

- **Chatham County Greenway Implementation Study and BMP Manual**

Completed plan and research on rails to trails and drainage canal systems in March 2016 for use by the public county-wide. The City of Tybee, Unincorporated Chatham County and the Town of Thunderbolt have adopted the plan thus far.

MPC completed a comprehensive assessment of stormwater drainage canals and retired rail corridors located throughout Chatham County, Georgia. The goal was to determine their viability as potential greenway trails. To ensure that the trails systems and adjacent habitats are properly maintained, a guide, “Best Management Practices for Canal Greenway Maintenance” was developed as a separate companion document.

Ten drainage canals and retired rail corridors were selected by the Steering Committee and underwent an extensive evaluation process. The subsequent chapters discuss the background and history of the project, corridor selection process, methodologies used to collect and analyze data, and related trail planning projects throughout Chatham County.

Eighteen assessment criteria were selected to evaluate each potential greenway. The criteria were scored and prioritized for each of the selected corridors and summarized in a Prioritization Matrix that was used by the Stakeholder Committee to select which corridors should be targeted for greenway implementation. The three corridors selected are:

- Old Savannah Tybee Railroad (extension of the McQueen’s Island Historic Trail),
- Placentia Canal
- Wilmington Park Canal

The final Greenway Implementation Study and BMP Manual can be found here:

<https://www.dropbox.com/sh/c7t8crj7l2g6ycb/AADGN-nyeElkqpB1Yp0gHglKa?dl=0>

And the final online GIS database for these corridors can also be accessed at the following link: <http://www.ecologicalplanning.net/greenway/>

- **Coastal Stormwater Supplement (CSS) to the Georgia Stormwater Management Manual:**

Adopted by all of the jurisdictions within Chatham County by April 2012.

The integrated, green infrastructure-based approach to natural resource protection, stormwater management and site design detailed in the CSS is used to help balance the protection of coastal Georgia’s valuable terrestrial and aquatic resources with local road, highway and bridge development projects. Managing post-construction stormwater runoff on these projects typically presents some challenges.

Despite these challenges, many of the natural resource protection and stormwater management practices and techniques detailed in the CSS can be successfully applied on local road, highway and bridge development projects while also ensuring that the prescribed

green infrastructure and stormwater management practices will continue to function, as designed, over time.

The full CSS can be found here: <http://www.mpcnaturalresources.org/natural-resources/stormwater/> . Also included at the end of this document is section 6.4 detailing the between stormwater management and Local Road, Highway and Bridge Development Projects.

- **Chatham County Disaster Redevelopment Plan**

In January 2016, Chatham County Chatham Emergency Management Agency (CEMA), GEMA, the Georgia Department of Natural Resources, and the MPC completed Chatham County's first Disaster Redevelopment Plan. This is the first plan of its kind in the State of Georgia and is now the model for other communities.

Intended to provide Chatham County with a single reference for guiding action and decision making during long-term redevelopment periods after a disaster such as a hurricane. Chatham County officials also want to ensure rebuilding that occurs following a disaster is done in a sustainable manner consistent with other plans and incorporates hazard mitigation techniques.

Goals and associated actions are further identified as pre- or post-disaster efforts and priority levels (i.e. "immediate," or within 12 months, "short-term," between 13 months and five years, or "long-term," between six and ten years) to implement actions are further identified for each goal's actions.

Redevelopment focus areas include:

- Land use: Land Use Policy Changes
- Housing: Sustainable and accessible housing
- Economic Redevelopment: Strengthen economic and industrial base
- Infrastructure and Public Facilities: Repair and improve placement of critical infrastructure and systems
- Health and Social Services: Protect socially and economically vulnerable populations
- Environment: Protect, restore and preserve unique natural resources and ecosystems
- Historic Property Preservation: Protect, restore and preserve unique historical assets
- Finance: Plan for the protection and redevelopment of tax revenues and other county income sources.

Future steps include the identification of Priority Redevelopment Areas (PRAs) that include critical sites, infrastructure, & utilities. Example redevelopment policies for Land Use include:

- Zoning Regulations/Design Standards
- Building Safety Codes
- Build-Back Standards
- Acquisition programs
- Transfer of Development Rights/ Conservation Easements

- Deed Restrictions and Covenants
- Education and Public Outreach Programs
- Outreach and Coordination

Immediate next steps include:

- Draft resolution or ordinance to adopt the Plan
- Complete Land Use Evaluation
- Zoning Ordinance/Subdivision Code Review and Update
- Evaluate what other plans should be updated
- Public Outreach and Public Review Process
- Implementation Timeline for Projects Based on Strategy: “immediate”, “short-term,” “long-term”

Current document can be found at:

http://www.chathamemergency.org/2016EMDocs/Chatham%20County%20Redevelopment%20Plan_2.1.16.pdf

- **Chatham County Blueprint**

The MPC and MPO staff are critical players in the steering committee that worked to draft the *Chatham Community Blueprint*. The Blueprint is a long-term 20-year plan for all of Chatham County. By using accurate and reliable data as indicators of improvement, this concerted effort will strategically move the Chatham Community towards the accomplishment of specified Goals in four key theme areas: Economy, Education, Health and Quality of Life.

The Community is working to collaborate across public sector entities, non-profit groups, and private industry to take ownership of listed Strategies and coordinate necessary Action steps for each identified item. The Blueprint proposes a Timeline in which to implement each Strategy over the next twenty years through 2035. Performance metrics will be used to monitor accomplishment of stated Goals.

The Visions, Goals and Strategies that are discussed in the Blueprint represent the voices of the Community as expressed in numerous meetings and surveys conducted during 2014 and 2015 throughout every district in the County (morning/day/night-time/weekend). The results outline a plan for the next twenty years.

An example of some of the goals and strategies developed and included in the plan are shown below:

Quality of Life:

Vision: Chatham County citizens achieve a superior quality of life within a safe, active and healthy environment inclusive of the area's history, natural resources, public mobility and efficient government.

Goal 2: Promote and provide neighborhood connectivity and build environments that encourage active and healthy lifestyles through the strategic placement of bicycle and pedestrian pathways, public parks, enforcement of road regulations, and education about health benefits.

Strategy 1: Adopt and implement "complete streets" ordinance to include appropriate roads (new, expanded and resurfaced) county wide restripe while adding traffic calming improvements and green space where appropriate.

Strategy 2: Work with municipalities in order to explore funding options to expand public transportation for Chatham County.

Strategy 3: Provide public/private incentives to encourage an array of transit opportunities to include care pool, park and ride sites, public transit, cycling, etc.

Strategy 5: Explore alternate routes for heavy equipment, trucks and those carrying hazardous materials county-wide.

Strategy 6: Adopt and consider the County Greenway Implementation Plan by all municipalities to include compliance with current and proposed developments.

Strategy 7: Complete and extent Truman Lanier Trail through local government partnership, SPLOST funding.

Strategy 8: Increase bicycle and pedestrian safety education, driver education and provide consistent traffic enforcement.

Goal 4: Provide effective and efficient government services while ensuring that processes and procedures are planned and executed with transparency.

Strategy 1: Create clearer process of use of SPLOST funding in regards to neighborhood improvements, infrastructure, parks, and community centers.

Strategy 4: Convene representatives of neighborhood associations and home owner associations county-wide semi-annually and provide constant feedback on projects.

The final *Chatham County Blueprint* can be found here:

http://www.coastalgaindicators.org/content/sites/uwce/planning_documents/Presented_to_BOC_120415_CGIC_Blueprint.pdf

A status report on the process as of December 2015 can be found here:

http://www.coastalgaindicators.org/content/sites/uwce/CGIC_2015_Blueprint_Status_Report.pdf

- **Chatham County – Savannah Comprehensive Plan**

The Comprehensive Plan is developed and overseen by MPC staff. This plan is specific to the City of Savannah and Unincorporated Chatham County only and builds on the Community Blueprint discussed above. The focus areas include:

- Land Use
- Transportation
- Economic Development
- Housing

This effort also includes a Strategic Plan which contains the community's goals and a list of strategies that will result in achieving the goals; as well as a Short Term Work Program (STWP) that identifies who will accomplish the goals, the estimated cost (where possible), and a time of completion.

Last updated in 2012, the Comprehensive Plan for the first time includes the discussion of the impacts of planning decisions on community health and safety and the impact of sea level rise on development patterns. The plan is currently being updated by MPC staff with much assistance and involvement from the general public, NGO's, other government agencies and community champions and is scheduled for approval by the State of Georgia with final adoption in October 2016. Subjects being discussed with specific goals and strategies for implementation include:

- Resiliency Planning and Implementation
- Complete streets (CORE MPO Complete Street Policy)
- Stormwater Management
- Traffic Management
- Commercial Trucking Management and Routing (MPO Freight Transportation Plan)
- Bicycle/pedestrian (MPO non-motorized plan)
- MPO Total Mobility Plan



**Coastal Stormwater
Supplement**
to the
**Georgia Stormwater
Management Manual**

First Edition April 2009



6.4 Meeting the Stormwater Management and Site Planning and Design Criteria on Local Road, Highway and Bridge Development Projects

Since they are often designed to discharge stormwater runoff directly into streams, wetlands and other aquatic resources, local road, highway and bridge development projects can have significant negative impacts on the valuable aquatic resources of coastal Georgia. Without an effort to control and minimize these impacts, these development projects have the potential to significantly impair the very natural resources that contribute so greatly to the region's natural beauty, economic well-being and quality of life.

Although the integrated, green infrastructure-based approach to natural resource protection, stormwater management and site design detailed in this CSS can be used to help balance the protection of coastal Georgia's valuable terrestrial and aquatic resources with local road, highway and bridge development projects, managing post-construction stormwater runoff on these projects typically presents some challenges for site planning and design teams, including:

- The need to manage the significant stormwater runoff volumes generated on impervious roadway surfaces
- The need to locate stormwater management practices in a limited amount of space (e.g., rights-of-way)
- The need to manage stormwater runoff while maintaining safe driving conditions
- The need to manage and contain potential spills

Despite these challenges, many of the natural resource protection and stormwater management practices and techniques discussed above can be successfully applied on local road, highway and bridge development projects. However, there are a number of site characteristics and constraints that should be considered when planning and designing of one of these projects to ensure that the prescribed green infrastructure and stormwater management practices will continue to function, as designed, over time (PA DEP, 2006):

- Roadway runoff typically contains higher pollutant loads than stormwater runoff from other urban land uses (Bannerman et al., 1993, Steuer et al., 1997). Sediment loads can be especially high on dirt and gravel roads. Consequently, roadway runoff should *not* be managed with infiltration practices, unless pretreatment is used to reduce sediment loads before stormwater runoff reaches them. Infiltration practices that are applied to local road, highway and bridge development projects must be preceded by green infrastructure or stormwater management practices that can significantly reduce sediment loads, such as:
 - Undisturbed Natural Areas
 - Vegetated Filter Strips
 - Grass Channels
 - Swales
 - Bioretention Areas
 - Filtration Practices

Using green infrastructure and stormwater management practices that reduce sediment loads upstream of infiltration practices helps reduce the risk of clogging and practice failure.

- Grass channels and swales can be highly effective at providing both stormwater conveyance and stormwater runoff reduction. Because they can typically be designed to

fit within the right-of-way, they are ideal for use on local road, highway and bridge development projects. However, they must be properly designed to prevent erosion and reduce the amount of maintenance that they will require over time. Additional information about these practices, including information about their proper application and design, is provided in Sections 7.8 and 8.6 of this CSS.

- The potential for spills should be considered during the planning and design process used for local road, highway and bridge development projects. While it is not practical to design for spill containment on all local roads and highways, the site designer should at least consider the potential for spills and the remedial actions that will become necessary should a spill occur.

Many green infrastructure and stormwater management practices, including filter strips, swales, filtration and infiltration practices and bioretention areas, will require significant maintenance or complete replacement after a spill occurs. While this may discourage the site designer from using these practices on local road development projects where spills are a concern, the relatively minor cost of replacing these stormwater management practices is worth the spill protection they provide. The alternative to using this green infrastructure and stormwater management practices is conveying the pollution generated by spills directly to streams, wetlands and other aquatic resources through the storm drain system, which can result in very high clean up and remediation costs.

- Increased stormwater runoff temperatures can result from local road, highway and bridge development projects. As stormwater runoff moves over these impervious surfaces, it increases in temperature. As documented in Section 3.3.2, when this “heated” stormwater runoff is conveyed into a river, stream, wetland or other aquatic resource, it can decrease the amount of dissolved oxygen contained within the water column, which reduces the amount of oxygen available to aquatic organisms. Consequently, site planning and design teams working on local road, highway and bridge development projects should consider the use of green infrastructure and stormwater management practices that promote infiltration and reduce stormwater runoff temperatures, including:
 - Protect Primary Conservation Areas
 - Protect Secondary Conservation Areas
 - Reduce Clearing and Grading Limits
 - Soil Restoration
 - Site Reforestation/Revegetation
 - Vegetated Filter Strips
 - Grass Channels
 - Swales
 - Bioretention Areas
 - Infiltration Practices

There are certain green infrastructure and stormwater management practices that work particularly well on local road development projects, others that work particularly well on local highway development projects and still others that work particularly well on local bridge development projects. The green infrastructure and stormwater management practices that can be most readily applied to each of these different types of development projects are briefly described below.

6.4.1 Local Highway Development Projects

Local highways are often designed with grass shoulders and often include vegetated medians, providing plenty of room for the use of green infrastructure and stormwater management practices. Opportunities to use infiltration practices on highway development projects, however, may be limited due to extensive grading and earthwork, as highway rights-of-way are often subject to significant compaction. However, the use of infiltration practices should not automatically be ruled out on local highway development projects, and should be considered on a case-by-case basis.

Because they can typically be designed to fit within medians and shoulders, swales, grass channels and vegetated filter strips are ideal for use on local highway development projects. They can be combined with bioretention areas located within the right-of-way to provide additional runoff reduction or with larger stormwater management practices, such as stormwater ponds and stormwater wetlands, to manage the peak stormwater runoff rates and volumes generated by larger, less frequent storm events.

6.4.2 Local Bridge Development Projects

Since bridges are built directly over streams and other aquatic resources, there is often little opportunity to use green infrastructure and stormwater management practices on these development projects. However, the use of filtration practices, particularly perimeter sand filters, as well as proprietary water quality management practices should be considered, as these stormwater management practices can be used to treat stormwater runoff before it is discharged directly from a bridge deck into a stream, wetland or other aquatic resource.

6.4.3 Local Street and Roadway Development Projects

Local street and roadway development projects are ideal for the use of green infrastructure and stormwater management practices. Although the goal of these natural resource protection and stormwater management practices and techniques is not just to minimize the creation of new impervious and disturbed pervious cover, a number of better site design techniques do work particularly well on these development projects, including:

- Reduce Clearing and Grading Limits
- Reduce Roadway Lengths and Widths
- Reduce Sidewalk Lengths and Widths
- Use Fewer or Alternative Cul-de-Sacs

Unfortunately, the use of some of these better site design techniques may be restricted by local "development rules." Site planning and design teams are encouraged to identify any local restrictions that would preclude the use of any of these better site design techniques on local street and roadway development projects.

Another site design technique that works particularly well on local street and roadway development projects is to use the right-of-way, rather than curbs and gutters, to manage post-construction stormwater runoff. Open section roadways can be used in place of closed section roadways to allow stormwater runoff to sheet flow off of the pavement surface and into grass channels, dry swales, vegetated filter strips or undisturbed pervious areas, all of which provide significant reductions in post-construction stormwater runoff rates, volumes and pollutant loads. Other green infrastructure and stormwater management practices that can be applied on local street and roadway development projects include:

- Permeable Pavement
- Bioretention Areas
- Filtration Practices
- Infiltration Practices
- Wet Swales

6.4.4 Local Back (Dirt and Gravel) Road Development Projects

A significant portion of coastal Georgia is served by unpaved dirt and gravel roads. These roads, and their associated stormwater conveyance systems (e.g., ditches, culverts), are prone to erosion and can generate significant amounts of stormwater pollution. In fact, according to the Georgia Department of Natural Resources Environmental Protection Division (GA EPD), the sediment generated on local dirt and gravel roads ranks second only to row cropping as a source of sediment in the state of Georgia (Pine Country RCDC, 2008). Consequently, it is important to manage the post-construction stormwater runoff generated on these unpaved surfaces to help protect the streams, wetlands and other aquatic resources of coastal Georgia from the negative impacts of the land development process. Although all of the techniques discussed below can be used to manage the stormwater runoff generated on these unpaved surfaces, additional guidance on managing local dirt and gravel road development projects can be obtained through the Georgia Better Back Roads Program. Additional information about this program can be found on the following website: <http://www.tworiversrcd.org/GABBR.htm>.

One of the simplest ways to control and minimize the negative impacts of local back road development projects is to use better site planning and design techniques during their design. By working with existing topography and natural drainage divides and patterns, roadway planning and design teams can minimize the need for earthwork, as well as the need for culverts and stream crossings.

Another simple technique that can be used to reduce the negative impacts of local back road development projects is to crown the roadways to prevent water from ponding on the roadway surface itself. On these crowned dirt and gravel roadways, stormwater runoff can be allowed to sheet flow off of the roadway surface and into undisturbed natural areas, vegetated filter strips, grass channels and dry swales, all of which provide significant reductions in post-development stormwater runoff rates, volumes and pollutant loads. Moving stormwater off of the surface of these roads also helps prevent the formation of erosive conditions.

Care should be taken to ensure that the green infrastructure and stormwater management practices that are designed to “receive” stormwater runoff from dirt and gravel roadways are properly designed and maintained. Any vegetation that is planted within these green infrastructures and stormwater management practices should be maintained over time, as it helps stabilize soils and prevent soil erosion. Because of the significant sediment loads that these roadways can generate, runoff from dirt and gravel roadways *should not* be managed with infiltration practices, unless pretreatment is used to reduce sediment loads before stormwater runoff reaches these infiltration practices.