SWFRPC Resolution #2008-12

Southwest Florida Regional Planning Council Stormwater Resolution for Retrofit Development

A RESOLUTION SUPPORTING THE TREATMENT OF STORMWATER FROM PREVIOUSLY DEVELOPED, NON-AGRICULTURAL AREAS TO REDUCE POLLUTANTS INCLUDING NITROGEN AND/OR PHOSPHORUS WITHIN THE SOUTHWEST FLORIDA PLANNING REGION; RECOMMENDATIONS THAT REDUCE POLLUTANT SOURCES; SUSTAINABLE STORMWATER TREATMENT CONTROL FOR WATER QUALTIY AND WATER QUANTITY; ADMINISTRATIVE RELIEF; PUBLIC FUNDING OF STORMWATER MANAGEMENT SYSTEMS; AND CITIZEN 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, 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 resulting in the need to bring existing development into a par with new development regulations to the extent of meeting the pollutant load limitations; and

WHEREAS, there is a need to develop a stronger understanding of the connection between activities in yards, streets, and the built environment including its 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.

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 natural assets, 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 to reduce its level of nitrogen and/or phosphorus from existing development 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; and
   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 and the reduction of runoff from existing developments.

D. The Southwest Florida Regional Planning Council recognizes that as state and local governments work to allocate fiscal resources 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 older development built prior to the introduction of current regulations and those developments whose stormwater management systems are in need of upgrading can also use sustainable design standards to minimize their impacts on the natural environment. 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 developed 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 natural, 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 older development to meet the sustainable stormwater guidelines with a time table;
f. the use of appropriate stormwater management strategies that will meet the overall goal of no net increase in pollution, quantity and flow rate from the site in its natural, pre-developed state while maintaining recharge and environmental values; and
g. The retention of traditional stormwater best management practices (BMPs) to be used alone or in tandem with others 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:

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 BMAP helps 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. 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.

Brownfields: real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.

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.

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.

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 alteration, 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).

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.

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.

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 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 non-biodegradable 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.

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.

Littoral zone: That portion of a body of fresh water extending from the shoreline waterward to the limit of occupancy of rooted plants. 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.

Municipal separate storm sewer system (MS4): a publicly-owned conveyance or system of conveyances (i.e., ditches, curbs, catch basins, underground pipes, etc.) that is designed or used for collecting or conveying stormwater and that discharges to surface waters of the State. An MS4 can be operated by municipalities, counties, drainage districts, colleges, military bases, or prisons, to name a few examples. As implemented by Chapter 62-624, F.A.C. Phase I addresses discharges of stormwater runoff from "medium" and "large" MS4s (i.e., those MS4s located in areas with populations of 100,000 or greater). Under Phase II the program regulates discharges from certain MS4s not regulated under Phase I, and that meet designation criteria set forth in Chapter 62-624, F.A.C. Regulated MS4 operators must obtain an NPDES stormwater permit and implement a comprehensive stormwater management program to reduce the contamination of stormwater runoff and prohibit illicit discharges to the MS4. Those governmental entities holding MS4 permits within the Southwest Florida Regional Planning Council include Charlotte, Collier, Lee and Sarasota Counties and their incorporated co-permittees and drainage districts.

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

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 pavement: alternative paving materials that can be used to locally infiltrate rainwater and reduce the runoff leaving a site.

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.

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

Redevelopment: a process of landuse 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.

Retrofit: structural stormwater management measures for urban watersheds designed to help minimize accelerated channel erosion, reduce pollutant loads, promote conditions for improved aquatic habitat, and correct past mistakes. These stormwater management practices are inserted in urban landscapes where little or no prior stormwater controls existed or where existing stormwater controls are inadequate in meeting water quality goals. Retrofit projects aimed at water quality improvements often accompany other public works endeavors serving multiple goals such as storm sewer replacements, road widening, downtown redevelopment, streetscapes, public parks, athletic fields and irrigation of public or common lands.

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.

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.

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.

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 reuse: stormwater from surface, cistern, or groundwater storage used for non-potable purposes, like irrigation.

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.

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 maximum daily load (TMDL): the total amount of a pollutant that is allowed by the state or federal government to be discharged to a receiving water body which has been determined to be impacted detrimentally by said pollutant.

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 in tandem 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.

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 the appropriate BMPs.

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.

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 RETROFIT OF EXISTING DEVELOPMENT USING SUSTAINABLE GUIDELINES AND STRATEGIES BY LOCAL GOVERNMENTS

A Three-Tiered, planning approach is recommended using LID BMPs to achieve improvements in water quality in the Southwest Florida Regional Planning Council's (SWFRPC) jurisdiction. The tiered approach can also be used as well by those governments within the SWFRPC jurisdiction who hold NPDES, MS4 stormwater permits as the EPA is requiring LID strategies from its permitees in its emphasis on pollutant load reductions. The challenges for local governments are that impaired waterways are often downstream of built-out areas, there are multiple pollutants and sources, the variability of stormwater flows and concentrations is high, and the pollutant reductions require treatment systems. Thus the strategic, three-tiered BMP selection approach is as follows:

Tier I. Non-Structural: **Achievable Load Reduction in 20 Years = 30-80%**

- Legislative Source Control BMPs such as bans on copper in break pads, restrictions on pesticides, low nutrient fertilizers
- Targeting priority sources and high source density areas
- Effectiveness assessments involving increased awareness, behavioral change, decrease in violations
- Enforcement, ordinances, education and outreach, political negotiations, targeting priority sources based on an iterative approach
- All local governments in the SWFRPC area review land development codes and revise to allow the use of LID BMPs.

Tier II. Structural: Achievable Load Reduction in 20 Years = 50-90%

- Confirm unknown sources and high loading watersheds
- Target aggressive street sweeping and monitor results
- Target aggressive street sweeping where monitoring proved it effective
- Implement runoff and treatment volume reduction BMPs (infiltration, treatment trains, bioretention, LID with stakeholder participation)
- Monitor BMP effectiveness and assess strategy for phased implementation before large-scale implementation
- Develop and implement stormwater master plan to coincide with BMAP and other regional and sub-regional pollutant reduction goals

Tier III. Intensive Treatment Achievable Load Reduction in 20 Years = 100%

- Target properties for BMPs, property acquisitions and evaluate. Include vacant land, parks, Brownfields and developed areas.
- Identify Treatment Train System BMPs on government property in targeted drainage areas
- Monitor BMP effectiveness and assess strategy in order to improve designs if needed

The Achievable Load Reduction estimation is provided above to assist decision-makers in selecting the appropriate level of BMPs necessary to reach the water quality goals according to watershed program requirements.

The monitoring of BMP effectiveness is necessary because the local government responsible for the pollutant load reduction must prove it is not exceeding its allocation in the watershed management plan for meeting the specified TMDL. Further, an effectiveness assessment can be used to create improved designs for a phased program.

The SWFRPC's Stormwater Resolution for New and Re-Development shall be used as a guide for selecting and implementing sustainable stormwater strategies by those planning retrofit systems.

Since certain LID BMPs are new to local governments, it is imperative that a thorough review of local land development codes that prohibit the use of LID and certain BMPs be made so that the unintended consequences of these ordinances and prohibitions will not interfere with the ultimate goal of improving water quality.

The opportunities to use LID for stormwater system retrofit and building stormwater systems where none presently exist in older development fall under two general categories: (A) Those designed to infiltrate, filter or treat, and (B) Those integrated into Watershed Programs to meet mandated water quality goals such as TMDLs and regional water supply strategies. Thus, the planning process is crucial in the implementation of a unified, LID stormwater retrofit program for local governmental pollutant reduction needs. In all cases it is important to:

1. Identify water quality and quantity target goals to match BMAPs, TMDLs, and MS4 requirements.
2. Draft a pollution prevention plan for both during and post construction.
3. Develop a water and pollutant balance model to assess the site's post development water balance and pollutant load relative to target conditions.

4. 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.
5. Evaluate the property to be retrofitted to ensure that any legacy pollutants that are present are dealt with properly, such as Brownfields.
6. Select plants, groupings, and locations to reduce fertilizer and irrigation needs.

A. LID Stormwater Management Systems Designed to Infiltrate, Filter or Treat shall:

1. Prevent excessive surface runoff from the site through enhancement of interception, evapotranspiration and infiltration practices.
2. In all areas, improve soil to enhance infiltration.
3. Create or restore wetlands and riparian areas to absorb, filter and attenuate runoff.
4. Use rainwater and vegetation management to prevent soil erosion and excessive sediment loading to receiving waters.
5. Plan for the use of vegetation that aids in infiltration. Add additional trees, shrubs, and groundcovers which protect soil structure and ensure water can percolate into the soil or into groundwater.
6. Use soil improvement techniques, such as compost, to break compaction and increase infiltration rates.
7. Design grading and plan layout to capture and slow runoff.
8. Find opportunities to install rain gardens, forested wetland gardens, or rainwater catchment-areas that filter rainwater and increase groundwater recharge by infiltrating excess water.
9. Assess soils on a retrofit site to determine the best areas for infiltration and attempt to place the new BMP in those locations.
10. 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.
11. Replace impervious surfaces with pervious or semi-pervious surfaces that allow water to infiltrate soil.
12. In previously non-compacted areas of the site, restrict machinery from those areas during construction. Restore infiltration capacity and reduce compaction of soils by breaking up compaction, adding organic matter and planting vegetation.
13. Provide for the treatment and storage of rainwater runoff from all impervious surfaces, including parking lots, roofs, and sidewalks.
14. Plan for landscape-based water treatment methods such as dry wells, vegetated swales, raised inlet rims, vegetated filter strips, and infiltration facilities such as retention basins.
15. Consider cutting edge water treatment processes that can be used on-site including phytoremediation systems such as constructed wetlands for greywater treatment or contained aquaculture-based systems.
16. 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 existing development.
17. Pre-treat stormwater runoff for sediment, leaf and debris removal prior to entering a detention pond, underground storage vault or man-made lake on the project site.

18. Direct runoff from impervious areas to water quality facilities such as grassed swales, constructed wetlands, and vegetated soil-based infiltration systems (retention basins).
19. Remove raised areas from parking lots and invert them. Plant appropriate water tolerant trees and shrubs.

B. LID Stormwater Management Systems Integrated into Watershed Programs to Meet Mandated Water Quality Goals and Regional Water Supply Strategies:

1. The conveyance of rainwater offsite must first pass through a stormwater treatment system to reduce pollutants to the required load limit and volume and rate to the required 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.
2. Where possible land practices should protect and regenerate healthy riparian areas, physical habitat features, and water chemistry as well as the biological, physical and chemical integrity of the receiving water bodies.
3. Certain areas draining to impaired waters may have additional pollution reduction requirements imposed. Therefore, pollutant loads may have to be reduced below pre-developed conditions through other means such as physical, chemical and biological processes and/or re-use of stormwater.
4. 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.
5. Address local and regional water issues, such as designated recharge areas or Aquatic Preserves, by maintaining a water balance mimicking the natural, pre-developed site conditions. If there is no downstream water body that runoff from the site will flow to except to artificial conveyances to tide, then the retrofit project shall hold as much stormwater on the site as possible with the goal of a three-year storm event frequency (4 to 4.5 inches of rainfall, depending on location).
6. Protect existing riparian areas and physical habitat features. Create riparian habitats where none exist due to previous land use practices and put these lands under conservation easements if appropriate to the project.
7. Restore impacted wetlands, streams, and habitat features.
8. 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 to historic, healthy configuration.
9. Protect or enhance seasonal flooding patterns of wetlands.
10. Select plants, groupings, and locations to reduce irrigation needs. Proper design can eliminate the need and expense of irrigation altogether.
11. Collect and filter water from building roofs and use cisterns or rain barrels to store harvested rainwater.
12. Achieve multiple water uses simultaneously. For instance, design vegetated infiltration basins that are attractive and provide habitat and passive recreation.
13. Maintain stormwater storage devices (cisterns and ponds) to supply non-potable water uses. Stormwater used for irrigation should be filtered through at least two

feet of soil to control toxic bacteria prior to spraying. No filtration is needed for drip irrigation devices, however.

SECTION 4: RECOMMENDATIONS FOR GOVERNMENT RETROFIT OF PUBLIC PROJECTS

As LID techniques are mandated in new and re-developments, local governments must lead the way to demonstrate LID methods for its retrofit projects. While some retrofit projects may be voluntary, others may be necessary due to impending or implemented TMDL requirements. In some areas of Florida pollution loads have been reduced by way of voluntary community cooperation on a watershed level, negating the need for strict enforcement of load limitations. In this effort local governments have partnered with the private sector, agricultural entities have reduced pollutant loads, and educational programs have heightened citizen awareness resulting in less personal pollution. It is recommended that those local governments wishing to retrofit to improve water quality in receiving waters which do not have a pollutant reduction goal should document their pre and post pollutant loads in order to receive credits should a TMDL be imposed at a later date.

The SWFRPC through this and other resolutions is advocating that all avenues of pollutant load reduction be investigated in order to improve the water quality of the southwest Florida region. In rapidly urbanizing areas the land available for stormwater management systems to be used for previously developed neighborhoods is scarce. Thus, local governments must identify appropriate retrofit locations from existing parks, libraries, administrative buildings, fleet yards, and roadways.

Some activities on the part of local government to facilitate the integration of LID for retrofit opportunities into its organization include:

1. As a guiding rule, retrofit projects shall make a water quality improvement to the point where a site does not damage receiving waters. However, if a receiving water has a TMDL or other water quality restriction established for it, more stringent water quality requirements may need to be enforced by the local government and/or the entity that is responsible for meeting the load limitations.
2. Using park personnel, inventory site-specific LID opportunities in the development and update of park and conservation area management plans. Incorporate as many techniques as are cited in Section 3 of this resolution.
3. Use facilities managers to evaluate opportunities to implement site-specific LID opportunities at libraries, administrative facilities and other buildings.
4. Evaluate parking lot turn-over for ability to remove pervious surfaces.
5. Evaluate existing detention and retention areas for ability to revise them for more efficient pollution removal while continuing to perform their permitted requirements of flood attenuation and stormwater storage. Be advised that any system change will require a permit from the water management district and other agencies depending on the nature and jurisdiction of the work.
6. Evaluate large grassy areas to convert to native forested areas to cool buildings and reduce energy costs.
7. Assess structural requirements of buildings for the ability to support a green roof or green walls to reduce energy needs and the heat island effect.
8. As a component of roadway resurfacing or reconstruction, evaluate the opportunities to widen and make more shallow roadside ditches.

9. Incorporate improved pedestrian, bicycle, and transit facilities which reduce the need for pervious parking surfaces.
10. Change raised road medians where possible to lower their elevations below the road grade and replant with appropriate water tolerant vegetation, shrubs, and groundcovers.
11. Use detention ponds for stormwater storage for irrigation requirements. Horizontal wells can be used to go beneath the pond to produce filtered stormwater for irrigation.
12. Incorporate as many techniques as appropriate from those cited in Section 3.

SECTION 5: RECOMMENDATIONS FOR VOLUNTARY RETROFIT OF PRIVATE, COMMERCIAL AND INDUSTRIAL PROPERTY

If a receiving water has a TMDL or other water quality restriction established for it, more stringent water quality requirements may need to be enforced by the local government and/or the entity that is responsible for meeting the load limitations. Therefore, local governments are urged to provide incentives for the private sector to enlist their help in meeting the load limitations required by the state and federal governments.

The private sector through incentives will be able to retrofit businesses, neighborhoods and other commercial ventures. Through public-private enterprises and agreements incentives can be provided to create economically feasible stormwater improvements for existing development. For example, the private sector may be able to negotiate development incentives in exchange for providing water quality systems or utility services for non-potable water users. The following recommendations are provided as further examples of retrofit opportunities for the private sector.

1. It is recommended that ordinances be modified to provide incentives for voluntary retrofit of private property. All techniques listed under Section 3 and in the SWFRPC stormwater resolutions for new and re-development are applicable.

2. Allow property owners the ability to survey parking lot use. Change ordinances to allow up to 50% of parking space impervious surface to be replaced with overflow grass parking. Trees should be allowed in the grass overflow lot.

3. Reward businesses who provide tables, chairs, and other appropriate outdoor furniture for the enjoyment of employees or customers in tree-shaded former parking areas.

4. Change land development codes to require or allow species of grass and other vegetation that do not need fertilizers and irrigation.

5. Incorporate improved pedestrian, bicycle, and transit facilities which reduce the need for pervious parking surfaces.

6. Provide incentives for older neighborhoods with property owner associations to have the ability to retrofit stormwater systems to allow for improved water quality through waiving of permits fees or other cost reducing benefits.

7. Change local government ordinances to allow residents the ability to replace grass areas with trees, shrubs, and groundcovers. Encourage neighborhoods with property owners associations to do the same.

8. Provide incentives for golf course communities or public golf facilities to work with local governments to store treat and use stormwater for non-potable uses.

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

Retrofitting of existing developments and older stormwater systems will become necessary as state and federal regulators set TMDLs for impaired waters. Local government capital improvement plans for performing the needed retrofit projects will require outside financial assistance as local budgets are stretched for other needed programs. The six funding categories below represent a beginning point for funding for public stormwater management programs. As stated on previous sections, budgets will have to include post project monitoring to verify the effectiveness of the retrofitted stormwater management system. In addition, most grant programs from the state are requiring calculations to support the estimate of the mass amount of pollutants removed by the proposed stormwater management system.

A. Stormwater Utility

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. 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, retrofits 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. Funds generated by a stormwater utility can also be used as match money for cost-share grants as well as provide reasonable assurance that the newly implemented project will have financial support from the local government for operation and maintenance (See C below).

B. Capital Improvement Programs (CIP)

Retrofit of government property may be accomplished through normal capital improvements programming. However, it is necessary to put the water quality enhancement projects on the list and provide portions of the local government's budget to support their implementation. Matching moneys for state and federal grants may come from this source of funding as well depending on local guidelines.

C. TMDL Water Quality Restoration Grants

The Florida Department of Environmental Protection receives documentary stamp funding for the implementation of projects to reduce urban nonpoint source pollution discharged to impaired waters. These funds are restricted to projects that reduce pollutant loadings to water bodies on the state's verified list of impaired waters or to water bodies with a DEP proposed or adopted TMDL. These funds primarily are used for stormwater retrofitting projects undertaken by local governments. Typically, the Department will provide up to $1,000,000 in grant funding for these water quality improvement projects. All projects will require a minimum of 50% matching funds. The TMDL Water Quality Restoration Grant funds primarily are for projects that are ready for construction within the next six to ten months. Land acquisition, design, and permitting should be complete or nearing completion. While the department will not fund these preliminary project elements, the cost of these elements are eligible as matching funds. Most projects will require storm event monitoring to document the project's effectiveness in removing pollutants. All data will be entered into the Florida BMP Data Base. Projects will be selected for funding based on the following:

Project will reduce loadings of pollutants of concern discharged to impaired waters (those on the basin specific verified list of impaired waters)

Anticipated load reduction of the pollutants of concern
Cost effectiveness of the project in terms of cost per pound of pollutant removed
Amount of matching funds
Establishment by the local government of a dedicated funding source for stormwater management, such as a stormwater utility

To apply for a grant, the project is submitted on the TMDL Water Quality Restoration Grant application form. Applications are continually accepted. All applications should be submitted electronically to Eric H. Livingston, Bureau Chief of Watershed Management (eric.livingston@dep.state.fl.us), phone 850/245-8430. Also, please be aware of other funding opportunities through our Section 319 grant program and the State Revolving Fund.

D. **Section 319 grant program**

The state, Nonpoint Source Management Section administers grant money it receives from EPA through Section 319(h) of the Federal Clean Water Act. These grant funds can be used to implement projects or programs that will help to reduce nonpoint sources of pollution. Projects or programs must be conducted within the state's NPS priority watersheds, which are the state's SWIM watersheds and National Estuary Program waters. All projects must include at least a 40% nonfederal match.

Examples of fundable projects include: demonstration and evaluation of Best Management Practices (BMPs), nonpoint pollution reduction in priority watersheds, ground water protection from nonpoint sources, and public education programs on nonpoint source management. All approved projects will be contracted with the Department of Environmental Protection and managed by the staff of the Nonpoint Source Management Section. Project proposals are due each year in late May with project selection completed by September. To be included on the 319 mailing list, please email or call FDEP. EPA has the program's guidelines available on the internet.

E. State Revolving Fund

The State Revolving Fund (SRF) Water Pollution Control Program provides low-interest loans for planning, designing, and constructing water pollution control facilities. Federal and State appropriations have funded the SRF. It is a "revolving" fund because loan repayments are used to make additional loans. By federal law, the SRF is to be operated in perpetuity. The DEP solicits project information each year. The information is used to establish project priorities for the following annual cycle. Funds are made available for Preconstruction Loans and Construction Loans. The Loan Terms include a 20-year amortization and low-interest rates. Preconstruction loans are available to all communities and provide up-front disbursements for administrative services, project planning and project design.

A. Brownfields Cleanup Fund

EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse Brownfields. A Brownfield is a site, or portion thereof, that has actual or perceived contamination and an active potential for redevelopment or reuse. EPA is funding: assessment demonstration pilot programs (each funded up to $200,000 over two years), to assess Brownfields sites and to test cleanup and redevelopment models; job training pilot programs (each funded up to $200,000 over two years), to provide training for residents of communities affected by Brownfields to facilitate cleanup of Brownfields sites and prepare trainees for future employment in the environmental field; and, cleanup revolving loan fund programs (each funded up to $500,000 over five years) to capitalize loan funds to make loans for the environmental cleanup of Brownfields. These pilot programs are intended to provide EPA, states, tribes, municipalities, and communities with useful information and strategies as they continue to seek new methods to promote a unified approach to site assessment, environmental cleanup, and redevelopment.

The DEP's Brownfields Redevelopment Program empowers communities, local governments and other stakeholders in economic development to work together to prevent, assess, clean up and reuse Brownfields. A Brownfield site is property which may be complicated by actual or perceived environmental contamination during the expansion, redevelopment or reuse of the property. The reuse of property is an important component of sound land use policy. Productive reuse of urban land helps prevent the premature development of farmland, open space and natural areas, and reduces the public cost for installing new water, sewer and highway infrastructure. The redevelopment of Brownfield sites continues to gain momentum in Florida and across the nation.

SECTION 7: RECOMMENDED PUBLIC EDUCATION PROGRAM

A. Public education is highly recommended regarding the appropriate activities to reduce the pollution content of stormwater for residential, commercial, and industrial properties. 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 neighborhood. Such education program will be based upon and utilize materials form 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.

PASSED AND DULY ADOPTED BY THE SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL this 15th day of January, 2009.

SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL

James Humphrey, Chairman

ATTEST:

Kenneth Heatherington, Executive Director