

The Mobile Bay National Estuary Program

South Alabama Stormwater Regulatory Review

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Executive Summary

A review of existing laws, regulations, permits and ordinances at the federal, state, and local levels was conducted for the geopolitical boundaries of the immediate Mobile Bay watershed, *i.e.*, Mobile and Baldwin counties. The 27 jurisdictions reviewed include Mobile County and its 11 incorporated towns and cities, and Baldwin County and its 14 incorporated towns and cities, with all lands being under state and federal jurisdiction. Approximately 50 county and municipal government regulations were reviewed relative to a number of factors influencing stormwater runoff, water quality, wetland protection and stream and shoreline protection. The codified regulations of each local entity were reviewed, and a chart listing regulatory requirements was prepared. Responses were compiled into a Regulatory Matrix for ease of comparison.

In summary, it was determined that all but four local jurisdictions address construction-phase BMP implementation, and all but five have post construction stormwater management requirements. However, the degree to which each entity is engaged in these efforts varies greatly, as do the specific stormwater management requirements. Twelve of the local jurisdictions have some form of wetland and/or stream protection initiative, usually in the form of a setback or buffer. Eight local governments have some reference to Low Impact Development (LID), although only three appear to have a mandatory LID requirement, and only four have shoreline protection initiatives. Ten local governments are currently required to have MS4 NPDES permit coverage.

The Matrix indicates a wide range of local stormwater management requirements with little consistency between jurisdictions. These inconsistencies in regulatory requirements lead to confusion within the regulated community and are not conducive to good watershed-wide resource and stormwater management. The author suggests a collaborative effort to resolve these inconsistencies and to promote common stormwater management goals necessary to protect the valuable wetland and water resources of Mobile and Baldwin counties.

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I. Introduction

Throughout the history of modern civilization, humans have realized the need to govern and regulate an ever-increasing number of human activities for the common good and overall health and welfare of the general public. Early efforts were rooted primarily in common law doctrines (nuisance, trespass, negligence, strict liability and the public trust doctrine). The first of the environmental laws were fairly broad and focused primarily on basic sanitation but, over time, the prescriptiveness of these laws and regulations has increased as our basic knowledge and understanding of “cause and effect” has evolved and in response to various court rulings. Perhaps the first environmental statute in the United States was the Rivers and Harbors Act of 1899. Somewhere around the middle of the 20th century, society began to accept the fact that there was a need to protect the public health, welfare and safety through protection of the environment, primarily air quality and water quality, and environmental laws and regulations were developed to abate known pollution problems. Subsequently, statutes have been enacted that focus on the beneficial use and management of natural resources and various conservation measures (endangered species, coastal zone management, national parks, etc.).

Nationally, great progress has been made in improving the quality of water in our rivers and streams through the implementation of the Clean Water Act and control of point sources of pollution. We now understand that non-point sources of pollution are the primary contributing factor to the majority of the country’s remaining water quality issues, and stormwater runoff is the main delivery system of pollutants to our waterways. We also realize that this particular issue needs to be addressed on a watershed scale, since rivers, streams, and stormwater runoff do not recognize political boundaries. Historically, stormwater was only considered an issue, and therefore regulated, due to flooding concerns associated with increased runoff volume from developed areas. However, when the Clean Water Act was amended and reauthorized in 1987, Congress mandated that the Environmental Protection Agency (EPA) address certain sources of stormwater runoff through the National Pollutant Discharge Elimination System (NPDES), and in 1990 EPA began requiring NPDES permits for 11 categories of “industrial” activities, including runoff from large urban areas and construction (land-disturbing activities).

Most states have been authorized by EPA to implement the NPDES program and in Alabama, the Alabama Department of Environmental Management (ADEM) is the lead water quality and NPDES-permitting agency. Several counties and municipalities throughout the State, as well as the Alabama Department of Transportation (ALDOT), are currently permitted under the Municipal Separate Storm Sewer System (MS4) portion of the NPDES program, which has precipitated various and sundry local ordinances related to the management of stormwater. Recognizing the importance of these local requirements in managing stormwater, as well as other natural resources, the EPA and Mobile Bay National Estuary Program (MBNEP) require that watershed management plans include a review of the regulatory drivers within the watershed. The purpose of this effort is to catalogue in a consistent format these regulatory requirements as they relate to stormwater management and resource protection within Alabama’s two coastal counties, Mobile and Baldwin.

II. Project Scope and Objective

During the development of the D'Olive Creek Watershed Management Plan in 2010, a Matrix format was developed to help organize and analyze local government regulations and ordinances relating to stormwater management. A survey form and questionnaire were developed to solicit information from municipal and county staff responsible for implementing the local ordinances and the information used to complete an Excel® spreadsheet (the Matrix) to assist in the identification of inconsistencies or regulatory gaps. The Survey/Questionnaire and Matrix format was refined and used again in the development of the *Weeks Bay Watershed Management Plan (2017)* and was also used by the MBNEP and Mississippi-Alabama Sea Grant Legal Program (MASGLP) to start this two-county regulatory review project.

The purpose of this project is to identify and catalog local regulatory requirements related to stormwater management throughout Mobile and Baldwin counties using the "Matrix" format, similar to the D'Olive Creek and Weeks Bay Watershed Management Plans. Based on the Matrix, regulatory gaps and/or inconsistencies have been identified and are discussed. The completed Matrix (one for each county) appears as Appendix 1.

The objective of the project is to provide baseline information on the regulatory environment relative to stormwater management in the two coastal counties and highlight the need for a degree of consistency between jurisdictions that will lead to changes resulting in better stormwater management and resource protection. The findings will also be presented to the MBNEP Government Networks Committee (GNC) for their use.

III. Methods

The regulatory areas of interest identified for this project were based on the factors that are to be considered during the watershed management planning process and are consistent with the *Weeks Bay Watershed Management Plan (2017)* and the MASGLP effort. These areas are: construction-phase best management practice (BMP) requirements; post-construction-phase stormwater management requirements; coastal area resource protection; low impact design requirements; and shoreline structures and stabilization.

In collaboration with the MBNEP, the information previously gathered by the MASGLP and the available watershed management plans were reviewed to determine data gaps and missing or incomplete data. Additional information was then gathered via on-line searches, telephone, email or in-person interviews with local governments, as necessary, to complete the Matrix. The South Alabama Regional Planning Commission (SARPC) proved to be an invaluable resource in the effort to obtain copies of regulations that were not available on-line.

The Matrix Regulatory Categories are intended to be read as the question "*Does the local jurisdiction have codified regulations or ordinances that require or specify...*" for the regulatory areas of interest listed above and as defined below:

Construction Phase BMP Requirements: the use of temporary best management practices (BMPs) to control erosion and sedimentation during construction (land disturbance)
Design Standards: standards for the design of temporary BMPs during construction
BMP Design Storm: a certain size or type rainfall event that temporary BMPs should withstand
Site Size: the use of BMPs during construction for a certain size site
Stabilization Time: how long an area can remain denuded of cover
BMP Repair/Maintenance Time: how quickly BMPs must be maintained or repaired
Non-compliance Reporting: that operators report any non-compliance with local regulations
Buffer Requirement: a setback or buffer be maintained between active construction and waterways or wetlands

Post Construction Stormwater Management Requirements: the use of permanent stormwater controls or management system for stormwater runoff from the completed project
Stormwater Quality: that stormwater discharged from the completed project be treated to improve the quality of water
Stormwater Quantity: that the quantity of stormwater discharged from the completed project be managed
Design Storm: a certain size or type rainfall event for the design of permanent stormwater management facilities
Site Size: permanent stormwater management for certain size sites
Routine Inspection: that permanent stormwater management controls be regularly inspected
Maintenance: who is responsible for routine maintenance of permanent stormwater management facilities
Reporting: that routine reports of permanent stormwater management facilities be submitted
Calculation Method: what methods or formulae are to be used to design permanent stormwater management facilities

Coastal Area Resource Protection: measures intended to protect coastal resources, particularly waterways and wetlands
Wetland/Stream Buffer: a natural buffer or setback from wetlands or streams
Permit Requirement: that a separate local permit be obtained for projects impacting coastal resources

Low Impact Development (LID): the use of permanent low impact development measures or green infrastructure (GI)
Development Size: that LID/GI be used on certain size sites
Impervious Cover: that impervious cover reduction be considered during project development
On-Site Retention: on-site retention (no discharge) of stormwater
LID Standards: design standards and specification for LID/GI

Shoreline Stabilization: certain practices be used for shoreline stabilization projects
Piers and Bulkheads: design requirements for piers and bulkheads
Living Shorelines: that “living shorelines” be used in lieu of hardened shoreline protection methods

In most cases where the local regulations are specific, the requirement is listed in the Matrix (e.g. Site Size: one acre, Setback: 25’, etc.). In cases where the regulations mention a related requirement by having a vague or non-specific requirement (e.g., a design standard of “good engineering judgement”, etc.), “Not Specified” is used. Most all local jurisdictions specify that state and federal permits are required and the Matrix responses are only affirmative (Yes) if the local jurisdiction mentions requirements independent of the state or federal government requirements. The Matrix also indicates if the local jurisdiction is currently covered under a NPDES MS4 permit. In several cases, the author consulted with the local program staff for clarification but otherwise relied on his own interpretation of the regulations to complete the Matrix.

A list of the local regulations and ordinances that provided the basis for the information presented in the Matrix is included as Appendix II.

IV. Overview of Existing Laws and Regulations

The majority of our actions related to development and stormwater management are driven by various and sundry legal authorities (statutes and codes, Executive Orders, etc.) and associated case law, legal requirements (rules, regulations, ordinances, interpretive writings, etc.) and/or legal rights and doctrine (riparian, trespass, public trust, etc.), all of which overlap and interplay.

Further, federal, state and local governments are continuously in the process of changing and evolving through practical experience, technology and legal interpretation of the various statutes and ordinances used to regulate stormwater. A number of examples of these regulatory changes are given in the *Weeks Bay Watershed Management Plan* (2017). It should be noted that flood control ordinances were not specifically reviewed as part of this effort, however flood control ordinances can often be in direct conflict with good stormwater management practices, with the first attempting to remove water as quickly as possible and the latter seeking to slow release rates and/or reduce volumes. Further, all aspects of local development requirements (e.g. parking space requirements, sidewalks, green space) that could potentially impact stormwater quality management efforts, particularly low impact development practices, should be reviewed in more detail.

A. Federal Laws, Regulations and Permits

The primary regulatory drivers associated with stormwater management and aquatic resource protection are based upon federal law, most notably in the Federal Water Pollution Control Act (FWPCA) of 1972 and the Clean Water Act (CWA) amendments of 1977. Collectively, these statutes, and the rules and regulations promulgated pursuant thereto, provide the legal basis for regulating water quality, the discharge of pollutants and dredged or fill material, and stormwater management. The most pertinent portions of the FWPCA/CWA are:

- CWA §303 (33 USC §1313) – Water quality standards and TMDL program
- CWA §319 (33 USC §1329) – Non-point source pollution program
- CWA §401 (33 USC §1341) and CWA §401(a) – State Water Quality Certification
- CWA §402 (33 USC §1342) – NPDES permitting program
- CWA §404 (33 USC § 1344) – dredged/fill material discharged to waters of the US

In addition to the FWPCA/CWA, the Coastal Zone Management Act (16 USC 1451), administered by the National Oceanic and Atmospheric Administration (NOAA), provides coastal states the opportunity to develop and implement coastal area management programs to manage coastal resources.

These federal statute and regulations apply nationwide. A more thorough discussion of these various federal laws and regulations can be found in the *Weeks Bay Watershed Management Plan* (2017).

B. State Laws, Regulations and Permits

Most of the federal statutes and regulations provide that a state may be delegated the authority to administer the program if they can satisfactorily demonstrate that they have implemented, and will implement, an equivalent state statute and program. This is, in fact, the case in Alabama for most of the federal statutes referenced above. The Alabama Department of Environmental Management (ADEM), through the authority vested by the Alabama Water Pollution Control Act (*Code of Alabama 1975, § 22-22*), Alabama Coastal Zone Management Act (*Code of Alabama 1975, §9-7-10*), and Alabama Environmental Management Act (*Code of Alabama 1975, § 22-22A*) is the state's primary environmental regulatory agency. With the exception of the Coastal Zone Management Act, the state statutes and regulations discussed below apply throughout the state of Alabama.

Alabama Water Pollution Control Act. The Alabama Water Pollution Control Act, *Code of Alabama 1975 §22-22-1*, like its federal counterpart (CWA), prohibits the discharge of pollutants to waters of the State without a permit and provides the foundation for the State's delegated authority to implement various federal water quality programs, including the §402 NPDES permitting program, §303 water quality standards and Total Maximum Daily Load (TMDL), and §319 Non-Point Source programs. Water quality programs are generally implemented through various sections of ADEM Administrative Code Rs. 335-6 and NPDES permits.

CWA §401(a) State Water Quality Certification. As previously mentioned, CWA §404 permit applications, pursuant to CWA §401(a), must be submitted to ADEM for review of the proposal's consistency with the State's water quality program. ADEM reviews applications to ensure the proposed discharge of dredged or fill material will not cause or contribute to a violation of State water quality standards as set forth in ADEM Administrative Code Rs. 335-6-10.

CWA §402 NPDES Permitting Program. Section 402 of the CWA sets forth the national permitting program for discharges of pollutants to waters of the United States. Alabama is an NPDES delegated state and ADEM is authorized to implement the NPDES permitting program. ADEM administers the program through its Water Quality Program, ADEM Administrative Code Rs. 335-6-6. Facilities discharging pollutants are divided by ADEM into a number of categories based on the type and/or size of the facility (e.g. major industrial, major municipal, minor industrial, mining, etc.) and level of treatment required. Discharge limitations are generally similar within the classifications but may vary where the water quality of the waterbody receiving the discharge is a limiting factor. The larger facilities, such as sewage treatment plants and heavy industrial facilities, usually are authorized to discharge under stricter "Individual" NPDES permits. Smaller facilities of a similar nature (*i.e.* concrete plants, construction sites, etc.) are usually grouped under a "General Permit" developed to cover the specific industrial sector. The primary ADEM NPDES permit relevant to this project is ALR1000000 addressing construction stormwater discharges. A copy of the current version of the permit is available on the ADEM website at:

<http://adem.alabama.gov/programs/water/waterforms/ALR16CGP.pdf>

This program also includes the NPDES Municipal Separate Storm Sewer System (MS4) permitting covering large municipalities and urban areas with more than 50,000 people. The MS4 permitting program sets requirements for the covered entity to develop and implement a local stormwater management program to reduce the contamination of stormwater runoff and prohibit illicit discharges. The general requirements of MS4 permits are to develop, implement, and enforce a Storm Water Management Program Plan (SWMPP) that addresses the following minimum control measures:

- Public Education and Outreach on Stormwater Impacts
- Public Involvement and Participation
- Illicit Discharge Detection and Elimination
- Construction Site Stormwater Runoff Control
- Post-construction Stormwater Management
- Pollution Prevention/Good Housekeeping for Municipal Operations

The MS4 permits also may set forth requirements for actual stormwater or stream monitoring or assessment where stormwater discharges are to a 303(d)-listed stream or to a stream with an approved TMDL, and encourages the implementation of Low Impact Development/Green Infrastructure (LID/GI) practices. The MS4 permits also require that an annual report of activities and accomplishments related to the six control measures be submitted to ADEM. With few exceptions, the local jurisdictions with the more stringent stormwater management requirements are those with MS4 permit coverage.

Alabama Coastal Zone Management Act. The Alabama Coastal Zone Management Act (*Code of Alabama 1975*, §9-7-10) establishes the statutory basis for the Alabama Coastal Area Management Program and was first enacted in 1976 with the stated purpose “to promote, improve and safeguard the lands and waters located in the coastal areas of this state through a comprehensive and cooperative program designed to preserve, enhance and develop such valuable resources for the present and future well-being and general welfare of the citizens of this state.” Currently, coastal program implementation is split between ADEM (regulatory portions) and the Alabama Department of Conservation and Natural Resources (planning and administration portions) and only applies to lands and waters seaward of the continuous 10-foot contour. Within the coastal area, a separate coastal management permit or coastal consistency certification is required pursuant to ADEM Administrative Code Rs. 335-8. This requirement applies to projects impacting wetlands (dredge or fill), developments greater than five acres, shoreline stabilization, docks and piers, construction on beaches and dunes, and other similar activities impacting coastal resources.

Alabama Act No. 91-610. Although not a “regulatory driver” per se, Alabama Act No. 91-610, which provides a statutory basis for the creation of Watershed Management Authorities, could be a most useful stormwater management tool.

C. Local Jurisdiction Regulations and Ordinances

Information originally gathered and provided by the MASGLP indicates that Alabama is a “Dillon’s Rule” state. According to uslegal.com, under Dillon's Rule, a municipal government has authority to act only when:

- (1) the power is granted in the express words of the statute, private act, or charter creating the municipal corporation;
- (2) the power is necessarily or fairly implied in, or incident to the powers expressly granted; or
- (3) the power is one that is neither expressly granted nor fairly implied from the express grants of power, but is otherwise implied as essential to the declared objects and purposes of the corporation.

The local cities and towns, as municipal corporations under Alabama law, have the authority to implement zoning, regulate new development, and manage stormwater. The legal basis for this authority can be found in the *Code of Alabama 1975*:

- §11-40-1: Defines municipal corporations/municipalities as cities and towns
- §11-40-6: Municipalities with 2,000 or more residents constitute cities, and those with less than 2,000 residents constitute towns
- §11-45-1: Gives power to municipal corporations to create ordinances generally
- §11-52-2: Gives municipalities authority generally for creation of a municipal plan and planning commission
- §11-52-6: Defines powers of municipal planning commissions generally
- §11-52-7: Gives specific zoning authority for municipal planning commissions
- §11-52-70: Gives municipal corporations authority to divide municipality into commercial, industrial, and residential zones

Some municipalities exercise their authority to issue permits within their police jurisdiction or “extraterritorial jurisdiction” (ETJ) while others confine permitting to the city limits.

The county government’s statutory authority is somewhat more limited. The county requirements obviously apply county-wide in areas not subject to a municipality’s planning jurisdiction. *Code of Alabama 1975* §11-19-1 through 24 provides general authority for counties to adopt zoning ordinances in flood prone areas.

Baldwin County cites *Code of Alabama 1975* §45-5-261, §11-19-1, §11-24-1, and §11-52-30 as the authority for developing its planning and zoning program and subdivision regulations. The county is divided into 30 zoning districts, of which 18 have voted to adopt ordinances for their district.

Mobile County also cites *Code of Alabama 1975 §11-24-1. et. seq.* as the authority for its subdivision regulations. Although Mobile County states in its stormwater management plan that it does not have authority to require or enforce the use of BMPs during construction, with the exception of implementing local zoning districts, its statutory authority is essentially the same as Baldwin County.

A complete listing of the local regulations and ordinances reviewed during this project, and other references, is provided in Appendix II.

In addition to the regulatory drivers noted above, subdivision restrictive covenants can also play an important role in stormwater management. Usually, within a residential subdivision, property owners' associations are incorporated, and for most there exist various subdivision restrictions that have been recorded and are imposed to regulate the activities within the subdivision. By nature, these restrictions look inward without consideration of neighboring property and, until recently, most do not address stormwater management. As evidenced in the Matrix, homeowner associations are routinely being held responsible for the maintenance of the post-construction stormwater management systems, and many may not even realize it. Just within the Weeks Bay Watershed in Baldwin County, over 250 private stormwater management ponds were located (WBWMP, 2017). It is very likely that subdivision restrictions related to stormwater management are essentially nonexistent and, where they do exist, are as varied as there are subdivisions.

V. Regulatory Framework

The stated purpose and objective of this project is to identify and catalog local regulatory requirements related to stormwater management and provide baseline information on the regulatory requirements sufficient to establish the existing regulatory framework. This has been accomplished and presented in the overviews above and by using the Matrix format (Appendix I), which allows inconsistencies to be identified across jurisdictions.

A. Overlap

Obviously, there is overlap among federal, state, and local requirements and the *Weeks Bay Watershed Management Plan* (2017) provides an excellent example, using the permitting of a proposal to fill jurisdictional wetlands, which would require:

- A proper CWA §404 permit – either an individual permit with review by all agencies and the public, or a Nationwide Permit (NWP);
- Appropriate ADEM §401 water quality certification;
- Consideration of CWA §303(d) impacts (for listed stream segments);
- ADEM coastal program consistency determination (if in the coastal area);
- A CWA §402 NPDES construction stormwater permit (if greater than one acre will be disturbed);
- City and/or county land disturbance permits;
- City and/or county development permits and plat approvals; and
- City and/or county building permits.

This overlap is unavoidable; however, the degree of regulatory overlap has been lessened by delegation of certain programmatic or regulatory authority by EPA to ADEM and for certain coastal program requirements from ADEM to the local authorities. Regulatory overlap has not been identified in recent watershed management plans in Mobile and Baldwin counties as a significant issue or impediment to implementation of good stormwater management practices.

B. Gaps

States often rely on federal regulatory requirements, and in turn local governments rely on state requirements, to provide a measure of consistency and some level of “minimum standards.” The federal and state environmental and stormwater requirements are necessarily designed to be applied at a national or state-wide level and, while appropriate at their respective levels, may not be meaningful or provide the level of protection needed for a particular local resource and should be considered only as “minimum standards”. The federal and state requirements are also more difficult to modify because of their broader application and implications, which becomes a problem when regulations do not address critical issues or have become antiquated. A prime example of a lack of federal or state standards is with regard to post-construction stormwater management. If it were not for the Federal Emergency Management Agency (FEMA) flood requirements, which only address volume, there would be no consideration of post-construction stormwater runoff. Neither EPA nor ADEM have any promulgated standards to set a consistent

baseline for stormwater quality or treatment, so this endeavor falls solely to local units of government. Outdated regulations are often less effective than they could be, because they do not consider advancements in science, technology, or resource protection alternatives. ADEM's coastal program regulations relating to resource protection (ADEM Administrative Code Rs. 335-8-2) have not been updated in over 20 years. Recent studies funded by Baldwin County (HydroEngineering Solutions, 2010) found that consideration should be given to the timing of stormwater releases as well as discharge rates.

Local governments often assume that the maze of federal and state permitting requirements will be sufficient to protect the natural function of these systems. Unfortunately, this is rarely the case.

- The State of Alabama currently has no codified buffer or setback requirements (other than the setback requirements in the construction general permit).
- There are no federal or State requirements for post-construction stormwater management.
- Federal and state permits are routinely issued that allow wetlands to be impacted either directly or indirectly and, although mitigation for stream and wetland impacts may be required by the permit, mitigation often takes place outside of the watershed in which the impacts actually occur.

Therefore, local governments must fill the gaps in order to protect these vital resources from both direct and indirect impacts associated with development. The Matrix identifies where local ordinances beneficial to good watershed management may be falling short or lacking all together.

Reviewing the Matrix, overall 23 of 27 local jurisdictions (~85%) have their own construction-phase BMP requirements, but within Mobile County the rate is only ~67%. Most of the jurisdictions that do not have specific requirements refer to the ADEM requirements. Post construction stormwater management requirements follow the same trend, primarily due to FEMA flood control requirements. However only 10 local jurisdictions (~37%) address post-construction stormwater quality. Coastal resource protection requirements are only evident in ~44% of the local jurisdictions, although all jurisdictions mention the State and/or federal permitting requirements. LID and shoreline protection requirements are only evident in about 30% and 15%, respectively (although shoreline protection is less critical in more inland communities without traditionally navigable waterways). Ten of the 27 jurisdictions are currently covered under the NPDES MS4 program permit.

Summary of Matrix Regulatory Responses

Regulatory Category	Baldwin Yes	Baldwin No	Mobile Yes	Mobile No
Construction Phase BMPs regulations	14	1	9	3
Post Construction Phase SW Management regulations	14	1	8	4
Coastal Resource Protection regulations	8	7	4	8
Low Impact Development regulations	6	9	2	10
Shoreline Protection regulations	4	11	0	12
MS4 Permit Coverage	4	11	6	6

C. Inconsistencies

Regulatory inconsistencies between federal, state and local units of government are inevitable and can contribute to ineffective watershed management, serve as impediments to restoration efforts, and cause confusion in the regulated community. Addressing regulatory inconsistency was a high priority item identified by both the development community and local government representatives during the public planning workshop held as part of the Weeks Bay Watershed Management Planning process. Development entities frequently gravitate to, or seek incorporation into, jurisdictions with “less regulation”. However, the long-term costs to the broader community and its citizens will be realized as flooding increases; flood zones expand, increasing insurance rates; and waterbodies become polluted, prompting additional regulatory oversight, expensive restoration projects, and increased stormwater treatment costs; and stormwater conveyance, maintenance, and dredging costs manifest and increase.

Regulatory inconsistencies have even precipitated legal action between jurisdictions (Baldwin County v Bay Minette, *et. al.*, 854 So. 2d 42[Ala. 2003]) whereby the County was attempting to prevent municipalities from issuing permits outside of their respective city limits because of potential differences in regulatory standards between the County and the various municipalities. The fact that creeks and rivers do not respect political boundaries, and what happens relative to stormwater runoff in an upstream community has impacts on all communities downstream, highlights the need for consistent stormwater management policies and practices. By example, stormwater runoff from the southeast corner of Semmes enters a watercourse tributary to Eight-Mile Creek, and flows through Mobile County, the City of Mobile, the City of Prichard, the City of Chickasaw, joins Chickasaw Creek and borders the City of Saraland, and flows back into the City of Mobile. Conversely, stormwater runoff from various portions of the City of Mobile impacts about a dozen different major (HUC 12) watersheds.

Between-jurisdiction inconsistencies are readily apparent in the Matrix. Most notable are the requirements for stabilization timeframes, which is the most critical element in erosion control. Other obvious inconsistencies are in: design standards and storms; site size to which the requirements apply; and buffers and setbacks. The following list has been

paraphrased from the *Weeks Bay Watershed Management Plan* (2017) and provides a good example of where (and why) regulatory consistency is of most benefit:

- Design standards for construction-phase BMP implementation. The current recommendations by EPA, the *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas* (2014), and the ADEM stormwater general permit all reference the two-year 24-hour frequency event. This is generally the physical limitation of most all of the temporary construction phase BMPs currently available, and designing for a larger event is impracticable. Having requirements for construction phase BMP plan preparation and BMP design and selection that are compatible with the ADEM guidance and requirements also reduces the potential for applicants having to prepare multiple plans under differing guidelines.
- Stabilization Time. Erosion and sedimentation issues are directly related to the “extent and duration” of the area exposed, *i.e.*, how much denuded area is exposed to rainfall and how long it is exposed before being stabilized. ADEM’s construction stormwater general permit requires that areas that have been disturbed and will not have activity for 13 days or more be temporarily stabilized immediately (emphasis added). Based on guidance from EPA, the ALDOT limits exposure to 17.5 acres, unless waived by the project engineer, to help control the extent of an area exposed.
- Maintenance. The effectiveness of construction-phase BMPs is directly related to maintenance of the individual control measures. The ADEM permits allow five days (from the date of discovery) to repair, maintain, or replace ineffective BMPs. Three municipalities within the two counties use a 48-hour repair or maintenance timeframe, which is consistent with recommendations in the D’Olive Creek WMP (2010) and other areas of the state.
- Post-construction design standards. The effectiveness of post-construction stormwater management is directly related to adequate design and installation and routine inspection and maintenance. There are no federal or State requirements, so having consistent local requirements that meet both flood mitigation goals and watershed protection goals are critical.
- Long term maintenance of post-construction stormwater facilities. Developing a consistent set of maintenance and repair requirements for permanent stormwater management facilities will ensure that watershed protection goals can be sustained. This could also facilitate the compilation of an inventory of systems that can be used to systematically inspect and prioritize the repair, maintenance, or retrofitting of systems throughout the two-county area.

To add to the above list, having a consistent site size, where the construction-phase and post-construction-phase requirements apply, consistent design criteria (storm size/frequency, calculation methods, etc.) and consistent setbacks/buffers and LID requirements would be helpful to those working in multiple jurisdictions. Having a degree of consistency on erosion and sediment control plan submission, what credentials are necessary to prepare plans and perform inspections, as well as consistent nomenclature relative to stormwater management, would also be beneficial. Resolving the majority of the inconsistencies identified in the matrix to achieve common watershed protection goals would be beneficial to both local governments and the development community

(developers, builders, consultants, etc.) and will foster wise stewardship of the resources within the watersheds.

Although not a focus of this project, several instances of “internal” inconsistencies were noted within a local jurisdiction’s regulations, *i.e.*, requiring one standard in one section and a different standard in another. By example: The Town of Perdido Beach Subdivision Regulations, regarding calculations for stormwater management ponds, state in §12.10.3 the rational method may be used for projects up to 200 acres; while §12.12.2 states that the rational method or modified rational method shall not be used on projects greater than 40 acres; the Town of Magnolia Springs references the Alabama Handbook for design standards that uses a two-year, 24-hour storm, but later indicates a design storm of 25-year, 24-hour. As noted in the Matrix, there are also several instances where a jurisdiction refers to multiple design standards (up to eight in Orange Beach). These type internal regulatory inconsistencies are most common when stormwater management requirements are addressed in more than one municipal ordinance.

VI. Observations and Opportunities

Anecdotally, the author observed that we tend to regulate most the things the public perceives need regulating, which turn out to be the things we know or understand. The best example found during this exercise was related to signage. All jurisdictions regulate signs, in some case up to 30 pages worth of sign regulations, while resource protection and stormwater requirements are lucky to receive a paragraph or two. This illustrates the need to better educate the public and those with authority to adopt, implement, and enforce stormwater management requirements.

- Educating elected officials and members of planning and zoning commissions so that the long-term benefits of wise resource management (including stormwater management) and the consequences of poor management are better understood would facilitate better governing (regulation and decision making).
- The various planning and regulatory staffs of the local units of government are generally well-educated on the principles and practices of stormwater management, however until the establishment of the local Baldwin County planning workgroup established through the Weeks Bay Watershed Management effort, there has been little formal interaction between jurisdictions. This group, Plan Lower Alabama Now (PLAN), along with the D'Olive Intergovernmental Task Force, could serve as models for information sharing among jurisdictions to facilitate consistency, or at least a common set of minimum standards in local regulatory requirements related to resource and stormwater management.
- Educating existing homeowner associations about stormwater management and requiring minimum subdivision stormwater management practices in newly recorded covenants would help ensure long-term maintenance and functioning of the systems.
- Educating the general public about the benefits of, and need for, good resource and stormwater management practices to help build the popular opinion necessary to sway political action.

A common suggestion in the local watershed management plans reviewed and reiterated here is that local governments are encouraged to set consistent requirements related to resource and stormwater management. As evidenced in the Matrix, there is a range of design standards and/or design references cited, and while each has merit for the particular settings for which they were developed, some are more or less appropriate for urban areas than others.

- Common design standards and design storm for temporary BMPs implemented during construction. Adopting the latest edition of the *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas* (ASWCC, 2014), besides providing an excellent baseline for use of BMPs and design storm (two-year, 24-hour), is consistent with ADEM permit requirements and therefore does not impose additional obligations on sites greater than one acre and smaller sites that are part of a common plan of

development. It should be noted that for temporary BMPs, a design storm larger than the two-year (i.e. recurrence interval of two years) event is not practicable.

- The size of the site to which the local requirements apply also varies greatly and is usually tied to a “land disturbance” permit requirement. Some municipalities have differing requirements for different size sites (e.g. City of Mobile uses a “Tier I” and “Tier II” designation, Foley distinguishes between parcels greater than 500 square feet and ½ acre, etc.) or different requirements based on a particular “overlay district” or receiving stream, and all jurisdictions have a variety of activities that are “exempt” from the requirements. In jurisdictions having MS4 permit coverage, having stormwater requirements that apply to sites less than that imposed by ADEM (one acre or smaller if part of a larger common plan of development) is likely justified.
- Since limiting the extent and duration of exposure of an area to rainfall is critical in reducing erosion and sediment loss, having consistent requirements that would limit, through construction phasing, timing and temporary stabilization, the extent and duration of areas exposed would help ensure that all watercourses are equally protected. ADEM currently requires that 1) any area not actively worked for 13 days or more be immediately stabilized, and 2) any area where construction has permanently ceased be immediately stabilized. For temporary stabilization, the Matrix indicates a range of allowed exposure time of two to 60 days (assuming 13 days for ADEM) and some municipalities in Alabama, outside of the project area, have even adopted a 24-hour requirement. Based on the frequency of rainfall and type of rainfall received in Mobile and Baldwin counties, a two-day stabilization time would seem appropriate.
- Lack of BMP maintenance continues to be the number one issue related to ADEM permit compliance and effective erosion and sedimentation control. Routine inspection of stormwater management practices is essential to determining their effectiveness and to detect poorly functioning practices and those in need of routine maintenance. ADEM requires that permittees perform “daily visual observations” and self-inspection (by a qualified inspector) monthly and after rainfall events of ¾ inch or more in a 24-hour period (sites having within stream bank disturbance are inspected weekly). The ALDOT has adopted a weekly self-inspection frequency. Currently, most local jurisdictions do not require developers to perform self-inspections and rarely have a set frequency for their staff inspection. Some municipalities do require that any ADEM inspections be submitted or made available to the local jurisdiction and at least one (Semmes) requires city inspection at scheduled milestones with a required city authorization to continue work. This last example of stopping work/inspect/proceed has also been adopted by at least one nation-wide developer, treating BMP installation and maintenance as a critical part of the overall project. Weekly inspections, performed and documented by qualified inspectors, are generally sufficient during most construction projects.
- Intimately related to the lack of maintenance issue is the time that is allowed for a contractor to actually repair, replace, or maintain the practice, and the shorter the

timeframe the better. ADEM currently allows five days while local jurisdictions require, when specified, anywhere from two to 10 days, with the two-day timeframe appearing most popular and most appropriate.

- ADEM requires permittees to “self-report” non-compliant discharges (i.e. excessive turbidity or sediment reaching a water of the State) and this permit provision is rarely heeded. At the local level only one jurisdiction has a self-reporting requirement (Semmes). However, this is probably not a critical issue because routine inspections can be performed by the municipality or county on a more frequent basis than ADEM inspections. However, routine inspections by the contractor/developer and by the regulatory authority are necessary to insure continued permit compliance.
- The buffer or setback requirement is another area that is highly variable among jurisdictions ranging from zero to 150’. One reason for the high variability is the lack of a State or federal requirement (although the ADEM construction permit, ALR10, has a 25’ riparian buffer requirement, it is so heavily caveated that it is rarely applied) and the plethora of varied references throughout the literature. Some consider such buffers or setbacks to constitute a taking of property without compensation and therefore most jurisdictions have not attempted to adopt such requirements or set a specific size setback. However, most local jurisdictions do require setbacks from waterways and other flood-prone areas (either vertically or horizontally), street and side yard setbacks, and dedicated “green spaces;” all of which are no more or less a “taking” than a stream or wetland setback. Generally, the larger the setback or buffer, the better, and the size needed to protect the resource can vary depending on soil type, resource type protected, position on the landscape, topography, etc.; so, one size does not necessarily fit all situations. Additional efforts are needed to develop effective watershed specific buffer and setback requirements.

Post-construction stormwater management is arguably more important than “during-construction” phases of a project, since potential stormwater impacts will continue for the life of the completed project. Therefore, consistent stormwater management policies and regulations are even more necessary. As indicated earlier, regulations intended to mitigate flooding issues were not specifically reviewed as part of this project. However, a good portion of the regulatory requirements for detention or retention were found in “flood control” ordinances. Since we now understand that simply catching the runoff and releasing it at a controlled rate may not be the best option for flood control or water quality, because it does nothing to reduce the increase in overall volume being discharged or remove pollutants, new thinking is necessary to ensure better long-term stormwater management.

The variability of post-construction stormwater management regulatory requirements between jurisdictions is due in part to the lack of federal or State requirements. As discussed above, the best way to achieve stormwater management goals is to ensure that design standards that address both flooding and water quality within a watershed are consistent between all jurisdictions within the watershed. These standards should

consider the “timing” of stormwater discharges and also incorporate LID measures that reduce the overall volume of runoff from a completed project, something that very few (~30%) local jurisdictions address. At least two jurisdictions (Baldwin County and Orange Beach) currently have watershed or water body specific requirements (i.e. detention requirements based on receiving stream). The following discussion regarding post-construction stormwater management was excerpted from the *Weeks Bay Watershed Management Plan (2017)*, but is applicable to all of coastal Alabama:

In the ADEM *Low Impact Development Handbook for the State of Alabama*, <http://www.adem.state.al.us/programs/water/waterforms/LIDHandbook.pdf>, it is recommended that the “first flush” be captured and retained. This water quality “capture depth” ranges from 1.0 – 1.5 inches across the state, with 1.5 inches applicable to coastal plain regions. The theory has been that if X% of the runoff is eliminated (retained on-site) a corresponding reduction in pollutant loading will result. Some opinions (Andrew Reese in *Stormwater*, Vol. 10 No. 6) are that even the traditional methods of using pre-and post-construction peak discharge limitations to address flooding and downstream impacts and/or pollutant reductions may not be as an effective approach as originally thought, and that the total pre and post construction discharge volume should be considered (an idea known as Volume Based Hydrology (VBH)). Reese also postulates that peak discharge controls may even exacerbate downstream erosion, particularly in humid climates, by forcing larger volume flows into the channel cross-section rather than allowing them to flow partially along floodplain paths. Standardization of the design criteria and calculation method(s) will help ensure that watershed protection goals can be achieved. Design storm events should be focused on runoff reduction (VBH) and timing that would be applicable, at a minimum, to the Weeks Bay Watershed [and other specific watersheds in coastal Alabama, *ed.*].

It is important to understand that a “100-year storm” does not normally cause a “100-year flood”, so it is necessary to understand the hydrology of the watershed in order to develop effective post-construction stormwater management objectives. Simply increasing detention requirements from the “10-year storm” to the “100-year storm” is not necessarily good. In fact, it may be more appropriate to decrease the detention requirements in areas closest to the watershed outlet. Each watershed should be evaluated, similar to what was done for Fish River by Baldwin County, to determine the best stormwater runoff management scenario for specific watersheds.

Lack of maintenance of post-construction stormwater management facilities (basins) is a common problem, and there are varied opinions on “who” should be responsible. Most local jurisdictions (the ones requiring retention/detention) require that the “owner” be responsible for long-term maintenance. However, these same jurisdictions are: specifying the design standards of the facilities and performing, or requiring, inspection and certification to ensure proper construction; readily assume responsibility of the street and stormwater drainage infrastructure appurtenant to the streets and basin(s); and, for those with MS4 permit coverage, are responsible for discharges from the basins. So, it appears that the local jurisdictions are vested in the proper operation of the facilities and should consider accepting maintenance responsibility concurrent with acceptance of new streets and drainage infrastructure.

The Coastal Resource Protection requirements reviewed focused primarily on wetlands and waterways and what type buffer or setback requirements the local jurisdictions implement independent of State or federal requirements. The Matrix indicates that about 44% of the local jurisdictions have some requirements aimed at protecting these coastal resources and two (Dauphin Island and Orange Beach) have requirements that any wetland mitigation be undertaken within the jurisdiction. See the above discussion of setbacks and buffers.

Green Infrastructure (GI) or LID are relatively new concepts that focus on improving the quality of runoff and reducing the overall volume of runoff from completed projects. The majority of these practices are focused on having the stormwater infiltrate the ground as close to the point of rainfall impact as possible. The following was excerpted from the *Weeks Bay Watershed Management Plan (2017)* and is applicable to the entirety of the two coastal counties:

Careful consideration of stormwater management is critical for planners, environmental program managers, elected officials, homeowners, business owners, developers, contractors, design professionals, and others; however, it is rare that these groups have an opportunity to work together in planning for future development and redevelopment, particularly on a watershed level. Low impact development or LID is an interdisciplinary systematic approach to stormwater management that, when planned, designed, constructed, and maintained appropriately, can result in improved stormwater quality, improved health of local water bodies, reduced flooding, increased groundwater recharge, more attractive landscapes, wildlife habitat benefits, and improved quality of life (*ADEM Low Impact Development Handbook for the State of Alabama*).

The lack of specific State or federal requirements or standards for LID is resulting in most jurisdictions not incorporating them into local ordinance and of the few (eight) jurisdictions that do specifically mention LID in their regulations, only three have specific requirements and each of those have different standards. It would seem that developing a common methodology of implementing LID (consistent local requirements), while there are only a few jurisdictions involved, would set the example for more consistent requirements in the future. Since LID focuses on reducing the overall volume of runoff, the previous paragraph illustrates the concept. Most all of the local jurisdictions do have some type of restrictions on encroachment into flood-prone areas (flood zones or floodways) and “open space”, “greenbelt” or “green space” requirements that should be reconciled with setback and buffer zone requirements. Further efforts are needed to determine the most effective ways to integrate flood control ordinances, green space and landscaping requirements, LID, and stormwater management requirements. Each impact the other and, individually and collectively, impact our waterways and downstream neighbors. Readers are also referred to Section 6.5 of the *Weeks Bay Watershed Management Plan (2017)* for a more detailed discussion of LID.

Proper planning and design of construction phase BMPs and post-construction stormwater management systems (detentions, retention, LID, etc.) are essential to proper functioning of the controls and their effectiveness and local ordinances should ensure that

persons preparing and designing these controls are qualified. ADEM states that BMP plans should be prepared by a Qualified Credentialed Professional (QCP) and defines such persons as Professional Engineers (PE), Certified Professional in Erosion and Sediment Control (CPESC), and other registered professionals with education, training and experience in erosion and sediment controls. Many local jurisdictions have also adopted these requirements.

The development of “model ordinances” related to stormwater management was beyond the scope of this particular effort and, as indicated in the narrative, adopting identical requirements throughout the two-county area is not necessarily the best option. None of the local ordinances currently address every aspect of resource protection or stormwater management; however, various portions of Foley, Fairhope, Magnolia Springs and Semmes, regulations provide good examples that can serve as a baseline for model ordinances. As mentioned above, the ordinances should be developed based on specific stormwater management objectives on a watershed scale and should not simply be copied from other areas of the country or state. Since the South Alabama Regional Planning Commission (SARPC) continues to assist many of the local governments in development of ordinances, they should be involved in the development and promotion of a set of model ordinances for each of the resource protection and stormwater management measures reviewed.

In addition to reconciling “between jurisdiction” inconsistencies, each local jurisdiction should conduct a thorough review of its regulations and ordinances to eliminate any “internal inconsistencies” and reevaluate requirements that are contrary to LID practices and good stormwater management. By example, the City of Fairhope revised its parking lot requirements to consider and incorporate LID practices.

One of the more comprehensive sets of stormwater management regulations reviewed was the City of Fairhope’s Subdivision Regulations, Article V. Section F. Although some of the prescriptive portions may vary from the author’s recommendations, they contain most of the critical elements for good erosion and sediment control, post-construction stormwater quantity and quality, setbacks/buffers that vary by resource, and incorporate LID practices through target reductions (in lieu of mandatory practices) that allow flexibility. General recommendations and select excerpts from ordinances are presented in Appendix III.

Appendix II

Regulations, Ordinances and References

Federal Regulations and References

USDA NRCS - National Engineering Field Manual for Conservation Practices, January 2012

USDA NRCS - Urban Hydrology for Small Watersheds, TR-55, June 1986

U.S. Environmental Protection Agency (EPA) - 2017 NPDES Construction General Permit, February 16, 2017

U.S. Geological Survey Water Science School website <https://water.usgs.gov/edu/100yearflood.html>

State Regulations and References

Alabama Department of Environmental Management (ADEM) - NPDES General Permit ALR100000; effective April 1, 2016.

ADEM Administrative Code R. 335-6, February 3, 2017 (Water Quality Program)

ADEM Administrative Code R. 335-8, May 8, 2013 (Coastal Program)

ADEM – Construction Best Management Practices Plan (CBMPP) Guidance Template; February 2012

ADEM - *Low Impact Development Handbook for the State of Alabama*, undated

Alabama Soil and Water Conservation Committee – *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*; September 2014

Alabama Cooperative Extension Service, ADEM and Auburn University – *Planning for Stormwater Developing a low impact solution*, 2016

Local Regulations – Baldwin County

Baldwin County Subdivision Regulations; May 19, 2015

Baldwin County Zoning Ordinances, Section XIII; amended May 17, 2016

City of Bay Minette Subdivision Regulations; February 14, 2006, amended July 10, 2012

City of Daphne Ordinance No. 2014-14, CBMPP Ordinance; April 21, 2014

City of Daphne Land Use and Development Ordinance; July 18, 2011

Town of Elberta Subdivision Regulations; as amended August 20, 2009

City of Fairhope Subdivision Regulations; March 8, 2007

City of Fairhope Code of Ordinance Chapter 7 Article VII (Erosion and Sediment Control Ordinance 1398); August 10, 2009

City of Fairhope Code of Ordinance Chapter 7 Article IX (Wetland Ordinance 1370); October 13, 2008

City of Fairhope Ordinance 1550; October 12, 2015

City of Foley Code of Ordinance Chapter 6.5 Article III (Erosion and Sediment Control Ordinance 15-1003); March 16, 2015

City of Foley Code of Ordinance Chapter 4 Article IV (Manual for Design and Construction Standards); 2017 edition

City of Foley Code of Ordinance Chapter 4 Article VIII (Shoreline Construction Activity Ordinance 1024-08); January 21, 2008.

City of Gulf Shores Subdivision Regulations; September 22, 1987 as amended thru May 23 2017

Town of Loxley Zoning Ordinance; August 9, 2004 as amended thru July 14, 2014

Town of Loxley Subdivision Regulations; July 8, 1991 as amended thru April 13, 2009

Town of Magnolia Springs Zoning Ordinance (Ordinance #2010-06); June 22, 2010

Town of Magnolia Springs Subdivision Regulations; August 23, 2007 as amended thru January 12, 2012

The Subdivision Regulations [for] the City of Orange Beach, Alabama; July 2, 1991 as amended thru January 2007

The City of Orange Beach Ordinance 2003-741; April 1, 2003

The City of Orange Beach Ordinance 2005-855; January 18, 2005

Town of Perdido Beach Subdivision Regulations; May 4, 2011

City of Robertsdale - Land Use Ordinance; January 23, 2012.

Silverhill Zoning Ordinance of the Town of Silverhill, Alabama; January 17, 2000

City of Spanish Fort Subdivision Regulations; February 8, 2016

City of Fairhope Subdivision Regulations; March 8, 2007

Summerdale Town of Summerdale Building Code Ordinance 521-13; March 11, 2013

Local Regulations– Mobile County

Mobile County Flood Damage Prevention Ordinance; March 11, 2010

The Subdivision Regulations of Mobile County, Alabama; December 13, 2004 as amended thru April 26, 2005

Mobile County Public Works Commercial Site Plan Requirements For Land Disturbance Permitting and International Building Code Compliance (106); December 11, 2017

Mobile County Public Works Construction Specifications and Engineering Requirements For Subdivisions in Mobile County, Alabama; December 11, 2017

The Zoning Ordinance of the City of Bayou la Batre, Ordinance #495; March 22, 2005

City of Bayou la Batre Storm Water Management and Flood Control Ordinance, Ordinance #504; October 11, 2005

City of Chickasaw Stormwater Discharge Plan, Ordinance #1540; December 1, 1998

Zoning Ordinance of the City of Chickasaw, Ordinance #2016-03; March 22, 2016

The Zoning Ordinance of the City of Citronelle, Ordinance #1059; January 13, 1987

City of Citronelle Subdivision Regulations, Ordinance #1280; January 24, 2013

Subdivision Regulations Creola, Alabama; November 12, 1992 as amended February 16, 2016

The Zoning Ordinance of the City of Creola; May 2002 as amended December 2014

Zoning Ordinance of the Town of Dauphin Island, Alabama, Ordinance #96; November 18, 2014 as amended thru June 2015

Mobile City Code, Chapter 17, Storm Water Management and Flood Control; July 8, 2014

Subdivision Regulations Town of Mount Vernon, Alabama; June 25, 2007

The City of Prichard Ordinance #1952; September 18, 2008

Zoning Ordinance No. 981 of the City of Prichard; June 15, 1964 as amended thru December 5, 2013

The City of Saraland Land Use and Development Ordinance; December 27, 2007

City of Saraland Ordinance #664; November 24, 1998

The Zoning Ordinance of the City of Satsuma, Alabama; Ordinance #482, September 6, 2011

City of Satsuma Ordinance #509, June 3, 2014

The City of Semmes, AL Subdivision Regulations; January 27, 2012 as amended thru Aril 26, 2016

The City of Semmes Design and Construction Manual; September 11, 2012

Watershed Management Plans Reviewed

(all are available on the MBNEP website: <http://www.mobilebaynep.com/>)

Bon Secour River, Oyster Bay, Skunk Bayou Watershed Management Plan, January 2017

Fowl River Watershed Management Plan, Undated

Three Mile Creek Watershed Management Plan, September 2014

Weeks Bay Watershed Management Plan, November 2017

WEBSITES

<http://www.mobilebaynep.com/>

<https://alconservationdistricts.gov/resources/erosion-and-sediment-control/>

<http://codes.findlaw.com>

<http://definitions.us.legal.com>

<https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents>

<http://library.municode.com/al/>

<http://sos.alabama.gov>

<https://www.epa.gov/npdes/epas-2017-construction-general-permit-cgp-and-related-documents>

<https://water.usgs.gov/edu/100yearflood.html>

<http://www.adem.state.al.us/default.cnt>

<file:///C:/Users/Double%20J/Desktop/CONSULTING/USDA%20NRCS%20TR-55.pdf>

<https://directives.sc.egov.usda.gov/viewerFS.aspx?hid=21429>

http://www.aces.edu/natural-resources/water-resources/watershed-planning/stormwater-management/documents/1467207286_lowimpactdistribution59.pdf

<http://sos.alabama.gov/government-records/legislative-acts>

Appendix III

General Recommendations and Excerpts from Select Ordinances

General recommendations:

Regulatory Category	Recommendations
Construction Phase BMPs Requirements	
Design Standards	Alabama Handbook for ESC ¹
BMP Design Storm	2yr-24hr
Site Size	>1 ac. ²
Stabilization Time	2 days if no activity for 13 days
Site Inspections – Self Performed	1 per week
Site Inspections by Regulatory Body	Scheduled with Project Phases ³
BMP Repair/Maintenance Time	48 hours
Non-compliance Reporting	Optional
Buffer Requirement	50' - 150' depending on resource
Post Construction SW Mngt Requirements	
Stormwater Quality	Retain first 1.5"
Stormwater Quantity	Detain 10 – 100 yr depending on watershed
Design Storm	10 -100 yr depending on watershed
Site Size	>1 ac impervious surface ²
Routine Inspection	Annually
Maintenance	Owner or Accepted by Municipality
Reporting	Annually
Calculation Method	Rational Method <100 ac - SCS Method >100 ac
Coastal Area Resource Protection	
Wetland/Stream Buffer	50' - 150' depending on wetland type
Permit Requirement	Yes ⁴
Low Impact Development	
Development Size	>1 ac impervious surface
Impervious Cover	Yes
On-site Retention	First 1.5"
LID Standards	Alabama LID Handbook ⁵

¹Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (current edition), with Plan prepared by a QCP.

²Smaller site size may be appropriate within MS4 permitted areas.

³ BMP inspections should be similar to other building inspections (electrical, plumbing, etc.) in that work can only proceed after the local authority has performed an inspection and determined that erosion and sediment controls are satisfactory.

⁴ Additional permitting at the local level is often needed to protect wetland types or areas not covered by the COE or ADEM. Additionally, local ordinances can require that mitigation occur within their jurisdiction (e.g. Dauphin Island).

⁵ Alabama Cooperative Extension Service, ADEM and Auburn University – *Planning for Stormwater Developing a low impact solution*, 2016

Excerpts from Select Ordinances: During the review process a number of ordinances appeared effectively worded to achieve their intended objectives and exclusion from the following list is not intended to reflect negatively. The following excerpts from local ordinances are just a few examples that demonstrate the elements necessary for effective resource management:

Relating to BMP Design Standards and Qualifications:

City of Fairhope Subdivision Regulations Article V. Section 6.

“k. Erosion and sediment control plans and details shall be based on the current edition of the “Alabama Handbook for Erosion Control, Sediment Control and Storm water Management on Construction Sites and Urban Areas”. Erosion control plans shall be prepared by a certified professional in erosion and sediment control such as a Certified Professional in Erosion and Sediment Control (CPESC).”

City of Fairhope Ordinance 1398, Section VI. Erosion and Sediment Control Plan.

“Plan shall be prepared by a certified erosion and sediment control specialist, such as a qualified credentialed professional (QCP), a Certified Professional of [in] Erosion and Sediment Control (CPESC) and/or a professional engineer.”

Relating to Inspections:

Mobile City Code, Chapter 17 (Ordinance 17-025-2014) Section 17-9(b)

“(2) Construction inspections. Regular inspections of the stormwater management system construction shall be conducted by a certified professional engineer, or a qualified certified inspector (“QCI”) or qualified credentialed professional (“QCP”). All inspections shall be documented and written reports prepared that contain the following information:

- a. The date of the inspection;*
- b. Whether construction complies with the approved CBMP plan;*
- c. Any deviation from the approved construction specifications; and*
- d. Any violations of the stormwater and flood control ordinance.”*

City of Fairhope Ordinance 1398, Section V. Permits.

“Once permit is received, permittee should immediately install those control measures (BMPs) specified on the site Erosion & Sediment Control Plan, if any, as well as the City of Fairhope BMP Minimum Requirements. Furthermore, land disturbance activity (except that necessary to install such BMPs) shall not commence until and “Initial BMP Inspection” is completed to ensure conformance with the developer’s plan as approved by the QCP and the City of Fairhope BMP Minimum Requirements.”

City of Fairhope Ordinance 1398, Section IX. Inspections.

“The City of Fairhope shall conduct random and scheduled Erosion and Sediment Control inspections of the construction activity and shall determine compliance or non-compliance with the provisions of the Ordinance. The following inspections shall be performed at a minimum on development and constructions sites, including sing family residential:

- 1. Initial BMP inspection*

2. *After clearing and grading has been completed (including detention/retention pond installation”.*
3. *After drainage features have been installed*
4. *Each phase of construction shall require a separate site inspection, before the next phase begins.*
5. *Before construction completion (before issuance of Certificate of Occupancy or other final building department inspection).*
6. *City of Fairhope Erosion and Sediment Control inspections in no way supersede or replace any State or Federal inspection requirements.*

B. The owner or contractor shall also make daily and rain event inspections of all control measures throughout the construction process to ensure the overall effectiveness of the Erosion and Sediment Control Plan.”

Relating to Post Construction Stormwater Management:

City of Semmes, Alabama Subdivision Regulations 4.18.5

“Detention and retention ponds will be reflected on the Preliminary and Final Plats as well as the Engineering Plans. These ponds will be maintained in accordance with BMP as prescribed by the Alabama BMP Handbook. Ownership of storm water management facilities:

1. All storm water management facilities shall be privately owned and maintained unless the Municipality expressly accepts the facility for Municipality ownership and maintenance. The owner of all private facilities shall grant to the Municipality, a perpetual, non-exclusive easement which allows for public inspection and emergency repair.”

City of Semmes, Alabama Subdivision Regulations 4.18.5.1.2

“c. The agreement shall provide that preventative maintenance inspections of storm water management facilities may be made by the City Engineer, at his option. Without limiting the generality of the foregoing, the City Engineer’s inspection schedule may include an inspection during the first year of operation and once every year thereafter, and after major storm events (i.e., 5- or 10-year floods).

d. Bi-annual inspection reports prepared by a PE at the owner’s expense shall be submitted to the City Engineer.

e. The agreement shall provide that if, after an inspection, the condition of a facility presents an immediate danger to the public health, safety or general welfare because of unsafe conditions or improperly maintenance, the Municipality shall have the right, but not the duty, to take such action as may be necessary to protect the public and make the facility safe. Any cost incurred by the Municipality shall be paid by the owner.”

Relating to Buffers:

City of Semmes, Alabama Subdivision Regulations 3.4.1.

“The width of buffer shall be delineated from the designated boundary line of wetlands and the identified top of bank of streams and waterbodies. These buffer areas shall be measured as follows: Within 150 feet of a public drinking water source and any associated tributaries and/or wetlands; within 100 feet of

streams and associated wetlands; and within 75 feet of natural drainage features, drainage easements, and adjacent and/or isolated wetlands.”

City of Fairhope Subdivision Regulations Article V. Section 4.

“A buffer layer in the City’s GIS system has been developed to show buffer limits along streams within the City’s planning jurisdiction. The following Buffer widths used to develop the buffer layer for streams, are shown in the following table and are measured from the top of bank as defined in Article II of these subregulations. Buffer widths for ponds, Mobile Bay, jurisdictional wetlands as determined by the Alabama Department of Environmental Management and the Army Corps of Engineers, and any lakes, ponds, and isolated wetlands are also shown in the table. The buffer requirement applies to streams beginning at a point where the drainage area is 100 acres or greater.”

Feature Buffer	Width (feet)
<i>Fish River</i>	100
<i>Other Watersheds</i>	50
<i>Mobile Bay</i>	50
<i>Wetlands (Jurisdictional and Isolated)</i>	30
<i>Ponds/Lakes/Isolated wetlands</i>	30

Relating to Low Impact Development (LID):

City of Fairhope Subdivision Regulations Article V. Section 8.

8. Post Development Water Quality Best Management Practices –

a. Storm water quality BMPs for new development and significant redevelopment are required for projects that disturb three acres or more or subdivisions with four or more lots. (The effective acreage for a project is not limited to a fractional part of the total concept; even though developed in phases, it is the total area of the conceptual plans which governs). The BMPs must be designed to achieve the goal of removing at least 80% of the average annual post-construction total suspended solids (TSS) load. The storm water quality BMPs will be considered in compliance with this requirement if;

(1) BMPs are sized to capture and treat the water quality treatment volume, which is defined as the runoff volume resulting from the first 1.8 inches of rainfall from a site; and,

(2) Appropriate structural storm water BMPs are selected, designed, constructed, and maintained. Storm water quality BMPs may be required on smaller projects if it is determined in the Planning Commission’s discretion that the intensity of the development could cause off-site storm water impacts during or after development.

b. The storm water quality treatment goal is designed to capture 85% of the annual storm water runoff. Storm water quality BMPs must be designed to treat the runoff from the first 1.8 inches of rainfall. Each site’s storm water quality treatment volume is also based on its percent impervious cover. The treatment standard is the same for all sites unless other secondary

pollutant reduction goals are established by ADEM; for instance, through the establishment of Total Maximum Daily Loads (TMDLs). The storm water quality treatment methodology to determine treatment volume is as follows:

$$WQv = \frac{P \times Rv \times A}{12}$$

Where:

WQv = water quality treatment volume, acre-feet

P = rainfall for the 85% storm event (1.8 inches)

Rv = runoff coefficient (see below)

A = drainage area in acres

$$Rv = 0.015 + 0.0092I$$

I = drainage area impervious cover in percent (50% imperviousness would be 50)

c. This storm water quality treatment goal is designed to give the developer flexibility in meeting the 80% TSS reduction goal on each site. BMPs may be selected to meet the storm water quality requirements in numerous ways through the application of low-impact site design and layout, non-structural BMPs, and structural BMPs.

d. The City encourages use of low-impact site design practices that reduce the impact of development on storm water quality and quantity. Low-impact site design practices are meant to:

- (1) Minimize the impervious cover on a site,*
- (2) Preserve the natural infiltration ability of the site,*
- (3) Route storm water to “micro controls,” such as rain barrels, rain gardens, etc. that treat small portions of site storm water from the site, and,*
- (4) Minimize long-term BMP maintenance by preserving and using natural features of the site.*

e. A developer should consider low impact site design practices early in the design process in an effort to reduce the overall water quality treatment volume requirement. These practices tie directly into the storm water quality program, the WQv calculation, and/or the storm water treatment volume. These practices should only be implemented when not in conflict with other City regulations.

f. Structural storm water controls, or Best Management Practices (BMPs), are engineered structures designed to treat storm water or mitigate the impact from storm water runoff. The following table presents a pre-approved listing of structural BMP practices. These BMPs have been assigned a TSS removal capability, based upon existing research, and can be used by developers to meet the pollutant reduction goal of 80% TSS removal. The structural BMPs have been divided into two categories:

- (1) General application BMPs are assumed to achieve the 80% TSS reduction.*
- (2) Limited application BMPs which have to be used in combination with other BMPs to achieve the 80% reduction goal. These BMPs may not be applicable for certain sites and require frequent intensive maintenance to function properly.*

[The regulation goes on to list a number of “Pre-Approved BMPs” and associated TSS removal rates.]”

Regulatory Category	US EPA	ADEM	Baldwin County	Bay Minette	Daphne	Spanish Fort	Fairhope	Robertsdale	Loxley	Magnolia Springs	Silverhill	Summerdale	Foley	Elberta	Gulf Shores	Orange Beach	Perdido Beach
Construction Phase BMPs Requirements	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Design Standards	Not Specified	AL Handbook*	AL Handbook	N/A	AL Handbook	AL Handbook	AL Handbook	USDA Field Manual**	Loxley Regulations Field Manual	USDA Field Manual	AL Handbook	EPA	AL Handbook	Not Specified	Not Specified	Not Specified	AL SCS manual or USDA Field Manual
BMP Design Storm	2yr-24hr	2yr-24hr	Not Specified	N/A	2yr-24hr	2yr-24hr	Not Specified	25 yr	10 yr	25yr -24hr	Not Specified	Not Specified	Not Specified	10/25-year	Not Specified	25 yr	25 yr -24 hr
Site Size	>1 ac. ⁴	>1 ac.	Any	N/A	>1,000 ft ²	>1,000 ft ² / 1 ac.	All	>1 ac.	1, 5, & 10 ac.	Not Specified	>1 ac.	>1 ac.	>= 500 ft ² / 1/2 ac.	>1 ac.	>4,000 sf	Not Specified	Any
Stabilization Time	immediate/14 days	Immediate/13 days	10 or 13 days	N/A	13 days	30 days	10 days	"minimized"	Not Specified	13 days	30 days	Not Specified	Immediate	14 days	Not Specified	Not Specified	10 days
Site Inspections	1 per week or per 2 weeks + 1/4" rain	State-Random / Con. 1/month + 3/4" rain	Yes	N/A	Yes	Yes	City-Random; Contractor- Daily	No	No	No	No	No	City-Random / Contractor- "regular"	City-Random / Contractor- "regular"	Not Specified	Not Specified	City-Random / Contractor- No
BMP Repair/Maintenance Time	immediate / 7 days	5 days	Not Specified	N/A	2 Days	Not Specified	2 Days	No	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified
Non-compliance Reporting	Yes	Yes	No	N/A	No	No	No	No	No	No	No	No	No	No	Not Specified	Not Specified	No
Buffer Requirement ⁵	50'	Yes- 25'	No	N/A	No	25' - 30'	20' / 30'	Yes-Unspecified Width	No	Yes - Varies	Yes-Unspecified Width	No	30' - Wetland 50' - Waterway	5' - 30' - Wetland 25' - Waterway	30' Wetland	No	30'
Post Construction SW Mngt Requirements	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stormwater Quality	No	No	No	No	Yes	No	Treat 1.8", 85% Capture, 80% TSS Removal	No	No	Yes	No	No	Yes- Treat First Flush (1.25")	No	No	Yes- Treat First Flush (1")	No
Stormwater Quantity	No	No	Yes - Considers Timing	No	Yes	Yes	Yes - Considers Timing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Design Storm	N/A	N/A	N/A	N/A	2 - 100 yr	2 - 100 yr	2 - 100 yr	25 yr - 24hr	20 yr	2 - 100 yr - 24hr	10 yr	100 yr	2 - 100 yr	25 year	Not Specified	25 yr - 24hr	2-100 yr, 5 minute
Site Size	N/A	N/A	Any	N/A	Any	> 1 ac. / 5 ac. Any Subdivision.	All Subdivisions	All Subdivision, Commercial, Industrial	1, 5 & 10 ac	Not Specified	Commercial, Industrial, Residential Subdivisions	> Triplex SF, Commercial, Industrial	500 ft ²	Varies 1 - 10 ac	Any	Not Specified	Any
Routine Inspection	N/A	N/A	No	N/A	1 / 5 yr	No	1 / 3 yr	No	No	1 per 3 yr / 1 per 2 yr	No	No	Annual by City	No	No	Annual	No
Maintenance Reporting	N/A	N/A	Developer/Owner	N/A	Developer/Trustee	Developer/Owner Assoc.	Developer/Landowner	Developer/Owner	Developer/Landowner	Developer/Landowner	Developer/Landowner	Developer/Owner	Owner	Landowner	Not Specified	Owner	Developer/Trustees
Calculation Method	N/A	N/A	SCS	N/A	Rational or Modified Rational Method	<200 ac. Rational Method >200 ac. Regression Equations or SCS	Rational <100 ac, SCS >100 ac	Rational <= 200 ac	Loxley Regulations Field Manual	USDA Field Manual	Not Specified	SCS	Not Specified	Various	Rational Method	Not Specified	Rational Method
Coastal Area Resource Protection	Yes	Yes	No	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes	Yes	Yes
Wetland/Stream Buffer	50 ft.	25 ft.	N/A	25' Floodway setback where no BFE ³	Stream 50' Wetland 30'	15' - 50'	Wetland-20'/30' Streams 50'-100' (by watershed)	No	N/A	30 feet	N/A	N/A	30'-Wetland / 50'-Waterway	5'-30'-Wetland / 25'- Waterway	30'-Wetland	No	30' Wetland
Permit Requirement	Yes - COE ⁶	Yes	N/A	N/A	USACE	Yes	Yes	No	N/A	Yes	N/A	N/A	USACE/ADEM	USACE/ADEM	USACE/ADEM/CITY	ADEM/USACE	USACE
Low Impact Development	No	No	No	No	Yes	Yes	Yes	No	No	Yes	No	No	Yes	No	Optional	Yes	No
Development Size	N/A	N/A	N/A	N/A	No	N/A	Not Specified	No	No	Not Specified	N/A	N/A	N/A	N/A	N/A	Any	N/A
Impervious Cover	No	No	No	No	No	N/A	Optional	No	No	Optional	N/A	N/A	N/A	N/A	N/A	Yes	N/A
On-site Retention	No	No	No	No	No	N/A	Optional	No	No	Optional	N/A	N/A	Yes -1.23"	N/A	N/A	Yes- Treat First Flush (1")	N/A
LID Standards	No	No	No	No	Yes	N/A	Not Specified	No	No	85% Treatment - 80% TSS Removal	N/A	N/A	LID Handbook***	N/A	N/A	Not Specified	N/A
Impediments to LID	N/A	N/A	N/A	N/A	No	N/A	No	No	No	No	N/A	N/A	No	N/A	No	No	Yes
Shoreline Stabilization	N/A	Yes	No	No	No	No	No	No	No	Yes	No	No	Yes	No	Yes	No	Yes
Piers and Bulkheads	N/A	Yes	N/A	N/A	USACE, ADCNR ADEM Verification	N/A	N/A	No	No	Yes	N/A	N/A	Yes	No	Yes	N/A	Yes
Living Shorelines	N/A	No	N/A	N/A	USACE, ADCNR ADEM Verification	N/A	N/A	No	No	Not Specified	N/A	N/A	No	No	Optional	N/A	No
MS4 Permit Coverage	N/A	N/A	ALR040042	No	ALR040039	ALR040041	ALR040040	No	No	No	No	No	No	No	No	No	No

* Alabama Soil and Water Conservation Committee *Alabama Handbook for Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas*, September 2014
 ** USDA NRCS *National Engineering Field Manual for Conservation Practices*, January 2012
 ***ADEM *Low Impact Development Handbook for the State of Alabama, and/or*
 Alabama Cooperative Extension Service, ADEM and Auburn University, *Planning for Stormwater Developing an low impact solution*, 2016

Abbreviations and Foot Notes:
 1 SCS = NRCS
 2 ft² = square feet
 3 Base Flood Elevation
 4 ac. = acre
 5 For waters unless otherwise specified
 6 permitted thru Corps of Engineers

MOBILE COUNTY

MOBILE BAY NATIONAL ESTUARY PROGRAM January 2018
SOUTH ALABAMA STORMWATER REGULATORY REGULATORY REQUIREMENTS

Regulatory Category	US EPA	ADEM	Mobile County	Bayou la Batre	Chickasaw	Citronelle	Creola	Dauphin Island	Mobile	Mt. Vernon	Prichard	Saraland	Satsuma	Semmes
Construction Phase BMPs Requirements	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Design Standards	Not Specified	AL Handbook*	Handbook	Not Specified	Not Specified	N/A	USDA Field Manual**	N/A	Not Specified	N/A	Not Specified	USDA Field Manual	USDA Field Manual	AL Handbook
BMP Design Storm	2yr-24hr	2yr-24hr	Not Specified	Not Specified	Not Specified	N/A	10 year	N/A	Not Specified	N/A	Not Specified	10 year	10 year	2yr-24hr
Site Size	>1 ac. ⁴	>1 ac.	>1 ac.	Any	>1 ac.	N/A	Any	N/A	>4,000 ft ²	N/A	>10,000 ft ²	Any	Any	>500 ft ²
Stabilization Time	immediate/14 days	Immediate	Not Specified	60 Days	Not Specified	N/A	30 days	N/A	10 days	N/A	7 days / 30 days	30 days	30 days	14 days
Site Inspections	1 per week or 1 per 2 weeks + 1/4" rain	State-Random / Con. /month + 3/4" rain	Monthly	Not Specified	Not Specified	N/A	N/A	N/A	Not Specified	N/A	3/4" rainfall	N/A	N/A	City-Periodic Engineer-Regular
BMP Repair/Maintenance Time	immediate / 7 days	5 days	Not Specified	Not Specified	Not Specified	N/A	Not Specified	N/A	Not Specified	N/A	Not Specified	Not Specified	Not Specified	Not Specified
Non-compliance Reporting	Yes	Yes	No	No	No	N/A	N/A	N/A	Not Specified	N/A	No	N/A	N/A	Yes
Buffer Requirement ⁵	50'	Yes- 25'	No	Stream Width or 25'	No	N/A	Yes- Not Specified	N/A	No	N/A	Not Specified	Yes- Not Specified	Yes- Not Specified	Yes 75'-150'
Post Construction SW Mngt Requirements	No	No	Yes - limited areas	Yes	Yes	No	Yes	No	Yes	No	No	Yes	Yes	Yes
Stormwater Quality	No	No	No	No	Yes	N/A	No	N/A	Yes	N/A	N/A	>10 ac. - Yes	>10 ac. - Yes	Yes - treat 1"
Stormwater Quantity	No	No	Yes	Yes	Yes	N/A	Yes	N/A	Yes	N/A	N/A	Yes	Yes	Yes
Design Storm	N/A	N/A	10 yr / 100 yr	10 yr	2 and 10 yr	N/A	10-yr	N/A	10-yr & 1.14"/24hr.	N/A	N/A	25-yr/24-hr	2 & 10 yr	2-100 yr
Site Size	N/A	N/A	Any commercial	>2,500 ft ²	10 ac.	N/A	Not Specified	N/A	>4,000 ft ²	N/A	N/A	>2 ac	>2 ac	Not Specified
Routine Inspection	N/A	N/A	Yes-annual	No	Yes-annual	N/A	No	N/A	Yes	N/A	N/A	No	No	Biannual
Maintenance	N/A	N/A	Owner	Developer/Owner	Not Specified	N/A	Landowner	N/A	Developer/Owner	N/A	N/A	Developer/Owner	Developer/Owner	Developer/Owner
Reporting	N/A	N/A	5 yr	No	No	N/A	No	N/A	Annual	N/A	N/A	No	No	Yes
Calculation Method	N/A	N/A	Not Specified	Not Specified	Not Specified	N/A	Not Specified	N/A	Not Specified	N/A	N/A	Not Specified	Not Specified	Rational Method
Coastal Area Resource Protection	Yes	Yes	Yes	Refers to ADEM Div 8	No	No	No	No	No	No	No	No	Refers to ADEM Div 8	Yes
Wetland/Stream Buffer	50 ft.	25 ft.	Varies 25-100'	Stream Width or 25'	No	N/A	N/A	N/A	No	N/A	N/A	Yes- Not Specified	Yes- Not Specified	Yes 75'-150'
Permit Requirement	Yes - COE ⁶	Yes	No	No	No	N/A	N/A	N/A	No	N/A	N/A	No	No	No
Low Impact Development	No	No	No	No	Yes	No	No	No	No	No	No	Optional	Yes	No
Development Size	N/A	N/A	N/A	N/A	Not Specified	N/A	N/A	N/A	N/A	N/A	N/A	Not Specified	N/A	N/A
Impervious Cover	No	No	N/A	No	Yes	N/A	N/A	N/A	No	N/A	N/A	No	No	No
On-site Retention	No	No	N/A	No	Yes	N/A	N/A	N/A	No	N/A	N/A	Yes-Infiltration	Yes-Infiltration	No
LID Standards	No	No	N/A	No	No	N/A	N/A	N/A	No	N/A	N/A	No	Yes	No
Impediments to LID	N/A	N/A	N/A	N/A	No	N/A	N/A	N/A	N/A	N/A	N/A	No	No	N/A
Shoreline Stabilization	N/A	Yes	No	No	No	No	No	No	No	No	No	No	No	No
Piers and Bulkheads	N/A	Yes	N/A	No	No	N/A	N/A	N/A	No	N/A	N/A	No	No	No
Living Shorelines	N/A	No	N/A	No	No	N/A	N/A	N/A	No	N/A	N/A	No	No	No
MS4 Permit Coverage	N/A	N/A	ALR040043	Yes	ALR040044	No	No	No	ALS000007	No	ALS000002	ALR040045	ALR040046	No

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