

Bacteria Reduction Measures  
Proposed Harris County & Harris County Flood Control District Plan

General	Wastewater Treatment Plants			Research		Monitoring Program	Storm Water (excluding Sanitary Sewer Overflows)					Sanitary Sewer Overflows		On-Site Sewage Facilities (OSSF's)	Other Wildlife & Animals	Increased Awareness	
	Regionalization of Wastewater	WWTP Design	Increased Field Inspections	Research to Better Define the Problem	Research to Help Find Ways to Solve the Problem	Long Term Monitoring	Household Hazardous Waste Collection	Development Programs	Illicit Discharges	Fertilizer Usage	Other Storm Water Related Public Education	Fats, Oils, Greases	Other Illicit Discharges	(permitted since 1978)	N/A	"If you care about the bayous, you may be willing to increase your personal accountability to protect them"	
<b>Program Objective</b>	Work with local community to develop a priority rating system for the various stream segments to target initial corrective measures.	Increase bacteria removal efficiencies of existing and new wastewater treatment plants.	Ensure more targeted and unannounced inspections are completed, thereby increasing compliance.	Provide research to help define problem.	Provide research to help solve problem.	Provide a monitoring program that tracks current stream quality and can track changes in water quality.	Provide a convenient and cost effective method of collecting HHW to encourage proper disposal.	Provide proper construction activity programs and existing development programs to reduce bacteria runoff.	Find and eliminate illicit discharges. Decrease bacterial loading from exhibited animals.	Categorize what fertilizers present problems are related to bacteria and restrict their sale and use if applicable.	Educate the public on what they can do to improve water quality.	Prevent fats, oils and greases from entering waste stream which causes collection system stoppages, overflows, and treatment problems.	Find and eliminate illicit discharges.	Minimize pollutant loadings entering area waterways from onsite sewage facilities.	Determine and understand the impact of wildlife and animals on streams.	Make public aware of bayou benefits and effect the message above.	
<b>EPA Bacteria Reduction Plan Outline Element Addressed:</b>	I- Source Assessment & Prioritization	IV.E- Decentralized wastewater systems (e.g - septic systems)	II- Dry Weather Screenings; III- Wet Weather Screenings	II- Dry Weather Screenings; III- Wet Weather Screenings	N/A	N/A	V. Monitoring & Assessment	IV.C- Public Education & Involvement	IV.A- Construction Discharges; IV.B- Post Construction Discharges	II- Dry Weather Screenings; III- Wet Weather Screenings; IV.D- Cosmetic Washing Sources (including areas with exhibited animals)	IV.C- Public Education & Public Involvement	IV.C- Public Education & Public Involvement, IV.D- Cosmetic Washing Sources (power washing)	III. Wet Weather Screening; IV.C- Public Education & Public Involvement	II- Dry Weather Screenings; III. Wet Weather Screening	IV.E- Decentralized Wastewater Systems	N/A	IV.C- Public Education & Public Involvement
<b>Existing Program Overview</b>	County using project ranking system to award certain grant funds	TCEQ program	Performing limited field inspections.	Performing field investigations; NSF studies; TWRI studies; in-house studies; monitoring literature; serving on research committees	Conducting BMP evaluations on basins and public education's effects; monitoring literature; serving on research committees	Coordinating with Clean Rivers Program; performing representative monitoring of storm water outfalls per the JTF MS4 permit	Currently holding 4-5 full day events per year and 5-7 half day HazMobile events per year; participating in voucher program with Montgomery Co. & City of Houston permanent facilities; holding educational program in local schools	Executing plan review, permitting, and inspections program. Using County and JTF developed manuals, as well as County regulations to implement program. Coordinating enforcement activity	Funding a 6 person staff at Environmental Public Health to perform representative monitoring and illicit discharge elimination programs. They include both wet and dry weather screening programs, including a commercial inspection program.	Holding "Yard-Wise" classes. Messaging about fertilizer usage is included in some general public education campaign pieces.	Executing large scale public education campaign related to multiple pollution sources for our bayous, but not specifically focused on bacteria alone.	Environmental Public Health performing a wet weather screening program per existing JTF MS4 permit requirements, but it has not been effective. Expected to change in new permit. Dry weather screenings performed with other illicit discharge detectors. HCFCO calling in SSO's to Environmental Public Health.	Effective on-site sewage facility team that is doing permitting, inspections and enforcement for on-site sewage facilities through the Permit Office / Planning & Operations seeking out grant funds and agreements to bring failing OSSF's online.	N/A	One facet of our public education program includes trying to encourage people to care for the bayou systems.		
<b>1-Year Goal*</b>	Form a Watershed Protection (WP) Stakeholders Group. Use that group to help prioritize watersheds as we phase in programs. Begin implementing a bacteria reduction plan.	Create a regionalization policy for County-owned and County funded WWTP's	Establish WWTP Design Stakeholder Committee	Request additional County staff to allow for increased proactive unannounced and reactive inspections of WWTP's based on existing permit limits.	Work with local universities to perform studies to better understand the sources of bacteria, bacteria life cycles (including regrowth), and better methods to test for bacteria. Participate in multiple TCEQ committees on research, TMDL's, and Water Quality Standard Criteria. Begin research that defines what the co-pollutants are to bacteria in our area (e.g. - sediment, nutrients).	Evaluate various best management practices to determine their effectiveness at bacteria removal or removal of other co-pollutants, including looking at alternate WWTP disinfection technologies, targeted public education campaigns, and wet bottom basins. Continue to educate ourselves on new products becoming commercially available that target bacteria and set up continuing education classes to learn about them. Encourage appropriate product's usage in our area.	Begin developing protocols to determine what a long term monitoring program should look like, including how to show effectiveness of program both via ambient monitoring and targeted source monitoring. Select White Oak and Buffalo Bayou as first streams to be monitored.	Continue existing program. Continue design of permanent facility. Move the acceptance of fertilizers for disposal higher on the list of accepted items for event flyers. Incorporate messaging on the importance of the bayou system, picking up after your pets, and other things that individuals can do to protect the bayous into the existing school programs.	Continue existing program. Continue working with the engineering community and other members of the JTF on updating the JTF criteria for permanent storm water quality features on new and redeveloped sites, focusing on improved long term operations and pollutant removal (emphasizing bacteria) reduction).	Continue existing program. Form exhibited animal stakeholder group. Inventory exhibited animal locations.	Begin to conduct a study of other locations with restrictions on fertilizer usage and quantify benefits.	Continue messaging that focuses on sources of bacteria entering our waterways through stormwater conduits (such as picking up after your pet and proper lawn care). Continue study to determine impact of public education on pollution coming from a single family residential subdivision.	Develop a general public education campaign on fats, oils, & greases and personal responsibility. Request a County position be created to perform "environmental inspections" on restaurants under existing restaurant codes. Begin inspections once position is filled.	Continue program.	Revise County rules & regulations, or petition the TCEQ to revise their rules to require all new on-site sewage facilities in impaired waters to utilize secondary treated methods that will produce an effluent meeting discharge limits of BOD of 10 mg/l and nitrogen of 10 mg/l. Revise County rules and regulations, or begin working with the State of Texas to revise their rules. To require all new on-site sewage facilities to participate in County's electronic monitoring/ management program.	Form stakeholder committee to determine impact of wildlife on streams. Increase public awareness of our bayou system with a goal of making people care more. Activities could include: additional outreach programs such as school tours, general education to connect the public with the bayous, and/or creating a map of places to recreate along the bayou system.	
<b>2-Year Goal*</b>	With Stakeholder input, develop a local stream use prioritization schedule and standards for drinking water source, primary contact recreation, secondary non-contact recreation, non-contact recreation. Use results to help prioritize mitigation measures.	Create stake holders group to develop Harris County Regionalization Plan that will apply to water and wastewater facilities located within Unincorporated Harris County.	Implement WWTP bacteria disinfection testing program. Continue other WWTP design research as necessary. Communicate research results to affected community.	Once staffed, begin program to increase proactive inspections of WWTP violations, and determine whether WWTPs are built and perform as designed under TCEQ rules.	Continue working with local universities and firms to help define the problem. Continue to advocate sensible water quality standards. Get a better handle on bacteria regrowth and determine if any of the plans laid out here need to be modified per what is learned.	As most studies require multiple years to have enough rainfalls to collect enough samples, continue previous year's studies, as well as continue to look at ways to "build a better mousetrap" and evaluate the effectiveness of those measures. Continue learning about new products and spreading the word through continuing education.	Begin monitoring first watersheds. Select additional watersheds and begin developing and implementing long term monitoring plan for them too. Target: Add 3 additional watersheds to total 5.	Continue existing program. Continue design of permanent facility.	Determine if post-construction guidance manual update is needed. If so, being working on manual update. Incentivize riparian corridor preservation in developing areas.	Continue existing program. Develop exhibited animal regulations, if deemed necessary by Stakeholders group.	Establish stakeholders group of fertilizers manufacturers, suppliers, users and government entities to discuss regulation of fertilizer use.	Work to increase communications with both public and landscaping companies on YardWise program topics. Develop a green infrastructure brochure for things people can do on their own lot- tree plantings, etc. Create a brochure or other targeted education piece related to proper method of power washing that will minimize pollutants entering our waterways.	Form a fat, oil & grease task group. Develop draft grease trap sizing and servicing requirements. Begin looking over fats, oils & greases transporter logs for irregularities	Continue existing program.	Continue program, modify as necessary.	Formulate wildlife's impact. Continue program.	
<b>3-Year Goal*</b>	Develop GIS stream segment map capable of tracking existing bacterial levels and goal levels. Start stream segment classification.	If deemed necessary by the Stakeholders, seek legislative authority or TCEQ approval for the regionalization program.	If determined to be required, seek legislative authority to develop a local permitting program with more stringent bacteria-specific requirements for TPDES dischargers that own or operate facilities in Harris County. Implement chlorine contact chamber detention time testing program.	Continue inspections program. If determined to be required, seek legislative approval to implement reinspection fees for WWTP inspections.	Continue working with local universities and firms to help define the problem. Continue to advocate sensible water quality standards. Start defining "Health Risk".	As most studies require multiple years to have enough rainfalls to collect enough samples, continue previous year's studies, as well as continue to look at ways to "build a better mousetrap" and evaluate the effectiveness of those measures. Continue learning about new products and spreading the word through continuing education.	Continue monitoring watersheds already part of the program. Add 3 more to total 8 watersheds. Begin looking at results from first 2 watersheds to determine if monitoring program needs to be modified and if any trends are noticeable yet.	Continue program. Continue design of permanent facility. Modify program towards bacteria and co-pollutants as viable.	Continue existing program. Look at possibility of expanding program. Begin looking at ways to improve upon temporary (construction phase) BMP's as they relate to bacteria and determine if a construction handbook update is necessary. If so, begin work to update that manual.	If necessary, adopt & implement exhibited animal regulations. (Years 3-4)	Develop draft regulations restricting sale and uses of certain fertilizers, if recommended by stakeholders group.	Continue program, modifying as necessary	If determined to be required, seek legislative authority to charge reinspection fees for "environmental" restaurant inspections and begin looking at process to implement fees if legislation passes.	Continue program.	Begin county-wide mapping and developing GIS based list of areas with failing on-site sewage facilities.	If it is determined that we need to do anything here, begin discussions with Texas Parks & Wildlife to attempt to find a way to do wildlife management that supports our community's values. Continue program.	
<b>4-Year Goal*</b>	Continue segment classification.	Draft, develop, and implement regionalization regulations, if legislative authority has been granted in Year 3 (Years 4-5).	If legislative authority is determined to be required and is subsequently granted, draft, and implement regulations governing design and operations of WWTP (Years 3-5).	Continue to implement program, modifying as necessary.	Continue working with local universities and firms to help define the problem. Continue to advocate sensible water quality standards.	As most studies require multiple years to have enough rainfalls to collect enough samples, continue previous year's studies, as well as continue to look at ways to "build a better mousetrap" and evaluate the effectiveness of those measures. Continue learning about new products and spreading the word through continuing education.	Continue monitoring watersheds already part of the program. Add 3 more to total 11 watersheds. Continue looking at results to determine if monitoring program needs to be modified and if any trends are noticeable yet.	Continue program. Continue design/ construction of permanent facility.	Continue existing program.	If necessary, adopt & implement exhibited animal regulations. (Years 3-4)	Adopt regulations restricting sale and use of certain fertilizers, allowing current inventories of restricted products to be used/ depleted.	Continue program, modifying as necessary	Implement design standards for restaurant grease traps and servicing through fats, oils, and grease task group.	Continue program.	Complete County-wide mapping of on-site systems.	No action, unless required to Continue program.	
<b>5-Year Goal*</b>	Complete stream classification.	Draft, develop, and implement regionalization regulations, if legislative authority has been granted in Year 3 (Years 4-5).	If legislative authority is determined to be required and is subsequently granted, draft, and implement regulations governing design and operations of WWTP (Years 3-5).	Continue to implement program, modifying as necessary.	Continue working with local universities and firms to help define the problem. Continue to advocate sensible water quality standards.	As most studies require multiple years to have enough rainfalls to collect enough samples, continue previous year's studies, as well as continue to look at ways to "build a better mousetrap" and evaluate the effectiveness of those measures. Continue learning about new products and spreading the word through continuing education.	Continue monitoring watersheds already part of the program. Add 3 more to total 14 watersheds. Continue looking at results to determine if monitoring program needs to be modified and if any trends are noticeable yet.	Operate HHW program out of permanent facility. Use permanent facility as educational showpiece for proper environmental stewardship.	Continue existing program. Look at possibility of expanding program.	Continue program.	Continue program.	Continue program, modifying as necessary	Continue modifying program per: task group recommendations. Continue successful programs.	Continue program.	Begin to develop strategies for areas in need of municipal wastewater collection and treatment facilities for areas with failing on-site systems.	No action, unless required to Continue program.	

\* Subject to change based on TMDL Bacteria Implementation Group, as well as EPA & TCEQ permit review comments.