

Response to Public Comment
TMDL for Bacteria in Upper Oyster Creek (Segment 1245)
April 11, 2007

Tracking Number	Date Received	Affiliation of Commenter	Summary of Request or Comment	Summary of TCEQ Action or Explanation
001_01	3/15/07	Quail Valley Utility District (Oral and Written)	The commenter noted that they fully support the endeavor to find and solve the bacterial problem in this stream segment. There is often an assumption that because bacteria levels are high, that human sources (sewage) are the main contributing factor. This TMDL has shown that there are other sources that contribute to the high bacterial counts in Oyster Creek (Segment 1245). The commenter referred to the bacterial source tracking data as "Very enlightening."	The support of the TMDL is appreciated. No changes have been made to the TMDL based on this comment.
001_02			Although the TMDL was extended 2 years for further study and ribotyping bacteria, the Stakeholder process was circumvented in August 2006 and the Stakeholder Group had no input to the final Technical Support Document that this TMDL came from. The final document was produced without Stakeholder consideration.	<p>The Upper Oyster Creek TMDL project was extended one year beyond what had originally been planned, although that was to allow an extra year of sampling for the dissolved oxygen portion of the project, being covered under a different TMDL document.</p> <p>The load allocations and other relevant points of the bacteria TMDL document were discussed at a stakeholder meeting on December 14, 2006, three months before the comment period began. Stakeholder input has always been welcomed, both at meetings and at any other time. On February 7, 2007, stakeholders were sent notice of the comment period for the TMDL document well before it started. Finally, the TMDL document presented for public comments such as these is not the final document, but a draft which may be changed as needed based on comments. No changes have been made to the TMDL based on this comment.</p>
001_03			PROBLEM DEFINITION: The Bacteria ribotyping indicates that only 14.2% of the bacteria in the segment come from human Sources. Even the sample station with the highest human contribution is 21.4%, leaving 78.6% to other contributors like birds, wildlife, livestock, pets and unknown sources. Most of the wet weather influences appear to DECREASE the Human % contribution.	Bacteria source tracking (BST) results indicate that the sources of bacteria in Upper Oyster Creek include humans, livestock, pets, and wildlife. There were no statistically significant differences in sources observed between runoff and non-runoff conditions. No changes have been made to the TMDL based on this comment.
001_04			The commenter noted that the draft TMDL document listed 93%	Any improper discharges of household sewage need to be

		<p>of housing units in 1990 were connected to municipal sewer systems, 6% to septic tanks and 1,400 houses were not connected to anything but a ditch. Whose jurisdiction are these unconnected and septic tank discharges in? Aren't there requirements at the State and County Level that monitor and enforce this type of activity?</p>	<p>investigated and correctional actions enforced by TCEQ Region 12 staff in incorporated areas and Fort Bend County authorized agents in unincorporated areas within the Upper Oyster Creek watershed. The comment about 1,400 houses not being connected to anything but a ditch seems to be a result of confusing wording in the draft TMDL, which stated that in 1990 "approximately 1,400 housing units in the watershed were reportedly not connected to a sanitary sewer system." That number actually included the number of households using septic tanks. The wording has been clarified in the final TMDL document.</p>
001_05		<p>END POINT IDENTIFICATION: The TMDL assumes that the Permitted Wastewater Treatment Plant (WWTP) Dischargers are discharging at the maximum level of 394 cfu/100ml, at the current and permitted flows. This is not the case. Most Dischargers operate at levels WAY BELOW that. The Missouri City Steepbank Plant for example monitors Fecal Coliform daily. This is required because the Plant utilizes Ultra Violet (UV) Light for disinfection, instead of chlorination and dechlorination. Missouri City's fecal coliform geometric mean (average) has been less than 10 cfu/100 ml for the last 5 years. Calculating a reduction from 467 to 126 cfu/100 ml in Reach 1 is not going to change the % contribution from Human Sources if the % of Human Sources is not coming from a Wastewater Plant Discharge. The commenter points out that effluent monitoring was not conducted, so we don't know how much of the human component was from WWTP Discharges.</p>	<p>The TMDL document does not assume that the permitted wastewater treatment facilities are discharging at the level used in the allocation process (the single sample criterion of 394 cfu/100 mL). This is addressed in the document with the statement, "However, based on the requirements in permits for disinfection and the limited bacteria data available for effluents from permitted facilities in the Upper Oyster Creek watershed, these treatment facilities are routinely expected to discharge well below the allowable single sample criterion." Using the single sample criterion in the allocation process is a practical means to prevent overly (and needlessly) restrictive limits on the permitted facilities, while also ensuring treatment and disinfection that will control bacteria within the established water quality standards. Also, federal rules require TMDL allocations for wastewater treatment facilities (WWTFs) be calculated at full permitted flow. No changes have been made to the TMDL based on this comment.</p>
001_06		<p>The TMDL for Bacteria refers to Upper Oyster Creek failing to meet the Aquatic Life use criteria due to depressed levels of dissolved oxygen. The commenter says that if Oyster Creek Segment 1245 did not have flow from the Gulf Coast Water Authority, from the WWTP dischargers, and from rainfall events, this segment would be an intermittent stream and might not meet the aquatic life use on its own.</p>	<p>This TMDL is only addressing the contact recreation impairment. The aquatic life use (dissolved oxygen) impairment will be addressed in a separate TMDL project in its development stage. No changes have been made to the TMDL based on this comment.</p>
001_07		<p>SOURCE ANALYSES: One minor correction on Table 2: Missouri City utilizes UV disinfection and not Chlorination/ Dechlorination.</p>	<p>The change has been made as suggested.</p>
001_08		<p>The commenter recognizes the potential for sanitary sewer overflows and WWTP excursions, but thinks the compliance</p>	<p>The TCEQ affirms that sanitary sewer overflows are not allowable discharges and not an allowable loading to the</p>

			history for the permittees during the TMDL study would indicate a very high percentage of compliance - not 100%, but very close. The SSOs and WWTP excursions are generally minimal and are resolved very quickly due to media attention, public scrutiny, TCEQ enforcement, etc... if violations persist.	impaired water. No changes have been made to the TMDL based on this comment.
001_09			POLLUTANT LOAD ALLOCATION: Continuous waste load allocation at the maximum bacteria criterion, distorts the ability to achieve the goal. If the WWTP dischargers are not the contributing factor to the human contribution, there will be no change in the bacteria levels in Oyster Creek Segment 1245.	The TMDL document does not assume that the permitted wastewater treatment facilities are discharging at the level used in the allocation process (the single sample criterion of 394 cfu/100 mL). Using the single sample criterion in the allocation process is a practical means to prevent overly (and needlessly) restrictive limits on the permitted facilities, while also ensuring treatment and disinfection that will control bacteria within the established water quality standards. The waste load allocation also includes storm water in permitted areas. No changes have been made to the TMDL based on this comment.
001_10			The recommendation that the Wastewater Treatment Plant Dischargers monitor for fecal coliform or e-coli bacteria, does not recommend a frequency. If the frequency is daily for the 14 dischargers that are not currently required to monitor bacteria, the annual cost for the 14 could range between \$150,000 and \$200,000 per year. Quail Valley UD would prefer to spend their portion of that money finding and solving the bacteria problem than spending it on lab analyses that will not have any effect on the bacteria levels	Past evidence indicates that wastewater treatment facilities discharging into Upper Oyster Creek are properly run and maintained, and that the effluent contains very little bacteria almost all of the time. However, the potential for problems exists, and some kind of monitoring plan for effluent from the facilities would provide assurance that increased bacteria concentrations in effluent are not occurring, and allow for the quick detection and correction of any problems that arise. Options could include TCEQ inspections and monitoring of WWTF effluent, routine monitoring by WWTFs (at a frequency and duration to be determined during the implementation phase of the project, if deemed necessary), routine examination of self-reporting data for chlorine residuals, or others. The wording has been clarified in the final TMDL document to allow flexibility during implementation.
002_01	3/15/07	Texas Dept. of Transportation – Houston District (Via PBS&J) (Oral)	Refinement of Water Quality Standard Should Precede TMDL Development: The current water quality standard for contact recreation has been inappropriately applied to all fresh waters and was adopted by the TCEQ based on federal studies and guidance. The current standard has not been studied or refined by Texas researchers and has been adopted based on federal studies conducted in Oklahoma and Pennsylvania with different climate and aquatic conditions than those found in Texas. In addition, the current standard does not distinguish between swimming, boating,	This TMDL is based on current water quality standards approved for the state of Texas. In the event that new standards are determined to be more appropriate for Upper Oyster Creek, the TMDL would be revised for those standards. To date, no requests for revisions to the current water quality standards for segment 1245 have been received during the publicly held triennial standards revisions or public meetings held when wastewater permits were drafted for this segment. Texas water quality standards

		<p>wading, hiking, and other recreational uses near, on, or in water. The current standard also does not recognize physical constraints or other dangers that would preclude certain recreational uses, such as shallow depths, high velocity flows, or pumped flows.</p> <p>The commenter said that this situation has led to inappropriate impairment listings and inappropriate TMDL development efforts throughout the state, and for the Upper Oyster Creek watershed. A requirement to achieve a full body contact swimming use... is not an appropriate or beneficial outcome. Legal requirements will then compel the TCEQ's permit writers to alter discharge permit conditions to achieve these load reductions. It is likely that all of the small municipal separate storm sewer system (MS4) operators will be unable to obtain permit coverage under the general permit for small MS4's and will be required to obtain an individual permit. TxDOT and other local stakeholders could then be compelled to design, install, and operate substantial treatment systems to achieve excessive bacteria load reductions in storm water runoff.</p> <p>The Houston District believes that the public and private expenditures necessary to comply with pollutant discharge permit requirements revised due to TMDL implementation will cause widespread economic harm and are an inefficient use of public and private funds, particularly because the expenditures are seeking to achieve an inappropriate water quality standard.</p>	<p>are in a period of review, and are currently going through public workgroups. A formal public hearing for comment on the standards is anticipated in the spring of 2008. No changes have been made to the TMDL based on this comment.</p>
002_02		<p>TMDL Document Should Formally Reference Pending Implementation Plan: The commenter stated that TCEQ TMDL staff have promised stakeholders that while the TMDL will be adopted with extremely low waste load allocations for storm water and wastewater discharges, point source permits will not be reopened and modified to conform to the adopted waste load allocation until after an Implementation Plan has been developed and approved. That approach also does not conform to state and federal law. Stakeholders are justifiably fearful of this type of promise, because under state and federal law, point source permits must be consistent with TMDL waste load allocations once a TMDL is formally adopted. The Houston District believes that revisions to water quality standards should precede TMDL development, however, if that is not possible, the TMDL should contain legally enforceable provisions which defer point source</p>	<p>The Implementation Plan is explicitly referenced in the TMDL document. According to federal law, TMDLs must be written to meet the water quality standards and cannot be phased to address only a portion of the load. However, a new section was added to the TMDL document about "Implementation Processes to Address the TMDL." This additional language discusses how the Implementation Plan will work to achieve the pollutant loading goals of the TMDL, including the potential for a phased implementation approach.</p>

		<p>permit modifications until adoption of the TMDL implementation plan, developed in concert with all watershed stakeholders.</p> <p>As a Last Resort, Adopt a Phased TMDL: If refinement of the applicable water quality standard is not possible prior to TMDL development, and if linking the TMDL to the pending implementation plan is not possible, then TxDOT strongly urges the TCEQ to adopt a "Phased TMDL" as defined in the August 2, 2006 EPA memorandum from Benita Best-Wong to all EPA regions. A "Phased TMDL" is defined in the memorandum as follows:</p> <p><i>The use of the term "phased TMDLs" should be limited to TMDLs that for scheduling reasons need to be established despite significant data uncertainty and where the state expects that the loading capacity and allocation scheme will be revised... Phased TMDLs may...occur when a revision of the applicable standard is underway and will necessitate development of a second phase, revised TMDL to comply with the new standard.</i></p>	
002_03		<p><u>1. Executive Summary</u></p> <p>a. Add Discussion of Applicable Water Quality Standard: TCEQ should add a clear discussion of the applicable water quality standard (both use and criterion) to the summary. It is important that the readers and decision makers understand that the designated use is <i>contact recreation</i>, which involves full head immersion swimming.</p> <p>b. Add Discussion of Basis of Water Quality Criterion: The commenter states again that the water quality standards used were derived from studies in areas that don't match Houston's climate, the riparian nature of Oyster Creek, and the actual recreational uses of Upper Oyster Creek. A discussion of the technical basis of the criterion should be added to more completely inform decision-makers and stakeholders, who must fund implementation actions.</p>	<p>a. The TMDL document makes several references to both the contact recreation use and both criteria (single sample and geometric mean). It also references the Texas Surface Water Quality Standards, where much more detailed aspects of the use and criteria are discussed. According to the definition in the Standards, contact recreation may include full head immersion swimming, as well wading by children and any other activity that may involve "a significant risk of ingestion of water." No changes have been made to the TMDL based on this comment.</p> <p>b. See the response to Comment 002_01. No changes have been made to the TMDL based on this comment.</p>
002_04		<p><u>2. Source Analysis</u></p> <p>a. Make Distinctions Among Storm Water Point Source Loads: The document does not note the various types of storm water point source discharges that could contribute bacteria loads...including certain industrial facilities, construction sites, and small, medium, and large municipal separate storm sewer systems, which are regulated point sources and should be included in this discussion. TxDOT believes that developing waste load</p>	<p>For the purpose of this TMDL, the Waste Load Allocation (WLA) was separated into "continuous" (WWTF) and "non-continuous" (MS4) components. The TCEQ recognizes that the storm water component can include various sources including storm water discharges from construction sites and discharges associated with certain industrial activity. Further refinement of these loads will be attempted during the implementation phase of the project. We look forward</p>

			allocations (WLA's) by storm water discharge categories will lead to more cost-effective implementation actions. This approach is also consistent with EPA's policy on the subject.	to additional data that TxDOT can provide to assist in this effort. The wording has been clarified in the final TMDL document.
002_05			<p><u>3. Pollutant Load Allocation- Load Duration Curves</u></p> <p>a. Regrowth Not Considered: The load-duration curve method does not include any regrowth factors, yet literature, and studies conducted by Harris County suggest that in subtropical climates regrowth might explain a large fraction of the observed concentration of bacterial indicators. Regrowth, die-off, and the lack of settling are all complex processes that are not well quantified in the system. There is some evidence to suggest that bacteria regrowth is particularly important in wastewater discharges, even those that are disinfected.</p>	The upper allocation reach of Upper Oyster Creek receives very little effluent from wastewater treatment facilities. Therefore, the impact of regrowth in that section is expected to be minimal if present. The lower allocation reach of Upper Oyster Creek is effluent dominated. However, the low number of bacteria exceedances at low flows could indicate that regrowth is not a significant factor here either. Also, this portion of Upper Oyster Creek (in Fort Bend County) is quite different from the bayous in Harris County where the commenter references evidence of regrowth as a significant issue. The water in this part of Upper Oyster Creek is not as turbid nor as deep as those bayous, allowing much greater sunlight penetration, an important factor in bacteria die-off. In any case, the issue of regrowth may need to be explored more fully as it relates specifically to Upper Oyster Creek during the implementation phase of the project. No changes have been made to the TMDL based on this comment.
002_06			<p><u>4. Pollutant Load Allocation- Waste Load Allocation (Continuous)</u></p> <p>a. Some Dry Weather Loads Are More Appropriately Handled in the Load Allocation: Storm water permitting regulations define certain "allowable non-storm water discharges," such as lawn watering, foot drains with uncontaminated groundwater, and similar discharges. Recent studies by Harris County have illustrated that many of these allowable non-storm water discharges actually contain elevated concentrations of indicator bacteria. Elevated levels appear because natural bacteria are added to sheet flows and storm water flows across and through lawns and other areas with natural soils. Because MS4 operators cannot regulate or control bacteria loads in these "allowable non-storm water discharges" these bacteria loads should be considered part of the formal TMDL Load Allocation (LA) along with the other uncontrollable nonpoint sources. The District urges the TCEQ to explicitly quantify a bacteria load allocation to allowable stormwater discharges. Some fraction of the defined continuous WLA should be removed and placed in the LA.</p>	The commission is aware that a permittee is afforded the opportunity to identify allowable discharges. However, it is not clear to which specific TPDES permit authorizing discharges to the Upper Oyster Creek watershed the commenter is referring. While there are environmentally adapted bacteria in soils that mimic fecal coliform under standard testing and culturing, such has not been shown to be the case for <i>E. coli</i> . Therefore, if <i>E. coli</i> are in the runoff from lawn watering it is unlikely that the cause is natural bacteria that mimic <i>E. coli</i> , but rather they are a result of a fecal sources from dogs, birds, etc. In the event that the commenter is referring to bacteria from such sources as dogs, birds, etc. as "natural," even if they are carried into the MS4 by an "allowable non-storm water discharge," they are still being discharged to Upper Oyster Creek via a permitted facility, and are therefore best considered a point source. Additionally, elements of what an MS4 identifies in its SWMP include numerous strategies for reducing the pollutant loads discharged from the systems. No changes have been made to the TMDL based on this comment.

002_07			<p>5. Pollutant Load Allocation- Waste Load Allocation (Non-Continuous)</p> <p>a. Make Distinctions Among Storm water Point Source Loads:</p> <p>The commenter states again that the document does not note the various types of storm water point source discharges that could contribute bacteria loads. TxDOT believes that developing waste load allocations (WLA's) by storm water discharge categories will lead to more cost effective implementation actions. This approach is also consistent with EPA's policy on the subject. TxDOT suggests assigning WLA's to the following categories of storm water dischargers: (1) transportation MS4s, (2) county, MUD, and drainage district MS4s, and (3) city MS4s. This could be accomplished by analysis of contributing drainage areas and land surface imperviousness.</p>	See the response to Comment 002_04. The wording has been clarified in the final TMDL document.
002_08			<p>6. Pollutant Load Allocation- Load Allocation</p> <p>a. Dry Weather Sediment-Bound Loads Under-Estimated:</p> <p>Consideration of the resuspension of sediment-bound bacteria during all flow regimes should be added. Bacteria in sediment will leave and enter the water column in a very dynamic manner and the significant sediment loads under these conditions should be considered. TxDOT believes that resuspension should be considered a part of the load allocation.</p>	The TCEQ is aware of studies that have indicated regrowth of <i>E. coli</i> in stream sediments. However, some researchers in the field question the validity and/or applicability of these studies and how they were designed. Resuspended <i>E. coli</i> loads, therefore, may originate from sources directly attributable to the WLA and LA source categories, even though the timing of delivery of these loadings at any Upper Oyster Creek location may be delayed as a result of the processes of settling and subsequent resuspension. The TCEQ acknowledges the complexities inherent in strict quantification of sources and their allocated loadings. To address these complexities, an implicit margin of safety is included in the allocation process and the aforementioned phased or adaptive nature of the Implementation Plan is embraced by the TCEQ. No changes have been made to the TMDL based on this comment
003_01	3/26/07	City of Missouri City - Public Works (Written)	The commenter questions the appropriateness the water quality standard for total immersion forms of recreation in Segment 1245, particularly in the lower reach which is characterized by generally low water levels in which total immersion would be impossible. The lower reach has also been dredged and widened from its natural state in order to improve storm water drainage from the surrounding suburban area. We support TxDOT's effort to refine the recreational use designations by dividing different types of recreational uses into degrees of immersion.	See the response to Comment 002_01. No changes have been made to the TMDL based on this comment.
003_02			The commenter points out that the draft TMDL notes that, according to the 1990 U.S. Census, 93% of homes in the	See the response to Comment 001_04. The TMDL document has clarified the status of the 1,400 housing units

			watershed were connected to a sanitary sewer system, 6% used septic tanks. The report states that a total of approximately 1,400 housing units in the watershed were not connected to a sanitary sewer system. You have clarified by phone that these 1,400 housing units include both homes connected to septic tanks and homes with no septic tank or sanitary sewer connection. The highest concentrations of septic tanks were in the Four Comers and Fifth Street areas.	and sewage management practices at those residences.
003_03			The TCEQ draft Bacteria TMDL proposes to focus the solution on the 14.2% Human/Sewage component. Within that 14.2%, the only specific recommendation focuses on the 15 domestic wastewater treatment plants operating under permits issued by TCEQ. The draft TMDL recommends that "bacteria monitoring of wastewater effluent be added to all existing and future point sources to supplement disinfection requirements." The draft TMDL is "based on the full allowable discharge for each facility, not the recent discharges, to account for increased loadings that may occur if or when facilities discharge at their maximum allowable levels." This maximum allowed level under their discharge permits is 394 cfu/100 mL. (cfu = colony forming units; mL = milliliters). Of course we would prefer to keep this upper level allowance in our wastewater discharge permit to keep within permit limits when an infrequent higher bacteria discharge event occurs.	It is not the intent of this TMDL to focus bacteria control measures solely on the human/sewage component. All contributors to the bacteria impairment will be considered during the development of the implementation plan, including human sources, livestock, pets, etc. The "continuous" portion of the waste load allocation (not the entire TMDL) is based on the full allowable discharge of the WWTFs. The TMDL also includes allocations to the "non-continuous" waste load allocation (largely storm water in the urbanized area) and load allocation (from all nonpoint sources). No changes have been made to the TMDL based on this comment.
003_04			<p>The commenter states that the study notes of the 15 permitted wastewater treatment plants, only Missouri City's Steep Bank Flat Bank Regional Plant is required to do daily E. coli monitoring under its existing permit. Daily monitoring is required for this plant because it uses UV radiation rather than chlorine for effluent disinfection. The 7-day geometric mean (average) found in testing at the Steep Bank Plant has been less than 10 cfu/100 mL, or well below the maximum 394 cfu, for the last 5 years. Thus, this plant is not a significant source of E. coli bacteria.</p> <p>Unfortunately, effluent sampling at the 15 plants was not included in the TMDL Study, so the portion of the Human/Sewage 14.2% which came from the 15 wastewater treatment plants is not known. But given the known contribution by the City's Steep Bank Plant, we believe that the other permitted plants are responsible for a similar low contribution.</p>	See the response to Comment 001_10. The wording has been clarified in the final TMDL document.

			The commenter then states that the draft TMDL recommendation to add bacteria monitoring of wastewater effluent does not include a recommended frequency of testing, but if done daily at all plants would add approximately \$10,000 to \$14,000 per year to the operating cost of each plant, or a total of approximately \$150,000 to \$200,000 per year.	
003_05			The commenter states that TIAER's study and the local Stakeholder Group input process were cut short prematurely to complete processing of the proposed TMDL on an earlier schedule. We recommend that the proposed daily bacteria monitoring of permitted wastewater treatment plants not be adopted and that the study and Stakeholder Group process be allowed to continue to a thorough completion and meaningful conclusion.	See the responses to Comments 001_02 and 001_10. The wording regarding proposed monitoring has been clarified in the final TMDL document.
004_01	3/26/07	Harris Co. Public Infrastructure Dept. (Written)	<p>Harris County and HCFCD believe that water quality standards should be refined prior to the adoption of any bacteria TMDL in our region: The commenter questions the applicability of the current water quality standard for contact recreation as it is being applied to Upper Oyster Creek (the language was much the same as the comment by the Texas Dept. of Transportation – Houston District on p. 3).</p> <p>They also state standard does not take into account the likely differences in human health risk between exposure to <i>E. coli</i> from human versus non-human sources; there is a lack of evidence that <i>E. coli</i> from non-human sources is a human health risk. This unfortunate situation has inevitably led to inappropriate impairment listings and inappropriate TMDL development efforts throughout the state.</p>	<p>See the response to Comment 002_01.</p> <p>Regarding the human health risk comment, <i>E. coli</i> are generally not a human health risk whether from human or non-human sources. They are indicator bacteria that are generally nonpathogenic.</p> <p>No changes have been made to the TMDL based on these comments.</p>
004_02			As a Last Resort, Adopt a Phased TMDL: If refinement of the applicable water quality standard is not possible prior to TMDL development, then Harris County and HCFCD strongly urge the TCEQ to adopt a "Phased TMDL" The commenter continued with the same language used by the Texas Dept. of Transportation – Houston District on p. 5	See the response to Comment 002_02. The wording has been clarified in the final TMDL document.
004_03			Make Distinctions Among Storm water Point Source Loads: The document does not note the various types of storm water point source discharges that could contribute bacteria loads. It would be helpful if the storm water discharges were further differentiated into their sources, as Harris County research has determined that even discharges allowable under the Clean Water Act, and thus	See the responses to Comments 002_04 and 002_06. Additionally, elements of what an MS4 identifies in its SWMP include numerous strategies for reducing the pollutant loads discharged from the systems. The wording has been clarified in the final TMDL document.

			most NPDES MS4 permits, may contain levels of bacteria that exceed the stream standard. Examples of these types of discharges include air conditioner condensate, freshwater leaks (that have traveled through local soils), and irrigation flows. Consideration and allowance of these types of discharges should be addressed.	
004_04			Discussion of Bacteria as a Living Community: Harris County studies have shown bacterial regrowth to be a large concern within the streams and bayous of Harris County. Harris County strongly recommends that the impact of the bacterial life cycle, including regrowth, be taken into account in local bacteria TMDL studies. Harris County and HCFCD further support the discussion of co-pollutants that likely impact bacteria regrowth rates in the TMDL analysis, such as nutrients. We believe that the state cannot reasonably address bacteria without addressing nutrients, which is the source of food for bacteria. Nutrient levels in White Oak Bayou are generally over 100-times what is expected in unimpaired streams. Probably a similar situation exists for Oyster Creek.	See the response to Comment 002_05. Additionally , allocation reach 2 does not have high nutrient concentrations as found in effluent dominated streams in Houston, hence regrowth potential is minimal. No changes have been made to the TMDL based on this comment.
004_05			Adoption of a TMDL with Realistic Implementation Goals: The commenter estimates that this TMDL proposed will require an 85% and 95% reduction of bacteria from storm sewers from Reach 1 and Reach 2, respectively. Non-structural BMPs such as public education and others found in the Phase II MS4 Permit will not come close to reducing bacteria this much (these reduction levels are higher than a typical wastewater treatment plant). <i>In adopting a TMDL with this reduction rate allocation to storm water, the TCEQ is setting up the regulated community for failure - especially the MS4 operators.</i> The sad part is that cleaning up storm sewer discharges will not likely fix the problem and Oyster Creek will likely still not be able to meet the stream standard.	The sampling conducted for this project showed that the bacteria problem was most severe following rainfall events. However, all contributors to the bacteria impairment will be considered during the development of the implementation plan, including human sources, livestock, pets, etc. It is expected that we will work with MS4 operators (among others) within the watershed to devise workable, useful means of decreasing the load of bacteria to Upper Oyster Creek so that applicable water quality standards will eventually be met. No changes have been made to the TMDL based on this comment.
005_01	3/26/07	Fort Bend Co. Municipal District #25 (Via CDM) (Written)	Endpoint Identification The commenter states that use attainability analysis is necessary to identify the appropriate endpoint for the TMDL and implementation plan development. The commenter states that current contact recreation standards are not applicable to Texas and do not take into account background conditions that would be expected in Upper Oyster Creek.	See the response to Comment 002_01. No changes have been made to the TMDL based on this comment.
005_02			Source of Bacteria in Upper Oyster Creek Watershed The DISTRICT believes that the TMDL has not satisfactorily evaluated all sources of bacteria in the Upper Oyster Creek watershed. Sources that required additional investigation include	See the response to Comment 002_05. No changes have been made to the TMDL based on this comment.

			<p>regrowth, and resuspension of bacteria from sediment. Bacteria load estimates should be developed for each source to indicate the magnitude of their contributions. These loads estimates should then be compared with the bacteria source tracking results to confirm that all sources have been incorporated into the TMDL and their distribution is appropriate.</p>	
005_03			<p>Linkage analysis The US EPA requires a relationship between the source and indicator bacteria. Plots of bacteria concentrations provided in the TMDL do not meet this requirement. The load duration curve should be discussed in this section as that is the basis for linking bacteria sources and water quality targets.</p>	In response to this comment, a discussion of the load duration curve approach has been added to the “Linkage Analysis” section of the TMDL.
005_04			<p>Pollutant Load Allocation The percent reductions for the TMDL are overestimated because bacteria concentrations that meet the standard were excluded from the analysis. Excluding those data biases the regression line high, excludes many of the lower flow samples and overpredicts the loading in the creek. Figures 13, 14, and 15 in the TMDL document are examples where the regression line would be much lower if all points were included in the regression. Requiring reductions that are excessive will have serious, negative financial repercussions and load reductions should be adjusted to address this flaw.</p>	Historical data and data collected specifically for this project demonstrate that Upper Oyster Creek is not meeting its water quality standards for contact recreation due to excessive levels of indicator bacteria (<i>E. coli</i>). For the single sample criterion used as the primary endpoint for this TMDL (394 CFU/100 mL), up to 25 percent of the samples are allowed to exceed the criterion. For the six stations used in determining the load allocations, anywhere from one-third to two-thirds of the samples exceeded the criterion during the sampling conducted for the project. Thus, while all stations were failing to meet the standards, many individual data points are below the criterion. Including all points in the regression line could mathematically result in the line falling below the standard, erroneously implying that no reduction is necessary when the data showed that standards were not being met. Using only the points exceeding the standard in the regression analysis is an acceptable, conservative means of determining a reduction percentage to meet the single sample criterion, and is one of the main ways of providing an implicit margin of safety. Since the state’s water quality standards also require the geometric mean criterion for contact recreation to be met (126 cfu/100 mL), all of the data points collected for the project were also used to calculate the geometric means for each allocation reach. The required 73 percent reduction would allow Upper Oyster Creek to meet this criterion as well. No changes have been made to the TMDL based on this comment.
005_05			<p>In addition, load reductions should not be applied evenly across all sources. A breakdown of all sources in the watershed should be</p>	The load duration curve approach provides a means to estimate the amount of bacteria reduction required and

			<p>provided and load reductions for each source identified. Known sources that can be addressed by existing regulatory means should be allocated larger load reductions than other sources.</p>	<p>provides a broad indication of the origin of the bacteria, i.e., point sources and nonpoint sources. Further refinement to identify more precise source categories and bacteria reduction strategies will be conducted during the implementation phase of this project, considering factors such as this type of input. No changes have been made to the TMDL based on this comment.</p>
005_06			<p>Finally, the DISTRICT supports the development of a phased TMDL. Sources that affect water quality when contact recreation would likely occur, such as septic systems, should be prioritized and addressed in the early phases. Other sources, such as wastewater treatment plants which have been shown to have minimal impact on water quality or and stormwater sources which are wet weather sources, should be addressed only when all other sources have been addressed.</p>	<p>See the response to Comment 002_02. The wording has been clarified in the final TMDL document.</p>
005_07			<p>Wastewater treatment plants improve water quality Wastewater treatment plants are not a major source of bacteria to Upper Oyster Creek. Well operated plants have been shown in other Houston TMDL studies (i.e., Buffalo and Whiteoak Bayou watersheds) to operate properly when chlorine residuals are maintained. In fact, research performed in that TMDL has shown the potential for WWTPs to improve water quality by providing clean, disinfected water that dilutes the polluted surface water. Upper Oyster Creek would be an intermittent stream if not for wastewater and additional flow from the Brazos River. The DISTRICT believes that human sources identified in bacteria source tracking should be identified and are related to the malfunctioning septic systems found in non-sewered areas.</p>	<p>The TCEQ agrees that wastewater treatment facilities that are operating properly are not likely to be a significant source of bacteria, and the TMDL document acknowledges that. WWTF sampling conducted as part of the Buffalo and Whiteoak Bayou TMDL project indicated a non-compliance rate of approximately 2%-7% under varying conditions. The flow in Allocation Reach 1 is dominated by treated effluent from wastewater treatment facilities. However, the flow in Allocation Reach 2 is dominated by water pumped into the segment from the Brazos River by the Gulf Coast Water Authority. Finally, identifying and correcting malfunctioning septic systems is expected to be a high priority during the implementation phase of this project. No changes have been made to the TMDL based on these comments.</p>
005_08			<p>Wastewater Treatment Plant (WWTP) Flows Another of the concerns for the DISTRICT is the failure of the TMDL to adequately address growth as required by 40 CFR§130.2(h). According to the Fort Bend County website, Fort Bend County is fourth fastest growing county in the nation among counties over 200,000 in population and is anticipated to have the strongest economic growth in the nation between 2000 and 2030. Population projections indicate over one-half million people will be added to the county in the next 25 years. To support this population influx, construction of new infrastructure and expansion of existing infrastructure is required. Although the</p>	<p>The TMDL is based on currently permitted conditions. Additionally, the “Future Growth” section of the TMDL document states: “Therefore, the effluent of any additional permitted facilities should not result in nonsupport of the contact recreation use. At worst, additional discharges should result in a neutral impact on Segment 1245 by increasing streamflow while adding bacteria at concentrations meeting protective criteria. However, because of disinfection requirements in their permits, these facilities are typically expected to discharge at concentrations less than the bacteria criteria.” In order to</p>

			TMDL acknowledges Fort Bend's rapid growth, the wasteload allocation (WLA) in its current form does not account for future population increases. The TCEQ should anticipate these increases in the TMDL rather than react to the growth as it happens. There is no question that the county will continue to grow, and the TMDL should account for this growth explicitly.	specifically allocate loading as part of an allowance for future growth in the TMDL equation, some loading would have to be taken away from either the waste load allocation or load allocation components. No changes have been made to the TMDL based on these comments.
005_09			<p>Bacteria Monitoring Requirements</p> <p>Bacteria monitoring on a regular basis is not necessary and would be onerous for WWTP operators and staff. Bacterial analyses have strict time limitations and require specialized handling. (i.e., sterile handling techniques and equipment). In addition, the analytical methodology is expensive to implement and requires expertise and training to obtain reliable and accurate results. Obtaining bacteria samples and performing the analysis would therefore place an undue and unnecessary financial burden on WWTP operators and staff. Sampling concluded in support of the Buffalo and Whiteoak Bayou TMDLs demonstrated that exceedances of the single sample standard occur very rarely, at most 7 to 10% of the time. Plants exceeding the surface water standard were found to have very low chlorine residuals. Therefore, monitoring effluent for bacteria is not necessary to demonstrate compliance.</p> <p>The DISTIRCT would much prefer to use financial resources to make effective, visible improvements rather than waste money testing for an unnecessary constituent.</p>	See the response to Comment 001_10. The wording has been clarified in the final TMDL document.
006_01	3/26/07	City of Sugar Land (Written)	<p>Water Quality Standard Assumptions</p> <p>The commenter questions the applicability of the current water quality standard for contact recreation as it is being applied to Upper Oyster Creek. They state that Oyster Creek is rarely used for contact recreation as defined by the TCEQ and that recreational uses of Oyster Creek fit much more closely to the definition of non-contact recreation. Oyster Creek like many other bodies of water in Texas are being inappropriately classified for contact recreation and thus being held standards much more stringent than necessary. They recommend that the water quality standards be refined to reflect bodies of water, such as Oyster Creek, that do not truly meet the definition of contact use recreation.</p>	See the response to Comment 002_01. No changes have been made to the TMDL based on this comment.
006_02			<p>Wastewater Treatment Plant Contributions</p> <p>The City's current wastewater treatment plant (WWTP) contributions come from its South WWTP, whose permitted maximum discharge is 10 MGD. While there is room for</p>	See the response to Comment 005_08. No changes have been made to the TMDL based on this comment.

			<p>growth at this plant, as the City is not currently discharging at its maximum, the "ultimate" contributions the study is based on do not take into account future growth. Given the rapid expansion of the City and Fort Bend County, the waste load allocation (WLA) should project its loads based on ultimate development or at the very least, consider the actual impact of future WWTP flows. The commenter also points out that well-operated plants have a net positive benefit on the concentration of <i>E. coli</i> in the streams by adding greater volumes of water with lower concentrations of contaminant.</p>	
006_03			<p>Additionally, the emphasis on restrictions on WWTP loading does not recognize sufficiently that the primary source fecal <i>E. coli</i> identified in the study is not human, but rather animal/avian.</p>	<p>It is not the intent of this TMDL to focus bacteria control measures solely on the human/sewage component. All controllable contributors to the bacteria impairment will be considered during the development of the implementation plan, including human sources, livestock, pets, etc. No changes have been made to the TMDL based on this comment.</p>
006_04			<p>The commenter also states that bacteria monitoring requirements for a WWTP should be removed if it can show that its discharge is already less than the ambient level.</p>	<p>See the response to Comment 001_10. The wording has been clarified in the final TMDL document.</p>
006_05			<p>Reuse Projects As Fort Bend County gears up to meet the dual water supply challenges of significant growth and equally significant regulatory reductions in groundwater withdrawals, effluent reuse projects represent a viable alternative to both groundwater and dwindling surface water supplies. One of the more feasible alternatives is the use of Bed and banks permits to transport effluent from WWTP discharges to downstream users. The standards and model do not effectively account for the beneficial nature of such projects, in both the reduction of surface water withdrawals and the wiser use of finite resources. Again, as the quality and concentrations characteristic of the effluent are of better quality than the ambient stream, the addition of reuse flows represents a net positive benefit. However, as the model and standards don't adequately account for their growing use, the TMDLs represent a potential disincentive for this type of project, even though the projects represent a "win/win" scenario for both environmental and human interests.</p>	<p>The load duration curve approach provides a means to estimate the amount of bacteria reduction required and provides a broad indication of the origin of the bacteria, i.e., point sources and nonpoint sources. Detailed water use strategies such as this can be considered during the implementation phase of the project, particularly if such alternatives have been approved and more certain. No changes have been made to the TMDL based on this comment.</p>
006_06			<p>It is anticipated that within 2007, the TCEQ will adopt the proposed Phase II MS4 general permit. When issued, General Permit TXR040000 will authorize the City of Sugar Land to</p>	<p>A Phase II MS4 city must submit a notice of intent to be authorized under a general permit or as an alternative could seek an individual permit by the deadline required under the</p>

			<p>discharge storm water to surface waters of the state (i.e. Oyster Creek). The Phase II general permit is an unfunded mandate requiring the City to develop and implement a storm water management program. With the adoption of these TMDL standards, the City may be required to implement additional costly programs in addition to the Phase II general permit requirements. As this impact is being driven by standards and a model we do not feel are accurate, the potential unfunded mandate these TMDLs represent seem far out of balance with the City's actual contributions, if any, to the impairment of Oyster Creek.</p>	<p>TPDES program and federal Clean Water Act. It is expected that we will work with any MS4 owners/operators within the watershed to devise workable, useful strategies that would decreasing the load and impact of bacteria discharged from urban storm sewers so that applicable water quality standards will eventually be met. MS4 permits do not have numerical requirements, but rather have best management practices (BMPs). The TCEQ is hopeful that the TMDL and implementation plan can help the city in putting BMPs where they are needed most, effectively being more cost efficient. No changes have been made to the TMDL based on this comment.</p>
006_07			<p>Economic Impact With the potential for monitoring of WWTP effluent that rarely if ever comes near the set standard, the difficulties caused for potential reuse projects, the lack of adequate consideration for future growth and the potential impact on MS4 permits, the TMDLs represent an appreciable negative economic impact on the City.</p>	<p>See the response to Comment 001_10. The wording has been clarified in the final TMDL document.</p> <p>The other portions of this comment were discussed in other responses (006_02 and 006_06) to this commenter.</p>
007_01	3/26/07	Texas Dept. of Transportation – Environmental Affairs Division (Written)	<p>The TCEQ TMDL analysis has determined that a 73% reduction in bacteria loading is required for the segment to meet the designated use of contact recreation. TCEQ makes a point in the "Source Analysis" section of the TMDL to state that municipal separate storm sewer systems (MS4s) are point source discharges subject to regulation under the TPDES permit program. Although bacteria concentrations in storm water runoff are typically elevated, it is important to recognize that TxDOT MS4s are not "point source origins" of bacteria. TxDOT storm water systems were designed prior to TPDES permit requirements, and were constructed to intercept runoff, divert floodwater away from transportation facilities, and to provide traffic safety. As such, these systems capture runoff from a myriad of different areas such as commercial, retail, farm, and suburban neighborhoods. These MS4s simply convey storm water that may additionally transport pollutants from regulated point sources and from area unregulated non-point sources. Dry weather screenings, spill response, and other best management practices are utilized by TxDOT to ensure these MS4 discharges meet TPDES permit requirements. Where TxDOT allows point source discharges to enter the MS4, we verify that the discharge is authorized under TPDES, and rely on the permit requirements to ensure the discharge is protective of</p>	<p>The TCEQ recognizes that many sources that are traditionally thought of as nonpoint in origin contribute pollutants to storm water. However, for regulatory purposes, storm water regulated by a permit (such as the pending Phase II MS4 permit) falls under the definition of a point source, and is allocated as such in this TMDL. It is expected that we will work with any MS4 owners/operators within the watershed to devise workable, useful strategies that would decreasing the load and impact of bacteria discharged from urban and highway right of way storm sewers so that applicable water quality standards will eventually be met. No changes have been made to the TMDL based on this comment.</p>

		water quality.	
007_02		TxDOT supports the recommendation on Page 37 that bacteria monitoring of wastewater effluent be added to point source discharges of domestic wastewater to supplement disinfection requirements.	See the response to Comment 001_10. The wording has been clarified in the final TMDL document.
007_03		On Page 30 of the TMDL document, under the Allocation Process discussion, it is stated that the TMDL load allocation for Segment 1245 was performed to "account for the pending general permit for small Separate Storm Sewer Systems." It is important to formally recognize that these are not new and proposed discharges of storm water. Instead, these are ongoing discharges to Segment 1245 that will soon be required to meet TPDES storm water management plan requirements to reduce or eliminate pollutants in storm water runoff.	Additional wording to make this point has been added to the document.
007_04		In the allocation process for the TMDL, TCEQ has effectively parceled dischargers into three groups: municipal wastewater treatment plants (identified as "WLA"); discharges from Phase II MS4s (identified as "WLA non-continuous"); and all non-regulated, nonpoint sources (identified as "LA"). The waste load allocation for the WLA group was subtracted from the allowable TMDL, and the remaining bacteria loading was identified as available to the remaining groups. A simple ratio of percent area for urbanized areas versus non-urbanized areas within the drainage area was used to divide the remaining allocation. This methodology is based on "occupied area" and does not account for any differences in the potential pollutant contribution from these two very different groups. It may even be argued that there is no need to separate the remaining allocation between these two groups. TPDES Phase II MS4 permits may be developed to include any management plan requirements specific to the control of bacteria, and education and voluntary measures may be identified and used to control bacteria from non-regulated sources, as is described in the "Implementation and Reasonable Assurances" section.	As the commenter indicates, this TMDL made use of simple area ratios to divide allowable load remaining after the calculation of the continuous waste load allocation into the non-continuous waste load allocation and the load allocation. The TCEQ recognizes that further refinement of these allocations will need to take place during the implementation phase of the project. It is expected that we will work with any MS4 owners/operators within the watershed to devise workable, useful strategies that would decrease the load and impact of bacteria discharged from urban and highway right of way storm sewers so that applicable water quality standards will eventually be met. No changes have been made to the TMDL based on this comment.
007_05		Storm water runoff is generally recognized as containing significant levels of bacteria. We support efforts, such as Bacteria Source Tracking, to identify the largest sources of bacteria to this watershed, in order that they may either be controlled through regulatory requirements, or through voluntary controls and commitments at their source. TxDOT has proposed an agency-sponsored study, "Bacteria Levels in Roadway Runoff" to be	The TCEQ agrees that additional research into specific sources of bacteria through Bacterial Source Tracking or other means could be valuable in identifying specific sources of bacteria in Upper Oyster Creek and other water bodies around the state. The TCEQ encourages the TxDOT to collaborate with us on developing this study so that the results of the study can be utilized in implementation

			conducted in fiscal year 2008. TxDOT believes that research is needed to determine concentrations and discharges of indicator bacteria from roadways, to better understand bacteria contributions, potential sources, and controls.	planning. No changes have been made to the TMDL based on this comment.
007_06			If the proposed TMDL is approved, TxDOT requests to be a participant stakeholder in the development of an implementation plan for the TMDL.	Under the established ground rules of the Upper Oyster Creek Steering Committee, new members “must be recommended by an existing committee member and approved by consensus of existing members.” As the steering committee does not have the maximum allowable number of participants, it is anticipated that TxDOT can request and receive inclusion in the steering committee by its current members. TxDOT is welcome to attend all steering committee meetings, and the request to be added to the group could be undertaken at any one of them. No changes have been made to the TMDL based on this comment.