

## Implementation Strategy 4.0: Stormwater and Land Development

The BIG project area has experienced rapid population growth resulting in increased land development, which in turn has led to challenges in maintaining waterways as areas for recreation. These changes may also impact bacteria levels in the waterways.

Bacteria sources, such as wastes from pets, wildlife, and even humans, can be washed into storm drains and then discharged into local waterways. Because stormwater systems are designed to quickly and efficiently remove stormwater from developments, stormwater often bypasses the natural vegetative barriers that filter sheet flow over the land. Thus, bacteria loading may be more concentrated. Infrastructure, such as pipes, inlets, culverts, interceptors, basins, reservoirs, outfalls, and channelized waterways, can also increase direct bacterial loading. The TMDLs for Buffalo and Whiteoak bayous indicate that stormwater from permitted municipal separate storm sewer systems (MS4s) is a significant source of bacteria loading.<sup>71</sup>

Existing requirements of MS4 permits address some important elements of bacteria loading in stormwater, offering an adaptive rather than prescriptive approach to bacteria reduction. Furthermore, many smaller cities and some unincorporated county areas do not currently have stormwater permits, but may become designated as an MS4-permitted community in the future, possibly because of new census data. Some smaller cities and unincorporated areas should be encouraged to voluntarily adopt the six elements of MS4 Phase II permits.<sup>72</sup>

Structural BMPs, such as modifications to stormwater outfalls that may reduce bacteria through aeration, treatment by sunlight, or physical removal of contaminants, have the potential to reduce bacteria loading into waterways. Because there is limited data regarding how well such BMPs might reduce bacteria loading, the BIG has identified the evaluation of the effectiveness of stormwater implementation activities as one of the top research priorities. (See Research Priority 10.1.) Any research, particularly research relevant to the BIG area, should be reported and shared with BIG stakeholders, through Implementation Activities 4.2, 9.2, and 9.4.2, so that stakeholders can devise appropriate strategies for integrating structural stormwater BMPs into their activities.

A map of MS4 areas in the region is shown in Figure 5. Examples of current programs are provided in Appendix F, along with a list of stormwater permits in the region provided in Appendix G.

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<sup>71</sup> (TCEQ 2009a, p. 44)

<sup>72</sup> (U.S. Environmental Protection Agency 2000)



## Implementation Activity 4.1: Continue Existing Programs

Local governments, especially those with MS4 permits, already employ extensive and innovative stormwater and land development programs, some of which address other bacteria sources identified in this I-Plan. These programs shall be continued as deemed appropriate by the entities that manage them.

For both the library of best practices and the networking meetings, particular attention should be paid to identifying best practices that involve the following:

- How to implement structural BMPs and stormwater controls that address bacteria reduction,
- Opportunities for watershed-based policies and activities,
- Codes, design criteria, and other specifications that address stormwater bacteria loading,
- How to encourage the use of green infrastructure in street design, sidewalk design, and stormwater management programs,
- How to incorporate bacteria reduction elements into flood control features where practicable, and
- How impervious cover affects water quality and bacteria loading, and best practices to address potential negative influences of impervious cover.

## Implementation Activity 4.2: Model Best Practices

Existing programs can serve as models for other local governments and land developers in the project area. As resources allow, H-GAC shall provide forums for sharing information about existing programs and for coordinating collaboration.

### *4.2.1: Create and maintain an online library of best practices*

H-GAC or another appropriate entity will create and maintain an online library of stormwater and land development best management practices (BMPs) and stormwater controls specific to bacteria load reduction that have been implemented regionally. Local governments will provide information about their BMPs and stormwater controls, which may include ordinances, policies, and structural BMPs and stormwater controls.

### *4.2.2: Coordinate networking meetings*

As resources allow, H-GAC or another appropriate entity will facilitate a series of meetings relating to stormwater and land development BMPs and stormwater controls. Each meeting will highlight BMPs and stormwater controls implemented by MS4 permittees and focus on either a required element of an MS4 permit or BMPs and stormwater controls that fall outside the scope of the permit. These meetings should lead to discussion of model BMPs, stormwater controls, and other practices, including the identification of practical opportunities for collaboration at a watershed level. These meetings shall also

serve as a forum for collaborative development and maintenance of regionally accepted codes, design criteria, structural BMP information, effectiveness monitoring and information, and guidelines.

### **Implementation Activity 4.3: Encourage Expansion of Stormwater Management Programs**

Existing stormwater management programs shall be improved voluntarily, and the geographic application of stormwater programs shall be expanded voluntarily, unless EPA chooses to expand the definition of the area encompassed by an MS4. If, after five years, voluntary actions are not implemented, stakeholders shall consider mandatory expansion.

#### ***4.3.1: Encourage permitted MS4 communities to voluntarily expand and refine elements of their stormwater programs that address bacteria***

Local governments are encouraged to focus their existing programs on activities that are specific to bacteria reduction. The BIG encourages the TCEQ to consider bacteria when evaluating and approving MS4 permit renewals within the BIG project area.

#### ***4.3.2: Encourage local governments without MS4 permits to voluntarily develop and implement a stormwater management program to address bacteria loading***

Stormwater programs similar in structure and content to, or in conjunction with, MS4-permitted programs should be considered. A local government which does not require a stormwater permit should prepare, adopt, implement, and enforce as appropriate a stormwater management plan that meets the general requirements of the TCEQ's small MS4 general permit (TXR040000),<sup>73</sup> as suitable for their community. Elements of such a plan might include activities related to the six minimum control measures identified in a small MS4 general permit.<sup>74</sup>

#### ***4.3.3: If voluntary measures are not implemented or bacteria reduction is not being achieved, petition the TCEQ to mandate stormwater program development***

The BIG can petition the TCEQ to require activities that are bacteria-specific in MS4 permits or to designate communities that do not already have an MS4 permit. Starting in year four after the adoption of this I-Plan, H-GAC shall, provided sufficient resources are available, evaluate communities to determine whether they have developed or improved a stormwater program to reduce bacteria loading in waterways. Criteria that will be evaluated are formal adoption of the stormwater plan by elected

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<sup>73</sup> General Permit TXR040000 for Phase II (Small) MS4s (TCEQ 2007)

<sup>74</sup> For more information, see the EPA's Fact Sheet 2.0: Small MS4 Stormwater Program Overview (U.S. Environmental Protection Agency 2005)

officials of the local government, funding levels for the program, self-reports of stormwater activities, and bacteria levels in local water bodies.

The H-GAC will provide a report to the BIG for evaluation. If local governments have not modified or created a stormwater program by the end of year five after the adoption of the I-Plan, the BIG shall recommend that the TCEQ consider additional permit requirements for those communities.

#### **Implementation Activity 4.4: Promote Recognition Programs for Developments that Voluntarily Incorporate Bacteria Reduction Measures**

Several recognition programs already exist or are being developed that address land development and infrastructure. Many of these programs are high-profile, comprehensive programs that could have a positive effect on bacteria loading from these sources. However, the programs are not specific to either bacteria or the BIG region. For this reason, the BIG proposes two complementary elements of action, participating in existing recognition programs and develop a recognition program specific to stormwater for the region.

##### ***4.4.1: Encourage voluntary participation in existing recognition programs***

Several voluntary programs that address land development and stormwater have been developed or are being developed, including:

- *Leadership for Energy & Environmental Design 2009 for Neighborhood Development Rating System*<sup>75</sup>
- *International Green Construction Code*<sup>76</sup>
- *National Green Building Standard*<sup>77</sup>

Although these programs focus specifically on neither bacteria reduction nor this region, they do contain elements that may help reduce bacteria loading. The BIG encourages local governments, land developers, and stakeholders to promote these programs and similar programs as appropriate. Local governments shall analyze their local regulations and programs in an effort to eliminate hurdles to the attainment of the requirements in these programs.

##### ***4.4.2: Develop a recognition program specific to stormwater and land development in the BIG area***

As resources are available, H-GAC shall convene a committee and work with existing local groups to develop a voluntary certification or recognition program that will promote stormwater and land

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<sup>75</sup> (Congress for the New Urbanism, Natural Resources Defense Council, and the U.S. Green Building Council 2009)

<sup>76</sup> (International Code Council 2010)

<sup>77</sup> (National Association of Home Builders and the International Code Council n.d.)

development practices that are intended to reduce bacteria loading from stormwater and land development. The program may apply to developments, builders, developers, local governments, drainage districts, and others. The committee will consider, among other things:

- Criteria for development and redevelopment,
- Criteria for stormwater infrastructure,
- Integration with existing programs,
- Funding, and
- Scope of the program.

#### **Implementation Activity 4.5: Provide a Circuit Rider Program**

As resources are available, H-GAC shall manage a circuit-rider program to provide evaluation and technical assistance to communities implementing stormwater programs. In particular, the circuit rider can provide assistance in identifying and adapting model program elements for specific communities, identifying partnership opportunities, identifying funding mechanisms, and evaluating local regulations that might present obstacles to pursuing recognition programs outlined in this section. The circuit rider program shall also work toward the collaborative development and maintenance of regionally-accepted codes, design criteria, structural BMP information, effectiveness monitoring and information, and guidelines, which may improve consistency in land development and redevelopment practices.

#### **Implementation Activity 4.6: Petition the TCEQ to Facilitate Reimbursement of Bacteria Reduction Measures**

The BIG will work with TCEQ staff to interpret existing policies to facilitate MUD reimbursement to developers for stormwater quality features (which may otherwise be considered part of a developer's amenity package and not subject to MUD reimbursement) in their plans for development. As part of this discussion, the parties, including the engineering and development communities, will work to develop criteria which can be used to determine the eligibility of a water-quality feature for reimbursement. If necessary, the BIG shall write a letter to the TCEQ encouraging the adoption of policies.