Bayou Above Tidal and Tributaries (Segments 1007B, 1007C, 1007E, and 1007L)

The document *Five Total Maximum Daily Loads for Indicator Bacteria in Brays Bayou Above Tidal and Tributaries For Segment Numbers 1007B, 1007C, 1007E, and 1007L* was adopted by the TCEQ on 09/15/10 and approved by EPA on 09/27/10, and became an update to the state’s WQMP. It has had two subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities. Additionally, one addendum to the original TMDL was submitted through the April 2013 WQMP update. This addendum added three new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- update the percentages of the areas of the subwatersheds of the AUs that are designated as urbanized areas (UAs) in the Decennial Census.

The proportional area of each AU’s subwatershed designated as a UA in the 2000 Decennial Census was used as part of the process to determine the percentage of the stormwater loading to be allocated to regulated sources (as an aggregate allocation for all permitted stormwater sources), referred to as the “WLA<sub>StormWater</sub>” in the original TMDL document. Any remaining percentage was allocated to unregulated sources in the Load Allocation (LA) term. This update adjusts the stormwater allocation based on newer UA information from the 2010 Decennial Census.

The changes reflected in this update resulted in the shifting of allocations between WLA<sub>MS4</sub> and LA terms in three AUs. (An additional AU was affected as it included the sum of the LA terms from upstream AUs. These AUs included the ones being updated here.) These were originally presented in Tables 17 and 18 in the original TMDL document, and the three affected AUs are updated here in Tables 2 and 3.

Table 1 – Percentage of MS4 Jurisdiction in the TMDL Area Watershed (Updates Table 10, p. 22 in the TMDL document.)

Assessment Unit	Stream Name	TPDES Number	Total Area (acres)	Area Under MS4 Permit (Acres)	Percent of AU under MS4 Jurisdiction	TMDL Comments
1007B_02	Brays Bayou Above Tidal	WQ0004685000	4,354	4,354	100%	Subwatershed designated as UA increased from 98% to 100%
1007C_01	Keegans Bayou Above Tidal	WQ0004685000	11,590	11,590	100%	Subwatershed designated as UA increased from 97% to 100%



Table 2 - *E. coli* TMDL Summary Calculations for Brays Bayou Assessment Units (Updates Table 17, p. 41 in the TMDL document.)

Assessment Unit	Sampling Location	Stream Name	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1007B_01	11138	Brays Bayou Above Tidal	2,390	366.7	1839.06	0	120	64.3
1007B_02	15848	Brays Bayou Above Tidal	162	37.6	102.05	0	8.09	14.2
1007C_01	11169	Keegans Bayou Above Tidal	325	87.5	207.01	0	16.3	14.2

Table 3 - Final TMDL Allocations (Updates Table 18, p. 42 in the TMDL document.)

Assessment Unit	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>MS4</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)
1007B_01	2,390	430.9	1839.06	0	120
1007B_02	162	51.9	102.05	0	8.09
1007C_01	325	101.7	207.01	0	16.3

## **Appendix II. 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**

TMDL Updates to the WQMP: 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)

The document *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 the TCEQ on 04/08/09 and approved by EPA on 06/11/09, and became an update to the state’s Water Quality Management Plan (WQMP). Sixteen subsequent WQMP updates prior to this one have updated the list of individual waste load allocations (WLAs) found in the original TMDL document. Additionally, two addenda to the original TMDL were submitted through the April 2013 and April 2015 WQMP updates. These addenda added two new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- correct the flow for one permit.

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 (AFG) in one AU. This was originally presented in Table 13 in Appendix III of the April 2015 WQMP update (*Addendum Two to Eighteen TMDLs for Bacteria in Buffalo and Whiteoak Bayous and Tributaries; One Total Maximum Daily Load for Bacteria in Rolling Fork Creek: For Segment 1017F, Assessment Unit 1017F\_01*). The affected AU is included here as Table 2.

In Table 14 of Appendix III of the April 2015 WQMP update, 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 14 of the appendix remains the same.

Table 1 – Change to Individual Waste Load Allocation (Updates Table 45, pp. 99-103 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
13623-001	001	TX0109126	1017F_01	WEST HARRIS COUNTY MUD 21	0.25	0.596	Corrected flow

Table 2 - *E. coli* TMDL Summary Calculations (Updates Table 33, p. 26 in Appendix III of the April 2015 WQMP update.)

Assessment Unit	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1017F_01	17.4	3.064	12.4	0	0.87	1.066

## **Appendix III. Three Total Maximum Daily Loads for Indicator Bacteria in the Carters Creek Watershed For Segment Numbers 1209C, 1209D, and 1209L**

TMDL Updates to the WQMP: Carters Creek Watershed (Segments 1209C, 1209D, and 1209L)

The document *Three Total Maximum Daily Loads for Indicator Bacteria in the Carters Creek Watershed For Segment Numbers 1209C, 1209D, and 1209L* was adopted by the TCEQ on 08/22/12 and approved by EPA on 09/27/12, and became an update to the state's Water Quality Management Plan (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, presented in Table 1:

- update the percentages of the areas of the subwatersheds of the assessment units (AUs) that are designated as urbanized areas (UAs) in the Decennial Census.

The proportional area of each AU's subwatershed designated as a UA in the 2000 Decennial Census was used as part of the process to determine the percentage of the stormwater loading to be allocated to regulated sources (as an aggregate allocation for all permitted stormwater sources), referred to as the "WLA<sub>SW</sub>" in the original TMDL document. Any remaining percentage was allocated to unregulated sources in the Load Allocation (LA) term. This update adjusts the stormwater allocation based on newer UA information from the 2010 Decennial Census.

The changes reflected in this update resulted in the shifting of allocations between WLA<sub>SW</sub> and LA terms in two AUs. These were originally presented in Tables 20 and 21 in the original TMDL document, and the two affected AUs are updated here in Tables 2 and 3.

Table 1 – Percentage of Stormwater Permit Jurisdiction in the TMDL Area Watershed (Updates Table 9, p. 15 in the TMDL document.)

Segment	Area under jurisdiction of MS4 permits (ha)	Total watershed area (ha)	Percentage of drainage area under jurisdiction of MS4 permits (%)	TMDL Comments
1209L	1,407	1,411	99.7%	Subwatershed designated as UA increased from 98.8% to 99.7%
1209C	7,522	13,240	56.8%	Subwatershed designated as UA increased from 51.0% to 56.8%

Table 2 - *E. coli* TMDL Summary Calculations (Updates Table 20, p. 37 in the TMDL document.)

All loads expressed in billion MPN/day

Segment	Stream Name	TMDL	MOS	WLA <sub>WWTF</sub>	WLA <sub>SW</sub>	LA <sub>SEG</sub>	LA <sub>TL</sub>	Future Growth
1209L	Burton Creek	199.9	8.428	36.25	117.755	0.354	31.31	5.785
1209C	Carters Creek	814.6	30.74	47.36	300.5	228.5	199.9	7.625

Table 3 - Final TMDL Allocations (Updates Table 21, p. 37 in the TMDL document.)

All loads expressed in billion MPN/day

Segment with AU	TMDL	WLA <sub>WWTF</sub>	WLA <sub>SW</sub>	LA	MOS
1209L_01	199.9	42.03	117.755	31.664	8.428
1209C_01	814.6	54.98	300.5	428.4	30.74

## **Appendix IV. Nine Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries: Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E**

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TMDL Updates to the WQMP: Clear Creek and Tributaries  
(Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E)

The document *Nine Total Maximum Daily Loads for Bacteria in Clear Creek and Tributaries: Segments 1101, 1101B, 1101D, 1102, 1102A, 1102B, 1102C, 1102D, and 1102E* was adopted by the TCEQ on 09/10/08 and approved by EPA on 03/06/09, and became an update to the state's Water Quality Management Plan. It has had three subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities. Additionally, an addendum to the original TMDL was submitted through the October 2012 WQMP update. This addendum added four new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- update the WLA for one facility that has increased its permitted discharge.

This AU had insufficient future growth in the original TMDL document to accommodate the proposed increase in discharge. The new individual WLA is based on the facility receiving half the typical bacteria limit for this watershed.

The change reflected in this update also affected the TMDL allocations for the AU and segment. These are presented in Tables 2 and 3.

Table 1 - Changes to Individual Waste Load Allocations (Updates Table 16, p. 47 in the TMDL document.)

State Permit Number / EPA Permit Number	Outfall	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – Fecal Coliform MPN/day	Waste Load Allocation (WLA) – <i>E. coli</i> MPN/day	Waste Load Allocation (WLA) – Enterococci MPN/day	Comments
10134-008 / TX0117501	001	1102_01	CITY OF PEARLAND	7.0	2.65E+10*	1.67E+10**	NA	Increased discharge

\*Calculated using 100 MPN/100 mL rather than 200 MPN/100 mL.

\*\*Calculated using 63 MPN/100 mL rather than 126 MPN/100 mL.

Table 2 - *E. coli* and Fecal Coliform TMDL Calculations for Freshwater Segments (Table 18, p. 50 in original TMDL.)

Segment	Sampling Location	Stream Name	Indicator Bacteria	TMDL (counts/day)	WLA <sub>WWTF</sub> (counts/day)	WLA <sub>StormWater</sub> (counts/day)	LA (counts/day)	MOS (counts/day)	Future Growth (counts/day)
1102	14229	Clear Creek Above Tidal	<i>E. coli</i>	1.32E+11	5.91E+10	5.36E+09	2.49E+09	6.58E+09	5.84E+10

Table 3 – TMDL Allocation Table (Updates Table 21, p. 52 in the original TMDL.)

Segment	Stream Name	Assessment Unit	Indicator Bacteria	TMDL (counts/day)	WLA <sub>WWTF</sub> (counts/day)	WLA <sub>StormWater</sub> (counts/day)	LA (counts/day)	MOS (counts/day)	Future Growth (counts/day)
1102	Clear Creek Above Tidal	1102_01	<i>E. coli</i>	2.18E+10	1.67E+10	1.29E+09	6.01E+08	1.09E+09	2.13E+09

## **Appendix V. Thirteen Total Maximum Daily Loads for Indicator Bacteria in Eastern Houston Watersheds For Segment Numbers 1006F, 1006H, 1007F, 1007G, 1007H, 1007I, 1007K, 1007M, 1007O, and 1007R**

TMDL Updates to the WQMP: Eastern Houston Watersheds (1006F, 1006H, 1007F, 1007G, 1007H, 1007I, 1007K, 1007M, 1007O, and 1007R)

The document *Thirteen Total Maximum Daily Loads for Indicator Bacteria in Eastern Houston Watersheds For Segment Numbers 1006F, 1006H, 1007F, 1007G, 1007H, 1007I, 1007K, 1007M, 1007O, and 1007R* was adopted by the TCEQ on 09/15/10 and approved by EPA on 09/27/10, and became an update to the state's Water Quality Management Plan (WQMP). One subsequent WQMP update prior to this one has updated the list of individual waste load allocations (WLAs) found in the original TMDL document, and another updated the allocation for regulated and unregulated stormwater. Additionally, one addendum to the original TMDL was submitted through the April 2013 WQMP update. This addendum added one new assessment unit (AU) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- add a permit that replaces one that had expired and was removed in an earlier WQMP update.

The change reflected in this update resulted in the shifting of allocations between the sum of the individual WLAs and the allowance for future growth (AFG) in one assessment unit (AU). This was originally presented in Table 17 in the TMDL document, and the affected AU is included here as Table 2.

In Table 18 of the TMDL, the WLAs for permitted facilities are the sum of the individual WLAs and the allowance for future growth within each assessment unit. Therefore, these overall numbers did not change, and Table 18 of the TMDL remains the same.

Table 1 – Change to Individual Waste Load Allocation (Updates Table 15, p. 40 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
14920-001	001	TX0075078	1006H_01	1977 KINDRED II, LP	0.005	0.0119	Replaces expired permit 11923-001 (TX0075078)

Table 2 - *E. coli* TMDL Summary Calculations for Eastern Houston AUs (Updates Table 17, p. 44 in the TMDL document.)

Assessment Unit	Sampling Location	Stream Name	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1006H_01	16663	Spring Gully Above Tidal	34.8	0.048	32.96	0	1.74	0.052

## **Appendix VI. Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries For Segment Numbers 1016, 1016A, 1016B, 1016C, and 1016D**

TMDL Updates to the WQMP: Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries (Segments 1016, 1016A, 1016B, 1016C, and 1016D)

The document *Eight Total Maximum Daily Loads for Indicator Bacteria in Greens Bayou Above Tidal and Tributaries: Segments 1016, 1016A, 1016B, 1016C, and 1016D* was adopted by the TCEQ on 06/02/10 and approved by EPA on 08/12/10, and became an update to the state's Water Quality Management Plan (WQMP). It has had eight subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities.

The purpose of this update is to make the following changes to the TMDL, presented in Table 1:

- update the percentages of the areas of the subwatersheds of the assessment units (AUs) that are designated as urbanized areas (UAs) in the Decennial Census, and
- update the WLA and name for one facility that has increased its permitted discharge.

The proportional area of each AU's subwatershed designated as a UA in the 2000 Decennial Census was used as part of the process to determine the percentage of the stormwater loading to be allocated to regulated sources (as an aggregate allocation for all permitted stormwater sources), referred to as the "WLA<sub>StormWater</sub>" in the original TMDL document. Any remaining percentage was allocated to unregulated sources in the Load Allocation (LA) term. This update adjusts the stormwater allocation based on newer UA information from the 2010 Decennial Census.

The changes reflected in this update resulted in the shifting of allocations between WLA<sub>MS4</sub> and LA terms in three AUs. These were originally presented in Tables 17 and 18 in the original TMDL document, and the three affected AUs are updated here in Tables 3 and 4.

Table 1 – Percentage of MS4 Jurisdiction in the TMDL Area Watershed (Updates Table 10, p. 24 in the TMDL document.)

Assessment Unit	Stream Name	TPDES Number	Total Area (acres)	Area Under MS4 Permit (Acres)	Percent of AU under MS4 Jurisdiction	TMDL Comments
1016_03	Greens Bayou Above Tidal	WQ0004685000	19,075	9,718	51%	Subwatershed designated as UA increased from 36% to 51%
1016A_02	Garners Bayou	WQ0004685000	15,409	15,004	97%	Subwatershed designated as UA increased from 96% to 97%
1016A_03	Garners Bayou	WQ0004685000	6,268	5,395	86%	Subwatershed designated as UA increased from 66% to 86%

Table 2 – Changes to Individual Waste Load Allocations (Updates Table 15, pp. 39-42 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
14625-001	001	TX0127981	1016_03	GENERATION PARK MANAGEMENT DISTRICT	2.8	6.677	Increased discharge and updated name

Table 3 - *E. coli* TMDL Summary Calculations for Greens Bayou Assessment Units (Updates Table 17, p. 46 in the TMDL document.)

Assessment Unit	Sampling Location	Stream Name	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1016_03	11369	Greens Bayou Above Tidal	1,780	200	1,114	167	89.0	210
1016A_02	11125	Garners Bayou	197	21.4	139.38	4.31	9.84	22.1
1016A_03	11125	Garners Bayou	419	58.4	230.3	14.7	21.0	94.6

Table 4 - Final TMDL Allocations (Updates Table 18, p. 44 in the TMDL document.)

Assessment Unit	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>MS4</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)
1016_03	1,780	410	1,114	167	89.0
1016A_02	197	43.5	139.38	4.31	9.84
1016A_03	419	153.0	230.3	14.7	21.0



## **Appendix VII. 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**

TMDL Updates to the WQMP: Watersheds Upstream of Lake Houston (1004E, 1008, 1008H, 1009, 1009C, 1009D, 1009E, 1010, and 1011)

The document *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 the TCEQ on 04/06/11 and approved by EPA on 06/29/11, and became an update to the state's Water Quality Management Plan (WQMP). Sixteen subsequent WQMP updates prior to this one have updated the list of individual waste load allocations (WLAs) found in the original TMDL document. Additionally, an addendum to the original TMDL was submitted through the October 2013 WQMP update. This addendum added six new assessment units (AUs) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- add two new permits.

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 (AFG) in seven AUs. This was originally presented in Table 18 in the original TMDL document, and the seven affected AUs are included here as Table 2.

In Table 19 of the original TMDL, 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 19 of the TMDL remains the same.

Table 1 - Changes to Individual Waste Load Allocations (Updates Table 16, pp. 49-56 in the TMDL document.)

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) – <i>E. coli</i> in Billion MPN/day	TMDL Comments
15434-001	001	TX0136841	1009E_01	TEXAS PROVIDENCE INVESTMENTS, LLC	0.008	0.019	New permit
15436-001	001	TX0136859	1008_02	RONAN BAILEY SMITH	0.015	0.036	New permit

Table 2 - *E. coli* TMDL Summary Calculations for Lake Houston Assessment Units (Updates Table 18, pp. 61 in the TMDL document.)

Assessment Unit	Sampling Location	Stream Name	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1008_02	11314	Spring Creek	287	3.30	31.4	235	14.4	2.90
1008_03	11313	Spring Creek	1420	96.76	141	1050	70.9	61.34
1008_04	11312	Spring Creek	1510	132.43	146	1090	75.7	65.87
1009_02	11331	Cypress Creek	615	82.78	141	325	30.8	35.42
1009_03	11328	Cypress Creek	1340	168.23	299	690	67.0	115.77
1009_04	11324	Cypress Creek	1550	206.82	338	779	77.4	148.78
1009E_01	14159	Little Cypress Creek	91.1	12.30	5.16	59.4	4.56	9.68

## **Appendix VIII. One Total Maximum Daily Load for Dissolved Oxygen in Lake O' the Pines: For Segment Number 0403**

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TMDL Updates to the WQMP: Lake O' the Pines (Segments 0403 and 0404)

The document *One Total Maximum Daily Load for Dissolved Oxygen in Lake O' the Pines: For Segment 0403* was adopted by the TCEQ on 04/12/06 and approved by EPA on 07/07/06, and became an update to the state's Water Quality Management Plan (WQMP). It has had three subsequent WQMP updates prior to this one that provided additional information on individual permittees in the TMDL watershed.

The purpose of this update is to provide clarification regarding phosphorus limits for one permittee, provided in Table 1.

These are no changes to the TMDL equation.

Table 1 - Point Source Dischargers in the Lake O' the Pines Watershed

State Permit Number	Outfall	EPA Permit Number	Segment Number	Permittee Name	Flow (MGD)	Waste Load Allocation (WLA) Total Phosphorus lb/yr	Waste Load Allocation (WLA) Total Phosphorus lb/day	Waste Load Allocation (WLA) Total Phosphorus kg/yr*	Waste Load Allocation (WLA) Total Phosphorus kg/day	TMDL Comments
03017-000	001	TX0062936	0404	Pilgrim's Pride Corporation	3.5	44,100	144.89**	20,000	65.71**	Providing clarification regarding daily load allocations.

\* The TMDL specifies a total WLA of 27,000 kg/yr of total phosphorus from regulated sources. Pilgrim's Pride Corporation has agreed to take responsibility for the full reductions required to meet the WLA. Their WLA of 20,000 kg/yr, added to the 7,000 kg/yr allotted to the seven municipal facilities affected by this TMDL, ensures that the 27,000 kg/yr target set by the TMDL is achieved. See the October 2015 WQMP update for additional details for total phosphorus monitoring requirements for the municipal facilities.

\*\* The daily value (in kg/day and lb/day) for Pilgrim's Pride Corporation is continued from the value approved in the October 2009 WQMP update, and reflected in their permit (as a daily average) issued on May 25, 2012. This allocation allows for flexibility for short-term reporting purposes (which may be affected by factors such as seasonality), but the facility will be held to the 20,000 kg/yr (44,100 lb/yr) limit in their permit (as an annual rolling mass). On an annual basis, this is equivalent to 54.76 kg/day (120.74 lb/day).

## **Appendix IX. Four Total Maximum Daily Loads for Indicator Bacteria in Sims Bayou Above Tidal and Tributary For Segment Numbers 1007D and 1007N**

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TMDL Updates to the WQMP: Four Total Maximum Daily Loads for Indicator Bacteria in Sims Bayou Above Tidal and Tributary (Segments 1007D and 1007N)

The document *Four Total Maximum Daily Loads for Indicator Bacteria in Sims Bayou Above Tidal and Tributary For Segment Numbers 1007D and 1007N* was adopted by the TCEQ on 09/15/10 and approved by EPA on 09/27/10, and became an update to the state’s Water Quality Management Plan (WQMP). It has had two subsequent WQMP updates prior to this one that provided individual Waste Load Allocations (WLAs) for permitted facilities. Additionally, one addendum to the original TMDL was submitted through the April 2013 WQMP update. This addendum added one new assessment unit (AU) to the original TMDL project.

The purpose of this update is to make the following change to the TMDL, presented in Table 1:

- update the percentages of the areas of the subwatersheds of the AUs that are designated as urbanized areas (UAs) in the Decennial Census.

The proportional area of each AU’s subwatershed designated as a UA in the 2000 Decennial Census was used as part of the process to determine the percentage of the stormwater loading to be allocated to regulated sources (as an aggregate allocation for all permitted stormwater sources), referred to as the “WLA<sub>StormWater</sub>” in the original TMDL document. Any remaining percentage was allocated to unregulated sources in the Load Allocation (LA) term. This update adjusts the stormwater allocation based on newer UA information from the 2010 Decennial Census.

The changes reflected in this update resulted in the shifting of allocations between WLA<sub>MS4</sub> and LA terms in two AUs. These were originally presented in Tables 17 and 18 in the original TMDL document, and the two affected AUs are updated here in Tables 2 and 3.

Table 1 – Percentage of MS4 Jurisdiction in the TMDL Area Watershed (Updates Table 10, p. 19 in the TMDL document.)

Assessment Unit	Stream Name	TPDES Number	Total Area (acres)	Area Under MS4 Permit (Acres)	Percent of AU under MS4 Jurisdiction	TMDL Comments
1007D_02	Sims Bayou Above Tidal	WQ0004685000	13,690	13,690	100%	Subwatershed designated as UA increased from 94% to 100%
1007D_03	Sims Bayou Above Tidal	WQ0004685000	11,090	10,903	98%	Subwatershed designated as UA increased from 96% to 98%

Table 2 - *E. coli* TMDL Summary Calculations for Sims Bayou Assessment Units (Updates Table 17, p. 37 in the TMDL document.)

Assessment Unit	Sampling Location	Stream Name	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>StormWater</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)	Future Growth (Billion MPN/day)
1007D_02	11133	Sims Bayou Above Tidal	527	98.2	368.2	0	26.3	34.3
1007D_03	11132	Sims Bayou Above Tidal	777	114.9	574.8	11.7	38.9	36.7

Table 3 - Final TMDL Allocations (Updates Table 18, p. 38 in the TMDL document.)

Assessment Unit	TMDL (Billion MPN/day)	WLA <sub>WWTF</sub> (Billion MPN/day)	WLA <sub>MS4</sub> (Billion MPN/day)	LA (Billion MPN/day)	MOS (Billion MPN/day)
1007D_02	527	132.5	368.2	0	26.3
1007D_03	777	151.6	574.8	11.7	38.9