

Section 12. Interim Bacteria Reduction Plan (IBRP)

In 2007, as part of the MS4 Permit Renewal process, EPA Region 6 requested the JTF MS4 co-permittees to include an Interim Bacteria Reduction Plan (IBRP) in the Storm Water Management Program (SWMP). EPA stated that proceeding with interim bacteria reduction activities in the permit at this time, in advance of bacteria TMDLs (some of which are not anticipated to be completed before 2012), supports the statutory and regulatory requirements for MS4 permits to (1) reduce the discharge of pollutants to the maximum extent practicable, (2) effectively prohibit the discharge of non-storm water into the MS4, (3) limit discharges that cause or contribute to violations of water quality standards and, in the future as they are completed, (4) would likely contribute to necessary pollutant reductions identified by the TMDLs. EPA also stated that, consistent with EPA policy regarding water quality and TMDLs, Best Management Practices (BMPs) are expected to continue to be the primary control mechanisms in the MS4 permit.

This component of Harris County's comprehensive SWMP targets anthropogenic sources of bacteria as a particular pollutant of concern and supports efforts already underway to address bacterial water quality impairments in the area.

As this IBRP is a plan that has been developed prior to the development of any and all bacteria TMDL implementation plan measures in our area, it is assumed to be interim and fluid in nature. Although we believe that the Harris County portion of the bacteria TMDL implementation plans in Harris County will be largely similar, if not identical, to the IBRP presented herein, if those TMDL implementation plans created require additional measures from Harris County not currently included in the IBRP it will be expected that elements of this plan that are not expressly called out in the permit may be removed and replaced with TMDL elements. Therefore, it is expected that with respect to anti-backsliding provisions, this IBRP will be treated similarly to TMDL provisions and not similarly to permit provisions.

12.1 Source Assessment and Prioritization

Current Program

Harris County has implemented numerous overarching activities to reduce the sources and discharge of pollutants - including bacteria - as described in the current SWMP. These activities include:

1. a program including operations of County facilities, including roadways, in a manner to minimize pollutant runoff, described in Section 3 of the SWMP;
2. a program to minimize the discharge of pollutants from areas of new development and significant redevelopment;
3. a program to promote public reporting of illicit discharges, described in Section 10.a;
4. a proactive wastewater inspection program, described in Section 6.e;
5. a process for reducing the discharge of pollutants from sanitary sewers, described in Section 6.b;
6. a floatables reduction program, described in Section 6.c;
7. requirements to reduce pollutants and the prohibition of non-storm water discharges into MS4, described in Section 8; and
8. monitoring programs to locate and eliminate illicit discharges, as described in Section 11.

In addition to these initial steps, Harris County, as a member of the JTF, has begun a review of ambient water quality data. The intent of the data review is to assist with the identification of localized "problem areas" for further evaluation, aid with prioritizing areas for implementing mitigation measures and developing a long term monitoring program.

The JTF has initiated two bacteria source studies: 1) Preliminary indications of wastewater stream and sediment impacts and 2) Preliminary indication of contributions of industrial sanitary discharges. The first study is to evaluate the potential contribution of bacteria from in-stream sediments by re-suspension into the water column. The second study is to evaluate the potential contribution of bacteria from industrial effluent that is commingled with sanitary waste.

Proposed Program

Harris County plans to continue its current programs. The County plans to work with the other JTF members to develop and implement a unified ambient water quality monitoring plan to assess sources and gather information to assess impact of proposed activities.

The County proposes to work with the local community to develop a priority rating system for the various stream segments to target initial corrective measures to areas with the greatest public health significance.

Implementation Schedule

Activity / Goal	Schedule
Form a Watershed Protection Stakeholders Group; help prioritize watersheds; and begin implementing a bacteria reduction plan.	Year 1
With stakeholder input, develop a local stream use prioritization schedule for drinking water source, primary contact recreation, secondary non-contact recreation, secondary contact recreation, and non-contact recreation. Use results to prioritize for mitigation measures.	Year 2
Develop a GIS stream segment map capable of tracking existing bacterial levels and goal levels. Start stream segment classification.	Year 3
Continue stream segment classification.	Year 4-5
Develop unified ambient water quality monitoring plan.	Year 1
Begin implement monitoring plan.	Year 2
Implement bacteria mitigation measures per watershed prioritization methodology.	Year 1-5

12.2 Dry Weather Screening (DWS)

Current Program

Harris County has implemented a Dry Weather Screening (DWS) program as described in Section 11 of the SWMP. Major storm water outfalls have been screened during dry weather conditions. After completion of the initial dry weather screening, sampling has been concentrated in areas that are more likely to have illicit discharges based on previous screening results, complaints, land use, and/or physical evidence. Harris County’s commercial inspection program also decreases illicit discharges by finding and eliminating them at their source. The County receives and responds to identified sanitary sewer overflows identified by Harris County Flood Control District.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Wastewater Treatment Plant Design – to increase bacteria removal efficiencies of existing and new wastewater treatment plants.
- Wastewater Treatment Plant Field Inspections – to ensure more targeted and unannounced inspections are completed thereby increasing compliance with the applicable requirements under the Texas Water Code, rules, and regulations.
- Storm Water Illicit Discharges – to find and eliminate illicit discharges. Decrease bacterial loading from exhibit animals and power washing.
- Sanitary Sewer Overflow Illicit Discharges – to find and eliminate illicit discharges.

To achieve the listed objectives the County plans to continue its current program activities and also proposes under Tex. Water Code § 26.171 and § 26.173, to perform additional sampling and testing, as necessary, in order to collect data and better understand the dynamics of bacteria loadings from TPDES dischargers; and perform additional proactive, as well increase unannounced inspections of TPDES permittees to ensure that permittees are in compliance with the requirements of applicable requirements. Beyond this and based on the state of its impaired waters, the County plans to determine its legal authority and seek any additional legislative authority that may be necessary to develop a local permitting program with more stringent bacteria-specific requirements for TPDES dischargers that own or operate facilities in Harris County. For additional activities and their schedule are listed in the following table.

JTF partners that wish to inspect their own wastewater treatment plants under the measures of this permit in lieu of County inspections under this permit may do so if their plan is equivalent to the County's and they will submit a copy of their inspection plan and sampling results to the County.

The County plans to work with the other JTF members to evaluate and improve efficiencies in detecting illicit discharges, modifying methods as improvements are identified.

Implementation Schedule

Activity / Goal	Schedule
Establish WWTP Design Stakeholder Committee.	Year 1
Request additional County staff to allow for increase proactive unannounced and reactive inspections of WWTPs based on existing permit limits.	Year 1
Continue implementing illicit discharge detection and elimination program.	Year 1 - 5
Continue sanitary sewer overflows elimination program.	Year 1 - 5
Implement WWTP bacteria disinfection testing program.	Year 2
Continue WWTP design research as necessary.	Year 2
Once staffed, begin program to increase proactive inspections of WWTPs, increase WWTP enforcement on violations, and determine whether WWTPs are built and perform as designed under TCEQ rules.	Year 2 - 5
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..	Year 3
Implement chlorine contact chamber detention time testing program.	Year 3
Review program, identify areas where improvements may be made and modify as necessary.	Year 3 - 5
If legislative authority is determined to be needed and then is subsequently granted under year 3, draft, adopt & implement regulations relating to WWTPs as discussed above.	Year 4

12.3 Wet Weather Screening (WWS)

Current Program

Harris County has implemented a Wet Weather Screening (WWS) program as described in Section 11 of the SWMP. The County has screened the area served by the MS4 during wet weather conditions. Following the completion of the initial wet weather screening, the County has continued with the screening program concentrating on areas that are more likely to have illicit discharges based on previous screening results, complaints, land use, and/or physical evidence.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Wastewater Treatment Plant Design – to increase bacteria removal efficiencies of existing and new wastewater treatment plants.
- Wastewater Treatment Plant Field Inspections – to ensure inspections are completed thereby increasing compliance with regulations.
- Storm Water Illicit Discharges – to find and eliminate illicit discharges. Decrease bacterial loading from exhibit animals and power washing.
- Sanitary Sewer Overflow Fats, Oils, Greases – to prevent fats, oils and greases from entering waste stream which causes collection system stoppages, overflows, and treatment problems.
- Sanitary Sewer Overflow Illicit Discharges – to find and eliminate illicit discharges.

To achieve the listed objectives the County plans to work on increased bacteria removal efficiencies of existing and new WWTPs through the establishment of a WWTP Design Stakeholder committee and various research activities, to conduct inspections, and to find and eliminate illicit discharges.

JTF partners that wish to inspect their own wastewater treatment plants under the measures of this permit in lieu of County inspections under this permit may do so if they submit a copy of their inspection plan to the County and the County approves it as an equivalent.

Implementation Schedule

Additional activities and their schedule are the same programs being done to eliminate dry weather illicit discharges. Applicable measures called out in the table in Section 12.2 will contain a wet weather component to be implemented at the same time as its dry weather component.

12.4 Pollution Prevention and Remediation Programs (PPRPs)

Pollution Prevention and Remediation Programs (PPRPs) for the Harris County MS4 include the following:

- elimination of dry and wet weather overflows from sanitary sewer systems
- construction discharges
- post-construction discharges
- public education and involvement
- cosmetic washing discharges

12.4.1 Elimination of Dry and Wet Weather Overflows from the Sanitary Sewer System and On-site Sewage Systems

Current Program

Harris County, through the implementation of its DWS program (section 12.2) and WWS program (section 12.3), identifies and mitigates overflow occurrences and other illicit discharges. The County seeks out grant funds and agreements to eliminate illicit discharges from failing on-site sewage systems by bringing them into regional systems or by providing them with other meaningful solutions that are site specific.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Sanitary Sewer Overflows – to prevent fats, oils and greases from entering waste stream which causes collection system stoppages, overflows, and treatment problems, and to locate and eliminate other illicit discharges caused by sanitary sewer overflows.
- On-Site Sewage Facilities – To minimize pollutant loadings entering area waterways from on-site sewage facilities.

To achieve the listed objectives the County will continue its current activities. The County proposes to minimize fats, oils and greases from entering the wastewater systems and causing collection system stoppages, overflows, and treatment upsets through public outreach and other activities. The County will continue to seek out grant funds and agreements to bring failing on-site sewage systems in to regional systems. Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Continue existing illicit discharge detection and elimination program.	Year 1 - 5
Develop a general public education campaign on fats, oils and grease and personal responsibility.	Year 1
Request a County position be created to perform environmental inspections on restaurants under existing restaurant codes. Begin inspections upon the position being filled.	Year 1-2
Revise County rules and regulations, or petition the TCEQ to revise their rules, to require all new on-site sewage facilities in impaired waters, to utilize secondary treatment methods that will produce an effluent meeting discharge limits of BOD of 10 mg/l and nitrogen of 10 mg/l.	Year 1
Revise County rules and regulations, or begin working with the State of Texas to revise their rules, to require all new onsite sewage facilities to participate in the County's electronic monitoring/management program.	Year 1
Form fat, oil, and grease task group.	Year 2
Develop draft grease trap sizing and servicing requirements.	Year 2
Begin reviewing fats, oils, and grease transporter logs for irregularities.	Year 2
Take necessary action against fats, oils and grease transporters based on inaccurate or falsified transporter logs.	Year 3
Begin county wide mapping and developing a GIS based list of areas with failing on-site sewage facilities.	Year 3
Complete county-wide mapping of on-site sewage systems.	Year 4
Implement design standards for restaurant grease traps and servicing through fats, oils and grease task group.	Year 4
Begin to develop strategies for areas in need of municipal wastewater collection and treatment facilities for areas with failing on-site sewage systems.	Year 5

12.4.2 Construction Discharges

Current Program

Harris County has implemented regulations to reduce pollutants and to prohibit non-storm water discharges into the County's MS4 as described in Section 9 of the SWMP. Runoff from construction sites is one of the specific messages addressed in Section 10 of the SWMP under Public Education.

Proposed Program

Harris County has established the following objective, listed by focus group, to address bacteria reduction:

- Storm Water Development Construction Programs – to provide proper construction activity programs to reduce bacteria runoff.

To achieve the listed objective Harris County will continue its current activities. The County proposes to provide “proper construction activity” programs and “existing development” programs to reduce bacteria runoff. The County will continue to work with the other members of the JTF to develop consistent criteria for permanent storm water quality features, focusing on long term operations, temporary BMPs and pollutant/bacteria removal. Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Continue existing construction and development programs.	Year 1-5
Begin looking at ways to improve temporary (construction phase) BMPs as they relate to bacteria & determine if construction handbook update is necessary. If so, begin work to update manual.	Year 3

12.4.3 Post-Construction Discharges

Current Program

Harris County has implemented a program for Post-Construction Discharges as described in Section 2 of the SWMP.

Proposed Program

Harris County has established the following objective, listed by focus group, to address bacteria reduction:

- Storm Water Post-Construction Development Programs – to provide programs to minimize bacteria runoff from existing development constructed since implementation of this program.

To achieve the listed objective Harris County plans to;

- continue with current activities, and
- modify existing program, as needed, to increase efficiencies.

The County plans to continue to work with the other members of the JTF with;

- evaluation of various best management practices to determine their effectiveness at bacteria removal or removal of other pollutants.

Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Continue existing development programs.	Year 1-5
Continue working with the engineering community and the 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).	Year 1
Determine if post-construction guidance manual update is needed. If so, begin working on manual update.	Year 2
Begin developing a program to incentivize riparian corridor preservation in developing areas.	Year 2

12.4.4 Public Education and Public Involvement

Current Program

Harris County has implemented a comprehensive public education campaign as described in Section 10 of the SWMP. Specific messages focus on:

1. public reporting of illicit discharges
2. proper management of used motor oil and household and hazardous waste
3. proper management of pesticides, herbicides and fertilizers
4. runoff from construction and new development/significant redevelopment
5. prevention of littering
6. preventing illicit discharges

Harris County holds numerous household hazardous waste (HHW) collection events throughout the year and participates in an HHW voucher program available to all Harris County residents with Montgomery County and the City of Houston’s permanent HHW facilities. The County also has numerous large scale public education campaigns related to multiple pollutant sources that include: a hazardous materials educational program in local schools and “Yard Wise” classes presenting information about fertilizer usage. Harris County manages an extensive watershed protection regional multi-media public education campaign annually.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Storm Water Other Related Public Education – to educate the public on what they can do to improve water quality.
- Storm Water Household Hazardous Waste Collection – to provide a convenient and cost effective method of collecting HHW to encourage proper disposal.
- General Increased Awareness – to make public aware of bayou benefits and effect the message: "If you care about the bayous, you may be willing to increase your personal accountability to protect them."

To achieve the listed objectives Harris County plans to continue with current activities including continuing the maintenance of the regional storm water quality website www.cleanwaterways.org. The County proposes to provide a convenient and cost effective method of collecting Household Hazardous Waste (HHW) to encourage proper disposal, and to educate the public on what it can do to improve water quality.

Activities that Harris County will participate in include:

- review and enhance the regional storm water quality website www.cleanwaterways.org for user accessibility to information for reducing bacteria in our waterways develop an outreach plan with an effective message explaining the importance of proper pet waste disposal and its connection with protecting the Bayous. This message may be distributed through the website and other avenues.

Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Continue HHW program.	Year 1-5
Move the acceptance of fertilizers for disposal higher on the list of accepted items for event flyers.	Year 1
Continue messaging that focuses on sources of bacteria entering our waterways through storm water conduits.	Year 1
Continue study to determine impact of public education on pollution coming from single family residential subdivisions.	Year 1
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 public with the bayous, and/or creating a map of places to recreate along the bayous.	Year 1-5
Work to increase communications with both public and landscaping companies on Yard Wise program topics.	Year 2
Develop a green infrastructure brochure for projects that people can do on their own lot (tree planting, etc.).	Year 2

12.4.5 Cosmetic Washing Sources

Current Program

Harris County has implemented a program to prevent illicit discharges and improper disposal into Harris County’s MS4 as described in Section 6 of the SWMP. This program includes a list of allowable, uncontaminated non-storm water discharges which Harris County believes have a minimal impact on storm water quality. The list includes pavement wash waters, provided cleaning chemicals are not used. The current program also includes a provision for Harris County to reserve the right to prohibit individual discharges on a case-by-case basis.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Storm Water Other Related Public Education – to educate the public on what it can do to improve water quality.
- Storm Water Illicit Discharges – to find and eliminate illicit discharges. Decrease bacterial loading from exhibit animals and power washing.

To achieve the listed objectives Harris County plans to continue with current activities and participate with the JTF in evaluating the contribution of bacteria from exhibited animal venues and power washing.

The County proposes to decrease bacterial loading from exhibit animals and power washing if these activities are identified to be significant sources of bacteria. Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Form exhibited animal stakeholder group.	Year 1
Inventory exhibited animal locations.	Year 1
Develop exhibited animal regulations, if deemed necessary by stakeholder group.	Year 2
Create a brochure or other targeted education piece related to proper methods of power washing that will minimize pollutants entering our waterways,	Year 2
If necessary, adopt & implement exhibited animal regulations.	Year 3-4

12.4.6 Monitoring and Assessment

Current Program

Harris County has implemented a Monitoring Program as described in the MS4 Permit and Section 11 of the SWMP. The current program includes representative monitoring, dry weather screening and wet weather screening elements. The current program includes required monitoring for bacteria at the Harris County representative monitoring sites. Bacteria are also monitored in field screening activities where illicit discharges of bacteria are suspected.

Proposed Program

Harris County has established the following objective to address bacteria reduction:

- Monitoring Program Long term Monitoring – to provide a monitoring program that tracks current stream quality and can track changes in water quality.

To achieve the listed objective Harris County plans to continue its current activities. The County will continue to work with the other members of the JTF to develop and implement a unified ambient water quality monitoring plan. The plan may include monitoring of BMPs to quantify efficiencies, long-term tracking of ambient water quality responses to management efforts and sampling to estimate basin or land-use specific event mean concentrations. Details of how the monitoring and assessment program are to be carried out can be found in Section 12.1: Source Assessment & Prioritization.

12.5 Preventive Measures

Current Program

Harris County has implemented various preventive measures that include:

1. public education regarding the proper management of pesticides, herbicides, and fertilizers;
2. facility operations;
3. street sweeping;
4. regulation of on-site sewage facilities; and
5. regionalization considerations for wastewater.

Harris County has an ongoing program to regulate on-site sewage facilities primarily for individual residences in the County. This program consists of a permitting process in which new systems or major improvements to existing systems require a permit for construction and an inspection of the new or renovated facilities is performed by County personnel. In addition, the County takes enforcement action when necessary against facilities that are discharging illegally. The County has general debris removal programs such as street sweeping programs in place for the removal of

potential bacteria sources from roadways. Harris County also performs public education concerning the proper use of pesticides, herbicides, and fertilizers and holds “Yard Wise” classes for area residents. County facilities are operated in a manner to minimize pollutant runoff from the site.

The County has a project ranking system in place for awarding community and economic development grant funds that promotes appropriate regionalization of wastewater treatment plants.

Proposed Program

Harris County has established the following objectives focused on decentralized treatment facilities, to address bacteria reduction:

- Storm Water Fertilizer Usage – to categorize which fertilizers present problems related to bacteria and restrict their sale and use if applicable.
- Waste Water Treatment Plants Regionalization of WWTPs – to decrease bacteria coming from wastewater treatment plants, using regionalization and/ or modifying plants to meet higher design and operation standards, so as to decrease bacteria loading into the waterways.
- On-Site Sewage Facilities (OSSF) – to ensure OSSFs do not create bacteria loadings in the streams

To achieve the listed objectives the County plans to continue with current activities; strengthen the OSSF program through additional requirements, categorize which fertilizers may present problems related to bacteria and restrict their sale and use if applicable, and focus on regionalization of wastewater treatment plants. Elements of this plan related to OSSFs are located in Section 12.4.1. Additional activities and their schedule are listed in the following table.

Implementation Schedule

Activity / Goal	Schedule
Begin to conduct a study of other locations with restrictions on fertilizer usage and quantify benefits.	Year 1
Establish stakeholders group of fertilizer manufacturers, suppliers, users and government entities to discuss regulation of fertilizer use.	Year 2
Develop draft regulations restricting sale and use of certain fertilizers, if recommended by stakeholders group.	Year 3
Adopt regulations restricting sale and use of certain fertilizers, allowing current inventories of restricted products to be used / depleted.	Year 4
Create a regionalization policy for County-owned and County funded Wastewater Treatment Plants	Year 1
Create a stake holders group to discuss and develop a Harris County Regionalization Plan that will apply to all water and wastewater facilities located within Unincorporated Harris County	Year 2
If deemed necessary by the stakeholders group, seek legislative or TCEQ approval for the regionalization program.	Year 3
Draft, develop, and implement regionalization regulations, if legislative authority has been granted in Year 3.	Year 4 - 5

12.6 Research

Current Program

Harris County has been participating, both individually and together with the other members of the JTF, in research to better understand the sources of bacteria and bacteria life cycle including regrowth in addition to other water quality topics through field investigations, support of university research, monitoring literature and serving on research committees.

Proposed Program

Harris County has established the following objectives, listed by focus group, to address bacteria reduction:

- Research to Better Define the Problem – to provide research to help define problem.
- Research to Help Find Ways to Solve the Problem – to provide research to help solve problem.

To achieve the listed objectives the County plans to continue with current activities. Additional activities in which the County will participate, both individually and together with other JTF members, to enhance the understanding of bacteria and mitigation measures include:

1. working with the local universities to better understand sources of bacteria, and their behavior in the environment;
2. evaluate various best management practices to determine their effectiveness at bacteria removal;
3. continue field investigations;
4. participate in multiple committees and groups related to research, TMDL's and water quality initiatives;
5. continue to contribute to efforts to "mainstream" new, effective, technologies and methods that target bacteria and/or its co-pollutants;
6. seek to better understand the health risk associated with the surface water quality standards for bacteria; and
7. seek to better understand the impact of wildlife and other animals on our bayou system.