

# **SWFRPC Resolution # 2008-11**

## **Stormwater Resolution for New Development and Re-Development**

**A RESOLUTION SUPPORTING THE TREATMENT OF STORMWATER FROM DEVELOPED NON-AGRICULTURAL AREAS TO REDUCE POLLUTANTS INCLUDING NITROGEN AND/OR PHOSPHORUS WITHIN THE SOUTHWEST FLORIDA PLANNING REGION; PROVIDING SUPPORT FOR RECOMMENDATIONS THAT IMPROVE SOURCE REDUCTION; SUSTAINABLE STORMWATER TREATMENT CONTROL FOR WATER QUALITY AND WATER QUANTITY; ADMINISTRATIVE RELIEF; PUBLIC FUNDING OF STORMWATER MANAGEMENT SYSTEMS; AND CITIZENS STORMWATER TREATMENT EDUCATION**

**WHEREAS**, Southwest Florida is a region where the water quality of the bays, estuaries, rivers, lakes, wetlands, bayous and the Gulf of Mexico is critical to the region's environmental, economic, and recreational prosperity and to the health, safety and welfare of the citizens of this region; and

**WHEREAS**, recent increased frequency and duration of red tide and blue green algae blooms and increased accumulation of red drift algae on local beaches and other algae and water related problems have heightened community concerns about water quality and cultural eutrophication of surrounding waters; and

**WHEREAS**, many water bodies in the region have been classified as impaired and will therefore be subject to development and implementation of Total Maximum Daily Load criteria; and

**WHEREAS**, there is a need to develop a stronger understanding of the connection between activities in yards, streets, and stormwater systems and natural water bodies among all those who live, work and recreate in the Southwest Florida Region; and

**WHEREAS**, this resolution is part of a multi-pronged effort by the Southwest Florida Regional Planning Council to reduce nutrient leaching and runoff problems by actions including, but not limited to, stormwater management, water conservation, septic systems, central sewage treatment, public education, restoration of surface and groundwater levels; and regional drainage of native habitats, and.

**WHEREAS**, this resolution identifies practices and activities that will be useful to water management districts and local governments under the State of Florida Impaired Waters Rule and the Federal Clean Water Act that will help secure future funding of critical capital and non-capital projects through the connected National Pollution Discharge Elimination System (NPDES) and Water Resource Development Act (WRDA) funding sources.

**NOW, THEREFORE, BE IT RESOLVED** by the Southwest Florida Regional Planning Council that the following provisions are recommended to local government jurisdictions in Southwest Florida as a basis for controlling, regulating, educating and monitoring the treatment of Stormwater in Southwest Florida:

### **SECTION 1: PURPOSE AND INTENT**

- A. The Southwest Florida Regional Planning Council declares its support for the reasonable regulation and treatment of stormwater and hereby provides specific management guidelines for stormwater in order to minimize the negative environmental effects said stormwater has in and on Southwest Florida lakes, canals, estuaries, interior wetlands, rivers and near shore waters of the Gulf of Mexico. Collectively these water bodies are a natural asset, which are critical to the environmental, recreational, cultural and economic well being of this region and the surrounding areas and contribute to the general health and welfare of the public. Recent red tide and blue green algae blooms, accumulation of red drift algae on local beaches, and the freshwater releases from Lake Okeechobee via the Caloosahatchee River have heightened community concerns about water quality and eutrophication of estuary, bay, river and coastal waters. Regulation of nutrients, including both phosphorus and nitrogen contained in stormwater entering the water bodies in this region is a crucial step toward improving and maintaining water and habitat quality.
  
- B. The purpose of this Resolution is to provide specific recommendations and guidelines to be considered by local government jurisdictions in Southwest Florida for the regulation, control, use and treatment of stormwater containing nitrogen and/or phosphorus and for
  - a. The protection of Southwest Florida's lakes, rivers and streams, wetlands, and groundwater essential to promotion of public health, safety, welfare, socio-economic growth and development of the region in perpetuity.
  - b. The proper selection, operation and management of existing stormwater systems to prevent the further degradation of groundwater, lakes, rivers and streams.
  
- C. The Southwest Florida Regional Planning Council recognizes that the management and regulation of stormwater is conducted in its jurisdiction by a combination of local governments and two regional governmental entities: the Southwest Florida Water Management District and the South Florida Water Management District who issue Environmental Resource Permits. While stormwater management started as drainage and flood control in the region and added water quality and wetland protection late in the last century, stormwater management is further evolving to encompass sustainable development. Sustainable development focuses on three general elements of growth: economic, environmental and social. Sustainability is a socio-ecological process characterized by the fulfillment of human needs while maintaining the quality of the natural environment indefinitely. Held as academic theory over the last 20

years, sustainability has become a mainstream planning concept and has fueled the “Green Building and Design” concepts currently being explored in the Southwest Florida Region and elsewhere in the state.

- D. The Southwest Florida Regional Planning Council recognizes that as state and local governments work to allocate fiscal resources, and development is facing lower profit margins, the environment continues to be challenged. Water quality issues impact all facets of the socio-economic system in Southwest Florida, from tourism to quality of life for the local population. The opportunity to meet these challenges lies in the fact that new development using sustainable design standards also minimizes its impacts on the natural environment through siting design and incorporating landforms and natural drainage pathways into the final plan. Construction built to sustainable standards makes a minimum demand on future operational resources, such as energy and water supply.
  
- E. The Southwest Florida Regional Planning Council recognizes that the management of stormwater runoff pollution can be divided into two categories: the avoidance of stormwater pollution by controlling it at the source or the use of best management practices (capital infrastructure) to cleanse the pollutants from the runoff to some degree on each development site before it flows to receiving waters. Sustainable Stormwater practices are calling for controlling the amount, rate and quality of stormwater runoff from the developed site to less than or equal to pre-construction levels. Ways to achieve this goal are as follows:
  - a. the retention of stormwater on site as much as possible;
  - b. the use of stormwater to reduce the demand on potable water supplies;
  - c. the reduction of impervious areas on-site to allow for groundwater recharge;
  - d. the use of native plant landscaping to reduce the need for pesticides, water and fertilizers;
  - e. the requirement for redevelopment to meet the sustainable stormwater guidelines
  - f. the designer chooses the appropriate stormwater management strategy that will meet the overall goal of no net increase in pollution from natural predevelopment conditions, quantity and flow rate from the site while maintaining recharge and environmental values; and
  - g. the retention of traditional stormwater best management practices (BMPs) that are most effective in the suite of strategies for stormwater management.

## **SECTION 2: RECOMMENDED DEFINITIONS**

The following are the minimum recommended definitions; and the words, terms, and phrases, when used in this Resolution, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

*Aquatic Preserve*: those areas designated in Part II, Chapters 258 F.S., and afforded the highest level of protection by FDEP are natural wonders that offer a window into Florida's natural and cultural heritage. The Aquatic Preserve Act was established to ensure that their natural condition, aesthetic, biological, and scientific values, would endure for the enjoyment of future generations. Within the SWFRPC jurisdiction, there are eight State-designated Aquatic Preserves: Cape Haze, Cape Romano 10,000 Islands, Estero Bay, Gasparilla Sound, Lemon Bay, Matlacha Pass, Pine Island Sound, and Rookery Bay.

*Basin Management Action Plan (BMAP)*: a plan for restoration of water quality in waters that have been identified by FDEP as "impaired," developed in partnership with cities, counties, the appropriate Water Management Districts, water control authorities and other local stakeholders. Implementation is designed to benefit surface waters throughout the watershed of the impaired water body.

The plan is developed after the State Department of Environmental Protection adopts water quality restoration targets, called Total Maximum Daily Loads (TMDLs), to establish how much pollutant loadings entering the waterbody must be reduced. The TMDLs help stakeholders evaluate and identify local actions to control pollutant discharges. The action plan sets forth these actions in detail, including a schedule for their implementation and potential resources to accomplish them.

Among the programs and projects called for in a BMAP are restoration of former agricultural lands, better stormwater controls for active agricultural lands and urban development, more stringent local ordinances to control pollution, surface water restoration projects by water management districts and the local water control authorities, and an ongoing program of public and private sector education and outreach. It is believed that by reducing the discharges of pollutants through cooperative action, the ecological health of the impaired water body can be restored.

*Basin Management Action Plan (BMAP)*: a watershed restoration plan that local governments are required to implement under the State of Florida's Impaired Waters Rule to address identified verified water quality impairments. Submission of basin status reports and revisions to the plan is required by FDEP on a five year interval. The BMAP utilizes a method or combination of methods found to be the most effective and feasible means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.

*Best Management Practice (BMP)*: a method or combination of methods found to be the most effective and feasible means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals. The following three principles apply in the improvement of water quality through BMPs:

- Prevention – avoiding the generation of pollutants
  - Reduction – reducing or redirecting pollutants
  - Treatment – capturing and treating pollutants
- (See Watershed Management Program)

*Bioretention*: landscape retention of stormwater runoff in areas that allow soil and plant-based filtration devices to remove pollutants through a variety of physical, biological, and chemical treatment processes. The reduction of pollutant loads to receiving waters is necessary for achieving regulatory water quality goals.

*Buffer zone*: restrictive easements, setbacks and/or greenbelts that serve the purpose of establishing a protective separation for the purpose of resource protection, separation of incompatible uses and minimizing industrial accidents or natural disasters. (See Riparian buffer zones)

*Chemical treatment*: processes to include coagulation coupled with solids separation to remove pollutants. Iron, aluminum metal salts, and alum are used to coagulate compounds, and then polymers may be added to enhance flocculation and induce settling. Chemical processes offer the advantage of low land requirements, flexibility, reliability, decreased detention time requirements, and the ability to enhance water quality to levels substantially lower than could be achieved using other methods.

*Clean Water Act (CWA)*: The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972 that establishes the authority for regulating discharges of pollutants to waters of the United States.

*Coastal waters*: waters of the Atlantic Ocean or the Gulf of Mexico within the jurisdiction of the state.

*Concrete grid pavers*: surfaces interspersed with areas of gravel, sand, or grass that can reduce runoff volumes and trap vehicle-generated pollutants. Pavers are most effective in very low traffic grassed areas with relatively pervious in-situ soils and require moderate maintenance.

*Conservation easement*: a right or interest in real property pursuant to Section 704.06, F.S., which is appropriate to retaining land or water areas predominantly in their natural, scenic, open, agricultural, or wooded condition; retaining such areas as suitable habitat for fish, plants, or wildlife; retaining the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or cultural significance; or maintaining existing land uses and which prohibits or limits any or all of the following:

- Construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground;
- Dumping or placing of soil or other substance or material as landfill or dumping or placing of trash, waste, or unsightly or offensive materials;
- Removal or destruction of trees, shrubs, or other vegetation;
- Excavation, dredging, or removal of loam, peat, gravel, soil, rock or other material substance in such manner as to affect the surface;
- Surface use except for purposes that permit the land or water area to remain predominantly in its natural condition;
- Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation;
- Acts or uses detrimental to such retention of land or water areas; and

- Acts or uses detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or cultural significance.

*Constructed wetlands:* areas that are designed to simulate the water quality improvement functions of natural wetlands to treat and contain surface water runoff pollutants and decrease loadings. Many of these systems can be designed to include vegetated buffers and deep water areas to provide wildlife habitat and aesthetic enhancements. An example of a constructed wetland is a system of multiple ponds to treat runoff through adsorption, plant uptake, filtration, volatilization, precipitation, and microbial decomposition.

*Construction:* any activity including land clearing, earth moving or the erection of structures which will result in the creation of a system.

*Design:* as a verb, the process of originating and developing a plan for a product, structure, system, or component. As a noun, "a design" is used for either the final (solution) plan (e.g. proposal, drawing, model, description) or the result of implementing that plan (e.g. object produced, result of the process). Designing normally requires a designer to consider the aesthetic, functional, and many other aspects of an object or a process, which usually requires considerable research, thought, modeling, interactive adjustment, and re-design.

*Detention system:* a stormwater management system designed to store and treat urban runoff and release the treated water slowly over a period of time to other receiving waters (see wet detention system).

*Development:* land improvement and/or construction involving land, buildings or infrastructure, a process of land use change for the purpose of improved well-being in people's lives, and takes into account the needs of future generations.

*Drainage basin* means a subdivision of a watershed (see Watershed).

*Drainage ditch or irrigation ditch:* a man-made trench that collects and directs drainage of water but is not built for navigational purposes.

*Dry retention basin:* a constructed stormwater collection basin designed to enable stormwater to recharge into the ground, leaving the basin dry.

*Ecosystem:* A complex set of relationships among living resources, habitats and residents of a region. The ecosystem can include people, wildlife, fish, birds, trees, plants, wetlands, water, and other living and non-living entities that are necessary for the ecosystem to function.

*Ecosystem services:* the goods and services provided by healthy environmental systems, such as pollination of food crops, flood protection by wetlands, air purification, climate regulation, erosion control, genetic resources, biological habitat or filtration of water by vegetation and soils. Ecosystem services provide benefits to humankind and other organisms but are not usually reflected in our current economic accounting.

*Effluent:* Wastewater that flows into a receiving stream by way of a domestic or industrial point source.

*Embodied Energy:* an accounting methodology which aims to find the sum total of the energy necessary - from the earth energy to make the raw material to its extraction, transport, manufacturing, assembly, installation as well as the capital and other costs of a specific material - to produce a service or product and finally its disassembly, deconstruction and/or decomposition..

*Environmental Protection Agency (EPA):* The United States Environmental Protection Agency was created in December, 1970 to address the nation's urgent environmental problems and to protect the public health. The majority of DEP's regulatory programs have counterparts at the EPA or are delegated from the EPA.

*Environmental resource permit:* a conceptual approval, general, or individual permit for a surface water management system issued pursuant to part IV of Chapter 373, F.S.

*Estuary:* a semi-enclosed, naturally existing coastal body of water which has a free connection with the open sea and within which seawater is measurably diluted with fresh water derived from riverine systems.

*Evapotranspiration:* the loss of water to the atmosphere by evaporation from soil and vegetation and by transpiration of the vegetation.

*Exfiltration trench:* a drainage system where perforated pipes are buried in trenches that have been backfilled with stone or sand/aggregate. Urban runoff diverted into the pipe gradually infiltrates from the pipe into the trench and into the subsoil, eventually reaching the ground water.

*Florida Department of Environmental Protection (FDEP):* The Florida Department of Environmental Protection is Florida's principal environmental and natural resources agency. The Department of Natural Resources and the Department of Environmental Regulation were merged together to create the Department of Environmental Protection effective July 1, 1993.

*Grassed swales:* typically shallow, vegetated trenches used as filtration and conveyance mechanisms to provide pretreatment before runoff is discharged to other treatment systems.

*Green design:* another term for Low Impact Design. It is design to minimize its impact on the environment. In some states there are specific guidelines and rules to follow to insure certification of a green design project.

*Green roofs:* vegetated roof covers, eco-roofs or nature roofs, multi-beneficial structural components that help to mitigate the effects of urbanization on water quality by filtering, absorbing or detaining rainfall. They are constructed of a lightweight soil media, underlain by a drainage layer, and a high quality impermeable membrane that protects the building structure. The soil is planted with a specialized mix of plants that can thrive in the harsh, dry, high temperature conditions of the roof and tolerate short periods of inundation from storm events

*Green walls:* living walls exterior and interior to a building. They involve layers of plastic, metal, and air to provide a rigid frame, temperature control, and air circulation. Plants grow in small pockets of felt-like plastic that is nonbiodegradable to avoid rotting. They are drip-irrigated through a system of pipes that distribute nutrient solution, greywater or filtered stormwater.

*Ground water:* water in underground geologic formations fed by surface water infiltration.

*Hydrologically sensitive areas:* wetlands and those geographical areas which are specifically designated as hydrologically sensitive areas by the WMD because of the importance of the hydrology and hydraulics of the area in meeting the Legislative policy contained in Section 373.016, Florida Statutes.

*Impaired water:* a designation by the U.S. Environmental Protection Agency (EPA) for water bodies that do not meet water quality standards for their designated use in order to set pollutant load allocations. The Total Maximum Daily Loads (TMDLs) program administered by EPA under the Federal Water Pollution Control Act (Clean Water Act) requires states to designate uses for their water bodies and to set water quality standards to reflect those uses. Under Section 303(d) of the Clean Water Act, states must submit to the EPA lists of waters not meeting the standards. They then must allocate pollutant loadings among dischargers that will bring the water body back into compliance with the standard. The State of Florida's Impaired Waters Program asserts that TMDLs should be integrated with the watershed management cycles on a five-year rotation.

*Isolated wetland:* any wetland without a direct hydrologic connection to a lake, stream, estuary, or marine water.

*Interception:* precipitation that is retained by above ground components of vegetation before it reaches the soil.

*Land Development and Management Practices:* all land related practices involved in the development and management of a site, including design, construction, operations, and ongoing maintenance. For simplicity purposes in this resolution, these are described as "land practices."



*Landscapes:* the visible features of an area of land, including physical elements such as landforms, living elements of flora and fauna, abstract elements such as lighting and weather conditions, and human elements such as human activity or the built environment.

*LEED:* The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ that encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria.

*Listed species:* those animal species which are endangered, threatened or of special concern and are listed in Rules 39-27.003, 39-27.004, and 39-27.005, Florida Administrative Code, and those plant species are listed in 50 Code of Federal Regulation 17.12, when such plants are found to be located in a wetland or other surface water.

*Littoral zone:* 1. That portion of a body of fresh water extending from the shoreline lake ward to the limit of occupancy of rooted plants. 2. The strip of land along the shoreline between the high and low water levels.

*Load Allocations:* the portions of a receiving water's loading capacity that are allocated to one of its existing or future nonpoint sources of pollution.

*Load Capacity:* the greatest amount of loading that a waterbody can receive without violating water quality standards.

*Low impact design (LID):* an innovative stormwater management approach with a basic principle that is modeled after nature: manage rainfall at the source using uniformly distributed, decentralized micro-scale controls. LID's goal is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Techniques are based on the premise that stormwater management should not be seen as stormwater disposal. Instead of conveying and managing or treating stormwater in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID addresses stormwater through small, cost-effective landscape features located at the lot level. These landscape features, known as Integrated Management Practices (IMPs), are the building blocks of LID. Almost all components of the urban environment have the potential to serve as an IMP. This includes not only open space, but also rooftops, streetscapes, parking lots, sidewalks, and medians. LID is a versatile approach that can be applied equally well to new development, urban retrofits, and redevelopment or revitalization projects.

*National Pollutant Discharge Elimination System (NPDES):* The permitting process by which technology-based and water quality-based controls are implemented.

*New development*: land improvement and/or construction involving land, buildings or infrastructure.

*Nonpoint Sources (NPS)*: diffuse runoff without a single point of origin that flows over the surface of the ground by stormwater and is then introduced to surface or ground waters. NPSs include atmospheric deposition and runoff or leaching from agricultural lands, urban areas, unvegetated lands, onsite sewage treatment and disposal systems (septic tanks), and construction sites.

*Nonpoint Source Pollution*: pollution that is created by the flushing of pollutants from landscape by rainfall and the resulting stormwater runoff, or by the leaching of pollutants through the soils into the ground water.

*Non-structural best management practices (BMPs)*: pollution control practices that improve water quality by reducing the accumulation and generation of potential pollutants at or near their source. They do not require construction of a facility, but instead provide for the development of pollution control programs that include prevention, education, and regulation. These can be classified as follows:

- Planning and regulatory tools
- Conservation, recycling and source controls
- Maintenance and operational procedures
- Educational and outreach programs

*Permeable pavers*: alternative paving materials that can be used to locally infiltrate rainwater and reduce the runoff leaving a site (see also concrete grid pavers).

*Phosphorus*: an element that is essential for life. In freshwater aquatic environments, phosphorus is often in short supply; increased levels of this nutrient can promote the growth of algae and other plants.

*Point Source*: an identifiable and confined discharge point for one or more water pollutants, such as a pipe, channel, vessel, or ditch.

*Pollutant*: any substance, such as a chemical or waste product, introduced into the environment that adversely affects the balance and health of a natural resource.

*Pollution*: an undesirable change in the physical, chemical, or biological characteristics of air, water, soil, or food that can adversely affect the health, survival, or activities of humans or other living organisms.

*Predevelopment*: the condition of the site prior to any form of development. Also known as the preconstruction condition.

*Project area*: the area being modified or altered in conjunction with a proposed activity requiring a permit.

*Rain barrels:* low-cost, effective, and easily maintainable retention and detention vessels designed to capture and store rooftop runoff.

*Redevelopment:* a process of land use change for the purpose of removing old buildings, neighborhoods and infrastructure in order to develop again. Often redevelopment occurs in blighted neighborhoods, defunct shopping centers and industry where the buildings are torn down and new ones built in their place to a better condition and meeting current building codes. Often urban governments encourage redevelopment in order to elevate the tax base, improve public safety, and enhance the quality of life for residents and visitors.

*Retention system:* a structural best management practice used to keep stormwater runoff on a site through absorption into the soil or evaporation into the atmosphere.

*Riparian buffer zones:* areas of land next to the banks of streams, rivers, lakes, estuaries or other waters that can be managed as two zones: the zone closest to the water to provide stream bank and shoreline protection while the outer zone to slow and spread out the flow of water coming from the land, trapping sediment and other pollutants.

*Separation devices:* stormwater management systems that include sumps, baffle boxes, oil/grit separators, and basins to capture trash, sediments and floating debris.

*Site:* a contiguous area of land upon which a project is developed or proposed for development; an area of property that is experiencing land development and management.

*Slough:* a natural depression associated with swamps and marshlands containing areas of slightly deeper water and a slow current, such as the broad, shallow rivers of the Everglades.

*Smart Growth:* Growth with outcomes that achieve community objectives of environmental sustainability, balanced human scale urban settings, and a healthy community character.

*Soil amendments:* soil additives that can be used to minimize development impacts on native soils by restoring their infiltration capacity and chemical characteristics. After soils have been amended their improved physical, biological and hydrological characteristics will make them more effective agents of stormwater management.

*Soil Organic Carbon:* Carbon that is stored in soils the amount of which is dependent on the soil's current organic carbon level, atmospheric carbon dioxide concentration, and soil-management practices.

*State water quality standards:* water quality standards adopted pursuant to Chapter 403, F.S.

*Stormwater management system:* a system which is designed and constructed or implemented to control discharges which are necessitated by rainfall events, incorporating methods to collect, convey, store, absorb, inhibit, treat, use, or reuse water to prevent or reduce flooding, overdrainage, environmental degradation, and water pollution or otherwise affect the quantity and quality of discharges from the system.

*Stormwater runoff cisterns:* roof water management devices that provide retention storage volume in above or underground storage tanks. They are typically used for water supply. Cisterns are generally larger than rain barrels, with some underground cisterns having the capacity of 10,000 gallons. On-lot storage with later reuse of stormwater also provides an opportunity for water conservation and the possibility of reducing water utility costs.

*Stormwater Utility:* a special assessment district set up to generate funding specifically for stormwater management. Users within the district pay a stormwater fee, and the revenue thus generated directly supports maintenance and upgrade of existing storm drain systems; development of drainage plans, flood control measures, and water-quality programs; administrative costs; and construction of major capital improvements. Unlike a stormwater program that draws on the general tax fund or uses property taxes for revenue, the people who benefit are the only ones who pay.

*Structural best management practices (BMPs):* constructed pollution control devices that reduce the quantity and improve the quality of urban runoff. These structures treat runoff at either the point of generation or the point of discharge to either the storm sewer system or receiving waters. Most require some level of routine maintenance. Structural BMPs can be categorized as retention systems, detention systems, or other systems.

*Surface water management system or system:* a stormwater management system, dam, impoundment, reservoir, appurtenant work, or works, or any combination thereof. The terms surface water management system or system include areas of dredging or filling as those terms are defined in subsections 373.403(13) and 373.403 (14), F.S.

*Sustainable site:* one that links natural and built systems to achieve balanced environmental, social, and economic outcomes to improve quality of life and the long-term health of communities and environment.

*Sustainable development:* a series of policies that encompass three general areas: economic, environmental and social. It is a socio-ecological process characterized by the fulfillment of human needs while maintaining the quality of the natural environment indefinitely.

*Total land area:* land holdings under common ownership which are contiguous or land holdings which are served by common surface water management facilities.

*Total maximum daily load (TMDL):* A Total Maximum Daily Load, or TMDL, is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet an existing water quality standard.

*Treatment Train:* a complete treatment process that is composed of a series of unit operations ranging from the gross to more refined as the flow progresses. In the case of stormwater, a treatment train can consist of a series of several best management practices strung together to accomplish a higher level of treatment than only one unit could produce by itself. A stormwater treatment train usually begins with grit and solids removal, followed by a series of nutrient removal techniques that can be biological, physical or chemical in approach.

*Urban development:* the process of developing populated settlements.

*Vegetated filter strips:* strips of land with vegetated cover designed to reduce sediment and remove pollutants. They are intended to receive overland sheetflow, but provide little treatment for concentrated flows. They can be used as pretreatment devices for dry detention ponds and exfiltration devices.

*Water balance:* for the purposes of this application, a mathematical accounting for the amount of water entering and leaving a region or project site through precipitation, evaporation, evapotranspiration, runoff, infiltration and percolation, and through-flow from off-site.

*Water Management Districts:* five water management districts in Florida created in 1972 by the Florida Legislature that manage the quality and quantity of water. The districts are authorized to administer flood protection programs and to perform technical investigations into water resources. The districts are also authorized to develop water management plans for water shortages in times of drought and to acquire and manage lands for water management. Regulatory programs delegated to the districts include programs to manage the consumptive use of water, aquifer recharge, well construction and surface water management. As part of their surface water management programs, they administer the stormwater management program.

*Waters or waters in the state:* any and all water on or beneath the surface of the ground or in the atmosphere, including natural or artificial watercourses, lakes, ponds or diffused surface water and water percolating, standing or flowing beneath the surface of the ground, as well as all coastal waters within the jurisdiction of the state.

*Water quality inlet:* a device designed to settle and/or remove pollutants before discharging to the storm sewer or other collection system. They can also be designed to trap floating trash and debris. They can also be coupled with oil/grit separators and/or hydrocarbon absorbents, to reduce hydrocarbon loadings from high traffic parking areas.

*Wasteload Allocations (WLAs):* Pollutant loads allotted to existing and future point sources such as discharges from industry and sewage facilities.

*Watershed:* the land area which contributes to the flow of water into a receiving body of water.

*Watershed Management Program:* the State DEP program that is responsible for fostering better stewardship of Florida's ground and surface water resources. Working with other state agencies, water management districts, local governments, citizens, and the private sector, the DEP coordinates the collection, data management, and interpretation of monitoring information to assess the health of our water resources; develops watershed-based aquatic resource goals and pollutant loading limits for individual water bodies; and develops and implements management action plans to preserve or restore water bodies.

*Wet detention pond:* constructed ponds designed to maintain a permanent pool of water and temporarily store urban runoff until it is released at a controlled rate. Biological activity in the water column and vegetation act to remove some soluble pollutants.

*Wetlands:* those areas that are inundated or saturated by surface or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to flow, reproduce, or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto. The landward extent of wetlands is delineated pursuant to Rules 62-340.100 through 62-340.550, F.A.C., as ratified by Section 373.4211, F.S.

### **SECTION 3: RECOMMENDATIONS RELATING TO PROJECT PLANNING AND DESIGN FOR THE TREATMENT OF STORMWATER FOR ALL NEW DEVELOPMENT AND RE-DEVELOPMENT**

- A. It is recommended that before plans are drawn developers and home builders shall explore options on-site to reduce resource consumption and waste and increase ecosystem function and human health. To that end they are to:
1. Identify opportunities to capture, treat and reuse rainwater and greywater.
  2. Promote the use of constructed wetlands and low impact development design that aid in rainfall interception, evapotranspiration, infiltration, and filtering of pollutants and explore the possibility of maintaining or enhancing these areas.
  3. Investigate streams, hydrologic connections, and surface flow patterns on-site for potential protection or restoration opportunities.
  4. Look for opportunities to protect or increase levels of soil organic carbon on-site.

5. Draft a pollution prevention plan for both during and post construction.  
Research the property to be developed to ensure that any legacy pollutants that are present are dealt with properly.
- B. It is recommended that sustainable development guidelines shall be used in site planning to include the following:
1. Value all water on the site.
  2. Maintain or regenerate healthy hydrologic processes.
  3. Promote water quality and healthy aquatic habitats.
  4. Design and maintain vegetation so that on-site and surrounding ecosystem services are sustained or enhanced.
  5. Reduce resource consumption and waste.
  6. Manage resources and materials efficiently.
  7. Select and use sustainable landscape materials.
  8. Reduce energy use, both embodied and operational.
  9. During all phases, avoid materials, products, and practices that are harmful to humans and the environment.
- C. Site planning and design shall be based on the understanding that water is a valuable natural resource that shall be used conservatively, cleaned, and reused on-site.
1. Eliminate potable water use in the landscape.
    - a. Select vegetation and site design components that are adapted to the site's geologic and climatic conditions.
    - b. Group plants with similar water needs together to maximize irrigation efficiency.
    - c. Utilize water-efficient irrigation systems that use drip or subsurface delivery methods, tailor irrigation to weather conditions, and measure soil moisture.
    - d. Use captured and treated rainwater and greywater for on-site nonpotable water needs such as landscape irrigation, cleaning outdoor surfaces, water features, and swimming pools.
    - e. Collect and filter, if necessary, water from building roofs and use cisterns or rain barrels to store harvested rainwater.
    - f. Achieve multiple water uses simultaneously. For instance, design vegetated infiltration basins that are attractive and provide habitat and passive recreation.
    - g. Raise stormwater inlets in planting areas to allow water to soak into the soil.
    - h. Mulch planting beds to minimize evaporation and maximize water retention.
    - i. Protect soils to optimize water retention and support healthy plants.
    - j. Use soil improvement techniques to break compaction and increase infiltration rates.

2. Manage water on-site so that no more water runs off than it did in its natural state.
  - a. Plan for the protection or enhancement of soils and vegetation to improve absorption, retention, and infiltration of precipitation, thereby minimizing runoff. Conservation easements can be used to protect the services provided by these enhancements in perpetuity.
  - b. Design grading and plan layout to capture and slow runoff.
  - c. Provide for the treatment of rainwater runoff from all surfaces, including parking lots, roofs, and sidewalks.
  - d. Plan for landscape-based water treatment methods such as dry wells and vegetated swales instead of curb and gutter systems, raised inlet rims, vegetated filter strips, and infiltration facilities such as retention basins.
  - e. Consider advanced water treatment processes that can be used on-site including phytoremediation systems such as constructed wetlands for greywater treatment or contained aquaculture-based systems.
  - f. Plan to use landscaped and aquascaped stormwater treatment detention systems in series (treatment trains) to store and treat stormwater while simultaneously providing irrigation water, wildlife habitat and passive recreation facilities for the development.

**SECTION 4: RECOMMENDATIONS RELATING TO SITE DEVELOPMENT  
FOR THE TREATMENT OF STORMWATER FOR NEW  
DEVELOPMENT AND RE-DEVELOPMENT**

- A. Site development shall maintain or regenerate the target water balance and hydrologic functions of the site to meet state, local, regional or watershed level goals. These goals shall include the requirements of water management districts as well as county and city ordinances pertaining to stormwater management regulation. Additionally, for impaired water bodies with Total Maximum Daily Load (TMDL) pollutant limitations and resultant Basin Management Action Plan (BMAP) guidelines, more stringent pollutant load management may have to be invoked by local governments in the future. Redevelopment of a site offers the opportunity to replace aging infrastructure with systems that mimic natural hydrologic ecosystem services that increase the land's capacity to naturally provide storage, infiltration and cleaning of water. Redevelopment, especially in impaired-waters' drainage basins, shall be held to current new development standards. To these ends site development shall include the following sustainable stormwater actions.
  1. Use vegetation to achieve target water balance conditions through interception and evapotranspiration.
    - a. Protect vegetation canopy and forest leaf litter.
    - b. Install multilayered planting schemes that replicate natural sites with both canopy and vegetative ground cover.
    - c. Use green roofs or green walls on buildings. This strategy should be mandated for big-box developments as well as arenas and shopping malls.
    - d. Use pond side slopes adequate to the support of a planted littoral zone.



2. Maintain or enhance infiltration to reach target water balance conditions. Water that is not intercepted or used by vegetation can be absorbed into the soil, where it is stored for percolation into the water table.
  - a. Install rain gardens or rainwater catchment-areas that filter rainwater and increase groundwater recharge by infiltrating excess water.
  - b. Assess regional groundwater needs to determine site infiltration goals. For example, a region dependent on groundwater for its potable water supply may need to infiltrate more water to compensate for sites with no infiltration capacity. Provide for the maintenance of base flows of off-site streams.
  - c. Assess soils to determine the best areas for infiltration, and improve soil to enhance infiltration.
  - d. Maintain or enhance vegetation, which protects soil structure and ensures water can percolate into the soil or into groundwater.
  - e. Use pervious or semipervious surfaces that allow water to infiltrate soil.
  - f. Protect soils from compaction during site construction by restricting machinery to designated zones.
  - g. Restore infiltration capacity and reduce compaction of soils by breaking up compaction, adding organic matter and planting vegetation.

#### **SECTION 5: RECOMMENDATIONS RELATING TO QUANTITY AND QUALITY OF STORMWATER FOR NEW DEVELOPMENT AND RE-DEVELOPMENT**

- A. Maintain or achieve target surface runoff levels. When precipitation exceeds infiltration capacity or when the soil is saturated, additional water leaves the site as surface runoff. Runoff occurs under natural or undisturbed conditions, but occurs more often and in greater quantity after traditional development occurs. Runoff from new development must not exceed the pre-development amount.
  - a. Maintain or restore the site's existing or historic drainage patterns, especially if runoff has traditionally flowed to wetlands, sloughs or other natural drainage ways.
  - b. Protect the hydrologic connectivity of water bodies. If streams have been redirected into culverts, bring them back to the surface and restore degraded streams and stream banks.
  - c. Protect or enhance seasonal flooding patterns of wetlands.
  - d. Create or restore wetlands and riparian areas to absorb, filter and attenuate runoff.
  - e. Develop a water and pollutant balance model to assess the site's post development water balance and pollutant load relative to target conditions.
  - f. Volume, rate and pollutant load of stormwater runoff from a developed site must be less than or equal to the volume, rate and pollutant load of runoff in the site's natural, pre-developed condition.



- b. Direct runoff from impervious areas to water quality facilities such as grassed swales, constructed wetlands, and vegetated soil-based infiltration systems (retention basins).
  - c. The conveyance of rainwater offsite must first pass through a stormwater treatment system to reduce pollutants to the required load limit based on the water and pollutant balance of the pre-developed, natural state of the site. Preferably, this may be accomplished through use of a treatment train, a multistage water quality system, consisting of several effective water quality devices, basins or ponds; on through a planted area; and then offsite.
  - d. Avoid discharge of untreated greywater from laundry, showers and sinks by cleaning or using it on-site. More importantly, take advantage of opportunities to reuse greywater in homes and landscape irrigation systems and to enhance groundwater recharge of greywater after water quality goals have been met.
  - e. Implement a water quality monitoring program to ensure that the effectiveness of the on-site water quality treatment features are meeting the pollutant load balance and goals needed by the watershed.
- E. Maintain or enhance the biological communities of on-site and off-site receiving water bodies.
- a. Maintain or enhance the appropriate level of nutrients, leaf litter and biota litter a site contributes to receiving waters.
  - b. Identify species that are federally listed as threatened or endangered, or are candidates or proposed for federal listing. Tailor the site water management system to protect those species.

## **SECTION 6: RECOMMENDATIONS RELATING TO PUBLIC FUNDING OF STORMWATER MANAGEMENT PROGRAMS**

It is recommended by the Southwest Florida Regional Planning Council that all local governments employ a stormwater utility to fund the implementation of their stormwater management services to the public. Stormwater utilities are special assessment districts set up to generate funding specifically for public, stormwater management programs. Users within the governmental jurisdiction pay a stormwater fee, and the revenue thus generated directly supports maintenance and upgrades of existing stormwater management systems; development of drainage plans, flood control measures, and water-quality programs; administrative costs; enforcement and compliance costs; and construction of major capital improvement projects. Unlike a stormwater program that draws on the general tax fund or uses property taxes for revenue, the people who benefit from the services provided by the utility pay according to the amount of stormwater they generate.

## **SECTION 7: RECOMMENDED PUBLIC EDUCATION PROGRAM**

- A. Public education is highly recommended regarding the appropriate activities to reduce the pollution content of stormwater. Local governments will work with the SFWMD and SWFWMD to offer courses and printed and audio-video media to all current and

future residents wishing to obtain green certification and understand the operation and maintenance requirements of their stormwater treatment systems and the sustainable stormwater strategies employed.

- B. A general education program will be coordinated with local media to advise the public on the proper activities to prevent non-point source pollution from their new or re-developed neighborhood. Such education program will be based upon and utilize materials from the Florida Yards and Neighborhoods Program (FY&N) as well as standards and guidelines from the U.S. Green Building Council and the Leadership in Energy and Environmental Design (LEED) Green Rating System. Encourage participation in the Florida Green Lodging Program and the Florida Clean Marina Program.

**SECTION 8: RECOMMENDATIONS FOR APPEALS, ADMINISTRATIVE RELIEF AND PENALTIES.**

- A. Each local government jurisdiction should establish provisions for appeals of administrative decisions and/or denials, provisions for administrative relief in the event of unique circumstances not addressed by local government stormwater regulations, and penalty and enforcement provisions necessary to accomplish the goals and objectives of the local jurisdiction's stormwater regulations.

**NOW, THEREFORE, BE IT RESOLVED** by the Southwest Florida Regional Planning Council **DULY PASSED AND ADOPTED THIS 21<sup>ST</sup> DAY OF AUGUST, 2008.**

**SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL**

**BY:** Andrea Messina  
Andrea Messina, Chairman

**ATTEST:** Ken Heatherington  
Ken Heatherington, Executive Director

