Exhibit A

Text proposed for deletion is shown ~~stricken~~ and text proposed for addition is shown underlined.
Supplement 58 provided by MuniCode is the base document for the EAR based changes shown.

Chapter 13 DRAINAGE AND NATURAL GROUNDWATER AQUIFER RECHARGE ELEMENT

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Amended:		By Ordinance No.

Acronyms used in this chapter:

BMAP	Basin Management Action Plan
CERP	Comprehensive Everglades Restoration Plan
CGMP	Comprehensive Growth Management Plan
CWA	Clean Water Act
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
FAS	Floridan Aquifer System
FDEP	Florida Department of Environmental Protection
IRL	Indian River Lagoon (Plan)
LOW	Lake Okeechobee Watershed
NPDES	National Pollution Discharge Elimination System
OSTDS	Onsite Sewage Treatment and Disposal System
PRP	Pollution Reduction Plan
RAP	Reasonable Assurance Plan
SAS	Surficial Aquifer System
SFWMD	South Florida Water Management District
~~STA~~	~~Stormwater Treatment Area~~
SWIM	Surface Water Improvement and Management
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus

Section 13.1. Background

13.1.A. *Introduction.* The management of surface water and groundwater resources is important to the environment and the economic viability of Martin County. How these resources are managed will greatly affect the County's growth and development patterns and the quality of life for residents. Historically, the focus of water management in Martin County, as in most of Florida, was on draining land to make it more suitable for urban or agricultural development. The impacts of these practices have taken many years to become apparent. In many instances, construction of water management facilities had harmful impacts, including lowered water tables, saltwater intrusion, reduced water quality, natural habitat loss and reduced natural productivity.

To rectify past problems and prevent or minimize future problems, water resources are now being managed in a manner that considers these impacts. As the County continues to develop, the needs of agricultural, industrial, recreational, residential, commercial and other land uses must be more fully evaluated with respect to their impact on water resources.

Many water management issues are addressed and regulated by entities not under the County's control, such as water management districts and state and federal agencies. Land use decisions made by the County have the potential to benefit or harm natural resources. The County has the flexibility to modify its decision-making process upon realizing the impacts to the quality and quantity of surface water and groundwater.

13.1.B. *Purpose and intent.* The purpose of this element is to design a stormwater and aquifer recharge management plan that addresses existing facility deficiencies and analyzes projected needs. It proposes a set of goals, objectives and policies to address both, while correcting or preventing environmental degradation in a cost-effective manner.

This element is limited to topics specifically related to stormwater management and groundwater aquifer recharge. Related subject areas are addressed in other elements and are only briefly discussed or referenced in this element. The Drainage and Natural Groundwater Aquifer Recharge Element is consistent with the ~~elements of~~ Coastal Management, Conservation and Open Space, Sanitary Sewer Service, Potable Water Service, and Solid Waste and Hazardous Waste Elements ~~and Potable Water Service~~.

13.1.C. *Major surface water and groundwater issues.* Martin County is facing a variety of issues concerning ground and surface water resources. These issues, common throughout Florida, include both quantity and quality of water. The problems vary by geographic areas of the County and the land uses in those areas.

(1) *Surface water issues.* For the purposes of this element, quantity of surface water is the primary issue, though it is recognized that water quality and quantity are largely interdependent, and neither can be altered without affecting the other. Environmental impacts and surface water quality are dealt with in more detail in the Coastal Management and Conservation and Open Space Elements (Chapters 8 and 9). Those quality issues which cannot be rationally separated from quantity issues will be identified here and discussed further. The issues can be grouped into four categories:

Control of water. Inland and coastal flooding are major concerns in managing surface water and stormwater. Development can increase flood potential — the loss of floodplain storage increases the amount of water running off the land. Sea level rise is also a threat to floodplain storage losses and impacts the control of water. As sea level rises, the flood risks increase within the areas that tidally discharge or are connected to tidal areas. Consequently, flood protection and the level of flood protection must be considered in water management as well as future flood risk associated with sea level rise, as applicable.

Water management facilities. The issues include the level of service or performance standard of a facility and the need for capital improvements to ensure the system of facilities performs at the desired level of service. A complication is the relative priority given to new construction as opposed to maintenance of existing facilities.

Environmental concerns. Water quality can be adversely affected by existing and future land uses and increases in the rate and volume of discharge into surface waters. Water quality degradation can lead to loss of fishery and recreational resources. Over drainage also has environmental impacts, including the destruction of wetlands and the resulting loss of habitat, increased erosion and water quality deterioration. The threat of sea level rise along with tidal fluctuations, storm surge, and increased rainfall impact the water quality and may cause potential changes in habitat over time.

Rules and regulations. Various federal, state, regional and local levels of government have jurisdiction over surface water issues. While all strive to prevent or mitigate adverse impacts, some activities are not adequately regulated.

Restoration. Due to the designation of impaired waters within the County, the County is an active stakeholder in the St. Lucie and Estuary Basin Management Action Plan (BMAP), the Lake Okeechobee BMAP, and the Loxahatchee River Pollution Reduction Plan (PRP). Restoration efforts listed within these plans are needed to further reduce water quality impacts. The County should continue to invest in projects that aid in the restoration of these impaired water bodies.

(2) *Groundwater issues.*

Excessive groundwater withdrawals. Exceeding the safe yield of a groundwater basin causes a decline of the water table that cannot be recovered for some period of time. Water table decline can result in saltwater intrusion, dewatering of wetlands and groundwater shortages.

Groundwater contamination. Contamination is possible from a variety of sources, including saltwater intrusion, free-flowing artesian (Floridan) wells, improper disposal of hazardous wastes, leaching from landfills and improper wastewater disposal. Contamination poses the greatest threat to the groundwater supply.

Section 13.2. Surface Water System

13.2.A. *Description of the system.* Martin County has a land area of approximately 555 square miles. The County has several major surface water drainage basins (an area that directly contributes or drains into a specific facility). The County's major drainage basins are shown in Figure 13-1. All of these basins ultimately discharge to the Atlantic Ocean. For water management purposes, the Atlantic Ocean, Okeechobee Waterway and Lake Okeechobee are treated as major drainage basins.

Editor's note(s)—Figure 13-1 is on file in the office of the Martin County Growth Management Department.

Each major drainage basin is subdivided into four smaller subbasins. Figures 13-2 and 13-3 illustrate the subbasins within Martin County. A first order drainage basin discharges directly to a tidal river or the ocean. A second order basin discharges to a primary tributary to a tidal river or the ocean. Examples include the Bessey or Danforth Creeks. A third order basin discharges to a manmade tributary, and then to a primary tributary and then to a tidal river of the ocean. Examples include the manmade ditches in the Palm City Farms area, formerly known as the Palm City Drainage District, or the ditches along the roads in the Coral Gardens Subdivision. A fourth order drainage basin is the smallest subdivision of area and discharges into a third order basin. Examples include the Coral Gardens or Papaya Village subdivisions. Any order of drainage basin can itself be any combination of order below or above it. For example, the Coral Gardens drainage basin is a third order basin that discharges directly into a first order facility, and therefore it is also a second order basin.

Editor's note(s)—Figures 13-2 and 13-3 are on file in the office of the Martin County Growth Management Department.

The size, shape and characteristics of surface water drainage basins depend on a variety of factors, including the region's topography, the presence of streams and rivers, and the ultimate receiving body of water and manmade facilities.

All of the major drainage basins in Martin County have been altered, to some extent, by development. Extensive urban development has occurred in the Coastal, St. Lucie River and Intracoastal drainage basins. The western drainage basins are generally rural, characterized by low, flat terrain. These areas are commonly served by a network of drainage ditches and canals, including roadside ditches, which provide street and highway drainage.

Many of the existing drainage facilities have been constructed individually, with little regard for their potential overall effects on downstream drainageways or water quality. Consequently, a number of areas experience frequent property flooding from relatively minor storms, particularly in older urbanized areas. These include Palm City, Port Salerno, Coral Gardens, Golden Gate, and Hanson Grant ~~and Indiantown~~.

The potential for pollution of surface waters from stormwater runoff is an increasing concern, particularly in the eastern portions of the County, where surface waters discharge to the St. Lucie and Indian River estuaries. This concern extends to the western portion of the County, which discharges to Lake Okeechobee and the St. Lucie Canal.

13.2.B. *Previous studies.* In response to flooding and water quality concerns, the Martin County Board of County Commissioners initiated basin hydrologic studies for certain areas of the County. Most of these studies were directed towards resolving existing drainage problems in small subdrainage basins or within individual subdivisions.

~~The Florida Department of Environmental Protection (FDEP) has prepared a study, "1986 Florida Water Quality Assessment 305(b) Technical Report", which states:~~

~~"…parts of the St. Lucie River watershed are being impacted by runoff from construction sites and urban development along the river. Manatee Pocket, a small port area on the St. Lucie River estuary, frequently has low dissolved oxygen (D.O.) and Secchi disk values (that measure the depth of water at the point to which about 18 percent surface light penetrates). The Savannas, a 15-mile long area of freshwater marsh located between Ft. Pierce and Stuart, have very good water quality. The Loxahatchee basin was recently evaluated in a district basin assessment. Good to fair water quality was generally found throughout the area. Problem areas included a small section of the north fork of the Loxahatchee River which had low D.O. concentrations, and waters in Jonathan Dickinson State Park had high coliform counts."~~

~~The Martin County area is classified as having good to fair surface water quality values. "Good" means the quality of water from the body meets the minimum standards designated for its use. "Fair" means the water body partially meets the designated use. No water bodies in Martin County are classified as "poor" (not meeting the designated use).~~

The Florida Department of Environmental Protection (FDEP) has prepared several studies within Martin County. In accordance with Sections 303(d), 305(b), and 314 of the federal Clean Water Act (CWA), the FDEP continues to prepare an Integrated Water Quality Assessment report for the state of Florida. Section 305(b) requires each state to report every two years to the U.S. Environmental Protection Agency (EPA) on the condition of its surface waters, and Section 303(d) requires each state to report on its impaired waterbodies (those not meeting water quality standards). This report, which is published on a regular basis, shows the impairments within Martin County and can be obtained through FDEP.

The latest Integrated Water Quality Assessment report discusses: environmental interest issues and water quality initiatives; statewide probabilistic and trend assessments; designated use support in surface waters; total maximum daily loads (TMDLs), prioritization, and alternative restoration plans; and the BMAP program.

Water quality within the St. Lucie River and Estuary and Indian River Lagoon has been in decline. The FDEP established a TMDL Report “Nutrient and Dissolved Oxygen TMDL for the St. Lucie Basin” dated October 2008. The TMDL Report shows concentration targets for total nitrogen (TN), total phosphorus (TP), and dissolved oxygen (DO). After the establishment of the TMDL Report, the County has been an active stakeholder in the BMAP, which was originally adopted in May of 2013, and its subsequent updates.

In 1998, FDEP identified Lake Okeechobee as impaired by TP. In August 2001, FDEP adopted the TP TMDL in the Lake Okeechobee Watershed (LOW) as a target for the lake's restoration. To address restoration, the Lake Okeechobee BMAP was adopted in December 2014, and the County has been an active stakeholder in the BMAP including its subsequent updates. In 2014, the Northern Everglades and Estuaries Protection Program (NEEPP) BMAP was adopted and covers the nine sub watersheds comprising the Lake Okeechobee Basin including the St. Lucie Estuary.

In order to minimize development of a TMDL on the Loxahatchee River, the Loxahatchee River Management Coordinating Council, which the County is a standing member, developed with FDEP a pollutant reduction plan (PRP) to address nutrients. The Northwest Fork and Southwest Fork are impaired for chlorophyll-a because they do not meet the water quality criteria. The Loxahatchee River above Cypress Creek is impaired for nutrients based on the presence of algal mats. Pollutants of concern include TN and TP, which are contributing to elevated chlorophyll-a levels. Local stakeholders devoted to restoring the river and estuary have initiated this plan to actively remedy water quality impairments without a state prescribed TMDL or BMAP. This plan is focuses on restoring water quality in the Loxahatchee River through local cooperative efforts.

The BMAPs and PRP identify projects that the County has completed to reduce the impacts of point source and nonpoint source pollution on estuarine water quality. FDEP and South Florida Water Management District (SFWMD) regulate water quality standards within the County. Figure 8-5 shows the FDEP classifications of waters within Martin County as well as the boundaries for the pollution reduction plans adopted by FDEP.

Martin County has made a commitment to preserve and enhance surface water quality, as stated in the Coastal Management and Conservation and Open Space Elements of the Martin County Comprehensive Growth Management Plan (CGMP). To further this commitment, Martin County cooperated with the ~~South Florida Water Management District (~~SFWMD~~)~~ and the FDEP to study the Manatee Pocket area, which has had relatively poor water quality. This and previous studies have concluded that the major cause of the Pocket's water quality problems is urban stormwater runoff, a very common occurrence in Florida.

The study included sampling and analysis of the seasonal water quality and stormwater discharges from storm events within the various tributaries to the Pocket. It resulted in identification of specific drainage basins and upstream land uses that may contribute to the water quality problems. Specific measures were identified to mitigate these problem sources. Various alternatives of wet/dry retention/detention, use of wetland storage areas, reconstruction and other solutions were recommended. The best management practices identified in the study are being used in other drainage basins in Martin County that have similar problems caused by urban stormwater runoff.

The implementation of the ~~drainage~~, ~~e~~Excavating,~~on and f~~Filling, and Mining division, Stormwater Management division, Flood Protection division, and other ~~components~~ divisions of the Land Development Regulations are assisting in preventing future problems and correcting existing problems. Initiation of basin hydraulic studies, as listed in the Capital Improvements Plan as adopted every year~~Element~~, will identify projects to help resolve level-of-service deficits~~,~~ and other problems ~~and solutions~~.

13.2.C. *Analysis.* Previous studies have included an inventory of drainage facilities; delineation of drainage basins and drainage areas; identification of drainage deficiencies; preparation of facility maps and databases; suggestions for correcting deficiencies in the current system; forecasting of future needs; estimates of costs; and recommendations for large-scale stormwater management systems in Martin County.

The needs for stormwater management vary across the County. The rural, less-developed western portion is served by several large regional drainage systems constructed many years ago as part of a U.S. Army Corps of Engineers' drainage project for South Florida. Much of this system is now operated by the SFWMD. Major canals include the Okeechobee Waterway Canal, C-44 (first order basin) and C-23 and L-65 (both second order basins).

Other parts of the County's west are either served by smaller systems that are part of the Florida Department of Transportation's drainage system or are connected to larger agricultural water management systems. Several smaller residential developments, as well as Indiantown, have more developed drainage systems.

Most of the drainage systems have been in place for many years and rely upon the capacity of a network of ditches, small canals and structures to carry stormwater to the major canal system. Stormwater detention or retention systems, designed to reduce rates of discharge and enhance water quality, are typically found only in newer developments that are subject to more recent, stringent regulations.

The eastern part of the County has seen steady development over the past 10 to 15 years, and this pace of growth is anticipated to continue into the foreseeable future. Many older developments were not subject to current regulatory criteria and are not capable of accommodating the same storm criteria as newer systems. In some cases, the capacities of downstream conveyance systems have been exceeded due to development in the upper portions of a drainage basin. New developments can accommodate larger storms and are designed to retain or detain stormwater runoff for the purpose of limiting peak rates of discharge after development to the rates that existed prior to the development.

The SFWMD began surface water management permitting in Martin County in the early 1970s. County population and developed acreage have more than doubled since that time. As a result, over half the County's urban development is subject to more modern drainage criteria, including retention-detention facilities and provision for adequate positive outfall. Since much of the development prior to the SFWMD permitting was lower density single-family on higher ground, Martin County does not have the degree of problems with water quality and quantity found in older communities where the majority of development occurred prior to regulation. In many locations it is the cumulative effect of numerous projects below the regulatory threshold (exempt from current regulations) that have the potential to adversely impact the stormwater system by increasing stormwater discharge rates.

13.2.D. *Design criteria and level-of-service standards.* Runoff characteristics of the drainage basins are analyzed based on 25-year frequency and 10-year frequency of storms ~~lasting 24 hours~~ according to the level of service required for the basin outfall structure. "Design storms" are water management designs that provide drainage and flood protection during storms based on rainfall frequency and impacts that may occur. A more severe storm will likely result in flooding that exceeds the design capacity of the system. However, the construction costs of a storm drainage system designed to handle greater discharges generally outweighs the additional benefits.

Design criteria. The proposed hydraulic design criteria for all new development are the drainage standards listed below, which are currently adopted and enforced through Martin County's Land Development Regulations. The criteria are the same for all developments, except single-family residential lots of less than five acres. While the existing standards are adequate, the SFWMD recommends exceeding these minimal standards; Martin County encourages new development to exceed this standard and will design and revise regulations to assure that new development will not create new deficiencies.

Level-of-service standard for conveyance facilities <u>and flood protection</u>. The levels of service for drainage represent the capacity provided for various development features. They are expressed in terms of storm events to be accommodated by the drainage conveyance facility. <u>The capability of a drainage system to dispose of runoff is commonly expressed in terms of the maximum storm event from which runoff can be conveyed or stored by the component facilities in a desirable manner. Specifying the return period and duration of rainfall to be handled by a drainage facility establishes the capacity the facility can be expected to provide.</u>

Martin County has established the following level-of-service standards for specific drainage conveyance facilities:

<u>(1) Drainage facilities serving more than one square mile shall accommodate runoff from a 25-year/24-hour design storm.</u>

<u>(2) Underground storm sewers shall accommodate runoff from a 5-year/~~24-hour~~critical duration (10-minute minimum) design storm.</u>

<u>(3) Other facilities shall accommodate runoff from a 10-year/24-hour design storm.</u>

~~(1) Building floors shall be at or above the 100-year flood elevations, as determined from the most appropriate information, including Federal Flood Insurance Rate Maps. Both tidal flooding and the 100-year, 3-day storm event shall be considered in determining elevations. Lower floor elevations will be considered for agricultural buildings and boat storage facilities that are nonresidential and not routinely accessed by the public.~~

(~~2~~4) All ~~project~~ sites shall control the timing of discharges to preclude any off-site impact for any storm event;~~.~~ ~~T~~the peak discharge rate shall not exceed the predevelopment discharge rate for the 25-year/72-hour ~~frequency, 3-day duration~~ design storm ~~event~~.

~~(3) The minimum roadway flood protection design storm shall be the 10-year frequency, 24-hour duration storm event unless the roadway is classified as a scenic corridor, in which case the flood protection design storm will consider maintaining the character of the roadway.~~

~~The capability of a drainage system to dispose of runoff is commonly expressed in terms of the maximum storm event from which runoff can be conveyed or stored by the component facilities in a desirable manner. Specifying the return period and duration of rainfall to be handled by a drainage facility establishes the capacity the facility can be expected to provide.~~

Martin County has established the following level-of-service standards for flood protection:

(1) Roadways that are classified as a minor collector or a local street shall be above the predicted elevation of stormwater that will stage after a 10-year/24-hour design storm.

(2) Roadways that are classified as a major collector or an arterial shall be above the predicted elevation of stormwater that will stage after a 25-year/24-hour design storm with allowable discharge.

(3) The lowest floor of a building outside a Special Flood Hazard Area shall be above the predicted elevation of stormwater that will stage after a 100-year/72-hour design storm without discharge, unless the building is on a lot that was subdivided without an approved or permitted stormwater management plan, in which case, the lowest floor shall be as set forth in the Land Development Regulations.

(4) The lowest floor of a building inside a Special Flood Hazard Area shall be at least two feet above the 100-year flood elevations~~,~~ as determined from the Federal Flood Insurance Rate Maps~~.~~

(5) The lowest floor of a building shall be set upon consideration of future flood risks associated with tidal influences, storm surge, increased rainfall, and sea level rise, which may be higher than (3) or (4) above.

13.2.E. *Surface water management needs.* Alternative solutions to surface water management must address facility deficiencies, future facility needs and maintenance needs.

Some facilities are operating below the desired level of service. Correcting deficiencies that endanger health and safety must be given priority over deficiencies that result in inconvenience and minor property damage. Martin County's responsibility for drainage improvements includes regulation to prevent future problems as development occurs and funding to cure present deficiencies.

Correction of deficiencies. The responsibility for funding to correct present deficiencies through the Capital Improvements Element is limited to:

(1) Public systems;

(2) Systems within or affecting the Primary Urban Service District;

(3) Systems where existing development is adversely affected; and

(4) Systems where there is a history of flooding complaints.

Improvements will be needed to systems in developed areas that are projected to provide less than the desired level-of-service (projected in five-year increments) through the planning period. Whenever possible, regulations should be strengthened or user fees imposed to assure correction of level-of-service degradation by the development causing it. In addition, new systems must be constructed in currently undeveloped areas. These systems will be the responsibility of new developments in these areas. Only a few drainage studies have been completed, and additional drainage studies will be needed to resolve other areas of concern. Finally, maintenance requirements to obtain the desired level of service must be instituted and continued to maintain the desired level of service.

Alternatives evaluated and selected. The most cost-effective alternatives are development restrictions and upgrading of drainage structures (primarily channels and culverts) to minimize flood losses. Development restrictions are an effective step to reduce the potential for flooding beyond what occurs under existing conditions. Undersized drainage culverts can result in undue ponding, possibly flooding nearby structures and overtopping roadways. Although initial costs for structural improvements may be substantial, they are relatively low compared to the cost of purchasing land and building regional detention facilities. Similarly, the cost to the County of purchasing floodprone properties would likely be prohibitive due to the extensive area that would have to be purchased.

Existing facility deficiencies. Many stormwater facilities in Martin County require upgrades to fulfill recommended levels of service under existing conditions. Areas upstream of undersized facilities are subject to more frequent and longer periods of flooding than areas with adequately sized drainage facilities. Results of the Martin County analysis indicate that culverts and other discharge structures are the primary type of undersized facilities. These facilities, none of which meet current standards, have been identified and grouped into projects.

The need to upgrade facilities is evaluated based on projected population distribution and land development trends within the County. Population densities and land use categories are identified throughout the County for the purpose of estimating the potential impact of future developments on surface water runoff. The Martin County Future Land Use Map is used to estimate the approximate type and density of future land uses within a drainage basin (see Table 13-1). From the type, extent and density of development expected to characterize the individual drainage basins during a future time period, the runoff characteristics of the basin can be changed empirically to estimate the peak runoff rates at drainage structures. The capacity of the structure is then compared to the peak flow rate arriving at the structure to determine if additional capacity is needed at that location to prevent excessive ponding during a storm event.

Table 13-1
Land Use Summary Table

Drainage Basin Name	Major Land Uses[1]
Lake Okeechobee	Agricultural, Agricultural Ranchette, Industrial, Vacant, Commercial
Palm Beach County	Agricultural, Vacant
St. Lucie Canal	Agricultural, Agricultural Ranchette, Low Density Residential
Pal Mar	Agricultural, Conservation, Vacant
Loxahatchee	Agricultural, Recreational, Vacant, Low to Medium Density Residential
Intracoastal	Medium Density Residential, High Density Residential, Commercial
South Fork St. Lucie	Agricultural, Agricultural Ranchette, Low to Medium Density Residential, Vacant, Commercial, Industrial, High Density Residential

North Fork St. Lucie	Medium Density Residential, Commercial
St. Lucie River	Medium and High Density Residential, Commercial, Industrial, Institutional, Vacant

[1] The order of land uses listed represents the approximate order in which those land uses dominate those drainage basins.

Needs for future facilities. Increased development generally results in increased stormwater runoff, usually manifested in increased peak rates and total volumes of runoff. Current stormwater discharge rules and regulations of the SFWMD and Martin County may reduce these impacts, but they do not eliminate them. New developments are required to design and construct drainage improvements to meet County and SFWMD criteria. The County will work with the SFWMD to develop criteria which will prevent an increase in stormwater discharge volume to sensitive estuarine areas. Many projects are exempt from such rules because of their size or type or are grandfathered since they were built prior to the adoption of these rules. Such projects are frequently built to lower level-of-service standards than those currently in effect. In these cases, Martin County may be allowing problems to occur by not requiring all projects to meet the current standards.

Surface water study needs. Some areas in Martin County have drainage patterns too complex to allow a full evaluation of the level-of-service performance without (1) detailed survey information and (2) analysis of the drainage network under a variety of scenarios reflecting changes in operating conditions and storm events. Studies addressing these concerns should be undertaken to provide the analysis needed to understand the complexity of these drainage systems. The areas in question generally utilize pumped drainage systems or other operable control features to regulate surface water elevations and discharge rates. They are typically located in agricultural areas, but others are on land that is largely unimproved. These systems often rely heavily on the operation of the major canals constructed in Martin County, most of which are regulated by the SFWMD.

Agricultural systems appear to have little impact on drainage facilities that could jeopardize human safety or the integrity of property, unless they are adjacent to urban development. These systems may have a direct bearing on the performance of outlying drainage features within the same drainage basin. Since these outlying areas are generally rural, structural upgrades in these locations have a relatively low priority compared to more urbanized areas. However, drainage problems persist for persons living in these areas, and they will become more pressing if development intensifies. The County should regulate these areas to prevent future development problems.

Other recommended studies~~y needs~~ include:

(1) detailed hydraulic analyses along the major creeks in Martin County to verify the impact of proposed structural improvements; identify floodplains for the purpose of enforcing floodplain regulations; identify channel size requirements over the entire length of the drainageway to meet level-of-service standards; and identify sites along the channel that may be subject to erosion; and

(2) detailed hydrologic and hydraulic studies for the entire County to determine current level of services, to identify current and future flood risks associated with sea level rise, and to develop proposed capital improvements to mitigate level of service and flood risks, as needed.

Such studies provide a basis for the County's stormwater planning and enforcement programs and could be updated as improvements or changes occur to the drainage features within the basin.

Information provided by the studies supplements that provided by the National Flood Insurance studies. Detailed information is kept for areas outside of areas that are primarily influenced by tidal sources. The County monitors and enforces its level-of-service goals and development restrictions within floodplain boundaries, as required by Phase II of the National Pollution Discharge Elimination System (NPDES), Municipal Separate Storm Sewer System (MS4) Permit and State Water Quality Standards criteria.

Right-of-way needs. Rights-of-way should be acquired for all facilities operated and maintained by the public. Developers shall not discharge to an outfall facility unless its design capacity and easements are sufficient to guarantee that the facility can be legally maintained.

Capital improvements. A number of capital improvement projects are recommended annually to address the surface water needs previously identified. ~~Capital improvements projects are listed and updated in the Capital Improvements Element.~~

Capital improvement projects constructed by the County address requirements for upgrading drainage facilities serving major tributaries (generally first and second order drainage basins) within or affecting the Urban Service District. Areas located upland from these channels may continue to experience flooding in spite of the recommended improvements. This is primarily due to poorly maintained or inadequately sized minor drainage tributaries; poorly maintained or inadequate internal drainage systems; low building elevations; or rainfall events of greater magnitude than the drainage facilities are designed to accommodate. In many instances drainage problems are localized, affecting a relatively small area. This flooding may cause nuisance problems such as making streets briefly impassible, leaving standing water in yards for several days or making septic tanks inoperable. Such problems generally do not cause substantial property destruction, and fixing them may not result in an attractive cost/benefit calculation due to the relatively small areas involved.

Future studies for specific areas of Martin County are included in the capital improvements budget in order to determine the exact causes of flooding. In many instances, localized flooding may affect a single subdivision or just several lots. Any improvement would rectify the problem only for dwellings in those areas. In some cases, such as when Martin County does not own the drainage system, the solution should not be publicly funded; the developer or homeowner should be responsible for solving the problem.

(1) *Capital costs.* Capital improvement costs have been identified for the five-year planning period. Several types of capital improvements are needed:

   a. Repair of facilities to reach the established level of service;

   b. Fourth and fifth order delineations and specific studies;

   c. Projects recommended in previous studies;

   d. Future studies; and

   e. Right-of-way acquisition.

(2) *Operations and maintenance.* Facilities maintenance must occur on a programmatic, scheduled basis to ensure the adopted level of service. Martin County has established a stormwater management unit responsible for all stormwater issues, including planning, engineering, budgeting, supervision, construction, operations and maintenance.

Funding strategy for stormwater management. The primary difficulty in dealing with past stormwater problems has been the lack of dedicated personnel and reliable funding.

Many public needs are being provided through creation of a utility dedicated to provision of a specific service, such as water, sewer and solid waste agencies. Consequently, utility agencies are being created nationwide with increasing frequency to provide stormwater management services.

To provide a stable and dedicated funding source for the Capital Improvements Element, Martin County will have the option of adopting an ordinance establishing a stormwater utility. It would be responsible for managing the drainage system to prevent property damage; maintaining a hydrologic balance to protect water quality for the safety and enjoyment of citizens; and preserving and enhancing wildlife.

If such an ordinance were adopted, funding of improvements would be based on the extent of the impervious area and the cost of improving the facilities.

Section 13.3. Groundwater and Aquifer Recharge

13.3.A. *Existing conditions.*

Description of groundwater system. Martin County is included in the SFWMD's Upper East Coast Boundary, which includes Martin County, St. Lucie County, and a small portion of Okeechobee County. Water for urban and agricultural uses in Martin County comes from three sources: the Surficial Aquifer System (SAS), Floridan Aquifer System (FAS) and surface water systems. Agricultural irrigation is primarily drawn from surface water sources, with FAS wells as a back-up during periods of low rainfall. The Surficial Aquifer System (SAS) and the Floridan Aquifer System (FAS) ~~is a~~ are principal sources of water for public water supply and urban irrigation in Martin County. ~~However, a~~Alternative water supplies have been developed, such as ~~the~~ additional FAS wells and reclaimed water systems, in coordination with the SFWMD, to meet existing and future demands.

The 2021 Upper East Coast Water Supply Plan Update evaluates water use in six categories:

(1) *Public ~~water s~~Supply (P~~W~~S):* All potable water supplied by water treatment facilities with average production rates greater than 0.10 million gallons per day (MGD);

(2) *Commercial/Industrial/Institutional (CII):* Self-supplied water associated with the production of goods or provision of services by industrial, commercial, or institutional establishments.

(3) *Landscape/Recreational (L/R):* Self-supplied and reclaimed water used to irrigate golf courses, sports fields, parks, cemeteries, and large common areas such as land managed by homeowners' associations and commercial developments.

(4) *Domestic ~~s~~Self-~~s~~Supply (DSS):* Potable water used by households served by small utilities (less than 0.10 MGD) or self-supplied by private wells;

(5) *Power Generation (PG):* Self-supplied and reclaimed water used for cooling, potable, and process water by power generation facilities; and

(6) *Agriculture (AG):* Self-supplied water used for commercial crop irrigation, greenhouses, nurseries, livestock watering, pasture irrigation, and aquaculture.

The ~~2016~~ 2021 Upper East Coast Water Supply Plan Update estimates gross water demand for Martin County, as shown in Table 13-2. Gross demand is water allocated in a consumptive use permit and is the volume withdrawn from the system:

Table 13-2

Estimated (~~2019~~ 2020) and projected (2045) average gross water demands (in MGD) - average rainfall conditions for Martin County, by use category*

Category	Estimated Historical Demands ~~2019~~ 2020 (MGD)*	Projected Demands 2045 (MGD)
Public ~~water s~~Supply**	~~22.26~~ 22.54	27.23
Domestic ~~s~~Self-~~s~~Supply	~~1.11~~ 1.12	1.45
Commercial/Industrial/Institutional	~~3.46~~ 3.50	4.21
Landscape/Recreational ~~Groundwater/surface water~~	~~12.51~~ 15.65	~~17.67~~ 17.36
~~Reclaimed water~~	~~3.66~~	~~5.54~~
~~Martin County total~~	~~15.54~~	~~17.36~~
Power ~~g~~Generation	~~16.46~~ 14.13	14.13
Agriculture~~al~~	~~101.67~~ 99.56	83.72
Martin County Total	156.50	148.10

* Estimated (~~2019~~2020) and projected (2045) average gross (raw) water demands~~,~~ by water use category~~,~~ in the UEC Planning Area for the 2021 water supply plan update. Agriculture accounts for the majority of current and projected demands, followed by PS, L/R, PG, CII~~DSS~~, and ~~CII~~DSS. A small decrease in total demand is projected through the planning horizon.

Source: 2021 SFWMD Upper East Coast Water Supply Plan Update, Appendix A: Water Demand Projections. ~~Tables 2-3, 2-5, 2-7, 2-8, 2-10 and 2-11~~ Table A-29. Summary of gross water demands under average rainfall conditions in the UEC Planning Area, by water use category.

Factors for determination of recharge areas. The SAS in Martin County is recharged directly by local precipitation. The amount of recharge is determined by several factors, including:

1. Amount and rate of precipitation;
2. Amount of evapotranspiration (combined water losses by evaporation into the atmosphere and transpiration by plants);
3. Soil permeability (the rate at which water seeps into the soil);
4. Topography (elevation and slope of the land surface related to the distance to the water table); and
5. Land use (degree of imperviousness or runoff).

Location of recharge areas for the Floridan Aquifer System (FAS). In Martin County, the top of the FAS is at least 600 feet below sea level, and is separated from the SAS by at least 450 feet of confining unit (a unit of rock that does not readily transmit water). The potentiometric head of the Aquifer (the level to which water will rise in a tightly cased well) ranges from 10 to 30 feet above land surface. Together with the degree of confinement, the result is minimal recharge to the FAS in the County (Lichtler, 1960).

For downward leakance to occur, the potentiometric head of the FAS must be at a lower elevation than the water table in the SAS. This condition apparently does not exist in Martin County. However, conditions conducive to recharge do exist in Polk County and parts of Highland County, which are the primary recharge areas for the FAS in Martin County (Lichtler, 1960).

13.3.B. *Recommendations for existing and future protection needs of groundwater resources.* ~~Figure 13-7 (on the Martin County website) shows potential areas for wellfield development recommended by the SFWMD (1987). Two of these areas are located in Basin 5, in the most transmissive (productive) part of the aquifer in the southern part of the County.~~ Potential areas for wellfield development ~~Evaluation of these areas and other areas of the County~~ within the County will be based on ~~further studies of~~ wellfield feasibility studies. ~~Wellfields in these locations could supplement the southeastern coastal region. The other four potential areas are located in Basin 2, which could supplement the north County peninsula area.~~

Section 13.4. Goals, Objectives, Measures and Policies

Goal 13.1. To protect and improve the quantity and quality of Martin County's groundwater and surface water resources.

Objective 13.1A. To maintain existing groundwater and surface water quality, improve areas of degraded groundwater and surface water quality, and prevent future contamination of groundwater supply sources.

Policy 13.1A.1. Measures for maintenance of groundwater quality. Martin County shall identify measures and practices necessary to maintain groundwater quality as provided by state regulations.

Policy 13.1A.2. State water quality policies. Martin County shall use the State Water Quality and Construction Policies, an element of the State Water Quality Management Plan, as a general source for evaluation of water quality. These policies will be incorporated into existing County regulations.

Policy 13.1A.3. Standards for surface water bodies. Standards the County has established by ordinance, minimum surface water quality standards (as required by Total Maximum Daily Loads, BMAPs, PRPs, and Phase II ~~of the~~ National Pollutant Discharge Elimination System (NPDES) ~~and~~ Municipal Separate Storm Sewer System [MS4] permit) and adopted State Water Quality Standards criteria shall apply to all surface water bodies as defined by legislation.

Policy 13.1A.4. Protection of potable water wellfield allocations. By implementing and updating the Martin County Wellfield Protection Regulations, the County shall protect present and future potable water wellfield allocations to assure that water resources are not degraded by development, excessively drawn down or contaminated by saltwater.

Policy 13.1A.5. Protection of groundwater adjacent to homes. Land use shall not be changed to industrial use where the groundwater flow would be located up-gradient and adjacent to homes that will continue to use individual wells. This includes situations where a highway or road separates the land uses.

Policy 13.1A.6. Protection of wells/wellfields from hazardous contamination. Existing and future potable water wells and wellfields shall be protected from contamination by regulated materials (i.e., hazardous and toxic materials). Protection shall consist of a program, outlined in the Wellfield Protection Regulations, that establishes requirements for (1) the use, handling, storage, production and disposal of hazardous and toxic materials; (2) revisions, condemnation, elimination or relocation of inappropriate land uses; and (3) prohibitions, structural containment safeguards, monitoring, emergency reporting and cleanup, personnel training, inventory and financial responsibility.

Policy 13.1A.7. Siting of wells/wellfields relative to hazardous materials. New potable water wells and wellfields shall be located in areas where maximum quantities of regulated materials do not exceed criteria of the Wellfield Protection Program.

Policy 13.1A.8. Criteria for siting wellfields. Sites for new wellfields shall be considered using the following criteria:

(1) Potential for saltwater intrusion;

(2) Suitable hydrogeologic characteristics;

(3) Adequate distances from industrial, commercial, agricultural and other sites that pose a risk for groundwater contamination;

(4) Potential for adverse effects on wetlands and stream flows.

Policy 13.1A.9. Review of wellfield protection regulations. Wellfield protection regulations and procedures shall be reviewed annually to reflect current best management practices (state-of-the art technology) that shall be utilized to achieve efficient management of water quality and supply, including management of recharge areas and groundwater.

Policy 13.1A.10. Consideration of water issues in review of development proposals. Future amendments to the Land Development Regulations shall require consideration of limitations to water supply or water quality problems in development proposal reviews. This review shall include appropriate density allocations through the use of the interim water and wastewater protection regulations.

Policy 13.1A.11. Use of reclaimed water on golf courses. Reclamation of treated wastewater by spray irrigation of golf courses and other large green areas shall be expanded. The locations and rates of reclaimed water application will be determined for each site.

Policy 13.1A.12. Enforcement of regulations to protect groundwater quality. The negative impacts of existing land use activities on groundwater quality shall be minimized through enforcement of regulations or by revising water quality management techniques. Where negative impacts are

occurring because of inadequate maintenance of water supply and wastewater systems or due to violations of the law, these situations shall be remedied at the owner's expense.

Policy 13.1A.13. Evaluation of effects of wells on groundwater supplies. The potential effects of additional private wells and septic tanks on groundwater supplies shall be evaluated for all future land developments.

Policy 13.1A.14. Prohibition on hazardous waste near wellfields. Hazardous waste storage, transfer or generating facilities shall be prohibited within wellfield zones of influence or other vulnerable high-recharge areas.

Policy 13.1A.15. Prohibition on spreading hazardous sludge. Martin County shall continue to prohibit the spreading of any municipal, domestic or industrial sludge that may include heavy metals or other toxic materials as determined by federal and state agencies and County regulations.

Policy 13.1A.16. Plugging of free-flowing artesian wells. All free-flowing artesian wells within the County shall be plugged or otherwise controlled to prevent adverse impacts to ground and surface waters.

Policy 13.1A.17. Improve water quality of surface waters. The County shall be an active stakeholder in regional water quality improvement plans such as a BMAP, PRP, or Reasonable Assurance Plan (RAP) or any other plans to address water quality degradation within its municipal limits. The County shall continue to plan and implement projects to reduce the contribution of pollutants into waterbodies.

Objective 13.1B. To enhance the quantity of groundwater recharge and maintain desirable groundwater levels.

Measure: Water level network data collected by SFWMD and the USGS shall be reviewed in conjunction with the public and private utilities for historical and present water levels. Minimum groundwater elevations and a range of fluctuation shall be established and shall be maintained. Water level increase shall be encouraged.

Policy 13.1B.1. Applicability of latest Upper East Coast Water Supply Plan. The most current Upper East Coast Water Supply Plan shall be referenced when determining water availability, use, and allocation.

Policy 13.1B.2. Land and water management policies. Martin County shall pursue land and water management policies that increase recharge of groundwater into the SAS to prevent water table declines and thereby enhance water quality.

Policy 13.1B.3. Protection of recharge. Activities shall not be permitted that would degrade the quality of recharge entering the County's potable water aquifers. Consistent with the intent of this policy:

(1) Storage and recharge potential of properties shall be maintained and, where possible, increased or enhanced using retention/detention areas, existing wetlands, open space and other means.

(2) Stormwater management systems shall be designed to maximize the quality of water being recharged and being discharged off-site through the implementation of the adopted stormwater design standards.

Policy 13.1B.4. Preservation of recharge areas. The development review process shall place a high priority on preserving major recharge areas. These areas will be identified through the SFWMD's Upper East Coast Water Supply Plan.

Policy 13.1B.5. Protection of freshwater recharge areas. Martin County shall preserve and protect the freshwater Savannas and other major recharge areas as identified under Policy 13.1B.4. Preservation and protection shall be accomplished through public purchase, density transfers, private dedications and similar mechanisms.

Policy 13.1B.6. Location of stormwater retention ponds. Where feasible, regional stormwater retention/detention systems shall be located in areas of depressed groundwater levels and/or impacted wetlands, and shall be designed to enhance groundwater recharge. Such recharge areas have been identified as part of the SFWMD Upper East Coast Water Supply Plan. The conclusions of that plan are used to assist in locating regional retention/detention systems, where feasible.

Policy 13.1B.7. Management programs to protect groundwater. Water and land management programs shall be used to protect and maintain groundwater supplies. These programs include the CGMP, and the Land Development Regulations. Water and land management practices shall also protect against saltwater intrusion by managing the amount of groundwater withdrawal from coastal Surficial Aquifers. Restrictions shall be imposed on future land uses that adversely affect recharge and water quality within the zones of influence of the wellfields protected by the Wellfield Protection Regulations. These areas shall be included on a wellfield protection map.

Policy 13.1B.8. Monitoring of saltwater intrusion. The saltwater intrusion monitoring well network shall be closely monitored, particularly in areas around the Martin County wellfields. Water table elevations at those wellfields shall also be monitored to detect long-term lowering of the water table. The water table elevation should not be allowed to decline irrecoverably at the wellhead to less than 4.5 feet below sea level, as recommended by the SFWMD.

Policy 13.1B.9. Use of appropriate technology for municipal water. To assure an adequate water supply for natural systems and existing commercial agriculture, water management plans shall recognize that domestic and municipal potable water needs can be served by reverse osmosis or other appropriate technology. This policy is applicable for normal, average rainfall years as well as drought years.

Objective 13.1C. To maintain and improve stormwater facilities that are in the Urban Service District that have capacity deficiencies and a history of flood complaints, while using generally accepted design criteria for current and future projects to ensure that those projects provide for their outfall needs without creating future deficits.

Policy 13.1C.1. Funding for stormwater management. Martin County shall pursue regional, state and federal funding for stormwater management and fiscal administrative procedures to improve stormwater management.

The County shall update the Stormwater Management Master Plan with hydrological and geological data from prepared drainage studies and the analysis undertaken for this element. The County shall produce needed supplemental data as is economically feasible and refine data concerning specific drainage basin boundaries. Stormwater basin studies for basins in the Urban Service District, which have capacity deficiencies and a history of flood complaints, shall be incorporated into the Stormwater Master Plan as appropriate. The Master Plan includes canal system improvements, structural needs, design specifications, proposed retention basins and suggested performance criteria for managing runoff. Any updates to the Stormwater Management Master Plan shall include future sea level rise projections as part of any alternatives analysis for proposed improvements and any other elements needed to evaluate flood risk.

Policy 13.1C.2. Regulations encouraging cost-effectiveness and environmental sustainability. Based on improved drainage and floodplain data, the County shall formulate and adopt the drainage and floodplain component of the Land Development Regulations, emphasizing cost-effective and environmentally sensitive solutions. The Regulations shall be revised, as appropriate, based on the analysis and recommendations of the Master Plan.

Policy 13.1C.3. Enforcement of level-of-service standards. Martin County shall enforce the level-of-service standards in Section 13.2 through the Land Development Regulations. The design criteria used to reach these levels of service will be the same as those of the SFWMD for all development except single-family residential lots of less than five acres.

Policy 13.1C.4. Martin County has developed a programmatic, scheduled, preventative drainage maintenance of County stormwater facilities that shall, at a minimum, follow the approved Phase II NPDES Notice of Intent. This program includes a capital and operations budget to support the program.

Policy 13.1C.5. Priorities for stormwater projects. Martin County shall prioritize stormwater improvement projects using the following criteria:

(1) Impacts on the health, welfare and safety of the public;

(2) Level of flood damage in terms of property losses;

(3) Location in the Urban Service District;

(4) Public ownership of the facility;

(5) Frequency of flooding;

(6) Total area involved in flooding;

(7) Duration of flooding based on past storms;

(8) Causes of flooding;

(9) Impediment to public transportation;

(10) Environmental impact;

(11) Cost of corrective measures;

(12) Benefit/cost analysis;

(13) Needs of maintenance vs. new construction;

(14) Impact on upstream and downstream areas.

Policy 13.1C.6. Design of stormwater improvements. Martin County shall ensure that proposed developments are designed and constructed so that stormwater system improvements meet County and SFWMD criteria. This includes both on-site and off-site improvements of public and private facilities.

Policy 13.1C.7. Contribution for off-site drainage improvements. All new developments shall provide an equitable contribution for off-site drainage improvements necessitated by the development. No new development shall be allowed that reduces services below the level-of-service standard established for the existing off-site facilities.

Policy 13.1C.8. Easements. The County shall encourage the dedication of rights-of-way and easements.

Policy 13.1C.9. Monitoring of stormwater facilities. In conjunction with the SFWMD, the County shall (1) monitor the performance of off-site stormwater facilities, (2) evaluate existing and potential problems or issues and (3) seek funding for structural and nonstructural system improvements needed for effective surface water management. However, new developments shall make all improvements required by their development to maintain the established level of service and shall not be allowed to make improvements that cause or add to off-site flooding.

Policy 13.1C.10. Funding for stormwater management. Martin County shall apply for state funding to improve stormwater management systems if the state approves a grant program for local governments for stormwater pollution control pilot projects.

Policy 13.1C.11. Stormwater utility ordinance. The County shall have the option of establishing a stormwater utility ordinance to fund drainage basin improvements. If established, fees would be based upon impervious area and the cost of improving drainage facilities.

Objective 13.1D. To maintain desirable surface water levels, discharge rates and discharge volumes to reduce adverse environmental impacts while providing for adequate levels of flood protection.

Measure: All new surface water management systems shall conform to the SFWMD and County design standards which shall limit environmental impacts and provide adequate levels of flood protection.

Policy 13.1D.1. Design of drainage systems. By rejecting the design of drainage systems that result in over drainage, the County shall assist in maintaining the highest practical surface water levels and appropriate water level fluctuations to provide for reasonable water use and for balanced urban, agricultural and natural systems.

Policy 13.1D.2. Criteria for water quality. The County shall limit an increase in volume and degradation of water quality. The County shall work with the SFWMD and the FDEP to implement appropriate criteria in compliance with Total Maximum Daily Load (TMDL), NPDES and all other adopted state water quality requirements.

Policy 13.1D.3. Prohibition of canals. Martin County shall continue to prohibit construction of canals.

Policy 13.1D.4. Implementation of stormwater management requirements. The County shall implement the surface and stormwater management requirements of the Land Development Regulations, and other future surface water management regulations.

Objective 13.1E. To reduce the adverse environmental impacts of over drainage and restore presently impacted affected areas.

Measure: As of the adoption of this plan, and in subsequent years thereafter, there shall be no fewer acres of viable wetland or deepwater habitat types than exist upon the adoption of this plan.

Policy 13.1E.1. Wetlands protection regulations. Martin County shall maintain a wetlands protection component of the Land Development Regulations that requires maintenance of upland buffers around protected wetlands.

Policy 13.1E.2. Hydrological and ecological functions. Martin County shall protect and preserve the hydrological and ecological functions of the County's water resources while permitting water management activities that meet the adopted standards and criteria of this element.

Policy 13.1E.3. Enforcement of environmental regulations. The County shall actively enforce all environmental control regulations of the County's Code of Ordinances and shall establish additional performance standards, as required, to promote water management concepts.

Policy 13.1E.4. Suitability of land uses. The County shall recognize that certain areas are unsuitable for urban or high-intensity agricultural use because of soil and watershed conditions. Soils, floodplain and topographic data will be used to determine these areas. Wetlands restrictions of the Conservation and Open Space Element shall apply to these areas.

Policy 13.1E.5. On-site retention of surface water. The County shall promote on-site retention/detention of surface waters, natural return of surface water into the soil and channeling of excess stormwater primarily through grassy swales and natural drainageways. Actions in this regard shall reflect land development regulations established by Martin County that integrate storage areas and natural drainage courses into water management plans for new development.

Policy 13.1E.6. Monitoring of new water quality practices. The County shall continue to monitor experimental water quality projects such as wetlands creation and stormwater detention in impacted wetlands. When long-term tests in real situations demonstrate the viability of these new techniques to eliminate negative impacts, these practices shall be adopted by amending the CGMP and Land Development Regulations.

Policy 13.1E.7. Review of excavation and fill policies. The excavation and fill component of the Land Development Regulations shall be reviewed to assure that current best management practices are incorporated to minimize erosion and siltation, especially during construction.

Policy 13.1E.8. Stormwater needs in community redevelopment areas. The County shall review the stormwater needs of the CRAs and shall provide exceptions or alternative compliance measures for these areas in the Land Development Regulations. Any exceptions shall assure that other properties do not flood and that the timing, quantity and quality of stormwater runoff does not negatively impact the St. Lucie River or other receiving bodies. Where offsite water management facilities are used they must be in place and functioning prior to the issuance of a building permit.

Objective 13.1F. To establish criteria for the extension of necessary public facilities that maintain adopted level-of-service standards and discourage urban sprawl.

Policy 13.1F.1. Extension of public facilities. Extension of facilities to any area is contingent upon approval of Martin County and the SFWMD.

Policy 13.1F.2. Areas for expansion of public facilities. The expansion of public facilities shall be limited to those areas identified and adopted as consistent with the urban growth objectives and policies in the Future Land Use Element.

Policy 13.1F.3. Determination of available capacity. The level-of-service standards shall be used to determine the availability of facility capacity and the demand generated by a development.

Policy 13.1F.4. Design standards. New development shall meet Martin County design standards, which are specifically designed to reduce adverse impacts on drainage systems and on the quality of receiving water bodies.

Objective 13.1G. To ensure that surface and groundwater resources occurring in or affecting more than one governmental jurisdiction are effectively managed to preserve, protect and enhance those resources through continued coordination with adjacent governments and appropriate agencies.

Policy 13.1G.1. Coordination with SFWMD. To provide for better management of the County's water resources, water system planning and development programs shall be coordinated with the SFWMD and be consistent with water availability, use, allocation and management plans.

Policy 13.1G.2. Coordination for use of emerging technologies. To promote improved water quality management, the County shall coordinate with federal, state and regional planning and water management districts to improve water management through the evaluation and incorporation of appropriate emerging technologies.

Policy 13.1G.3. Coordination for watershed management. Martin County shall assure coordination of watershed management plans and policies with all appropriate local, regional, state and federal agencies. These include local municipalities, the SFWMD, Treasure Coast Regional Planning Council, FDEP, State Agricultural Extension Service, U.S. Soil Conservation Service, U.S. Geological Survey and U.S. Army Corps of Engineers. Martin County shall designate a staff member responsible for coordination of water management issues and plans.

Policy 13.1G.4. Cooperation for information on flood damage prevention. Martin County shall cooperate with the SFWMD, U.S. Soil Conservation Service and other relevant agencies in upgrading the information program for assessing flood damage prevention issues.

Policy 13.1G.5. Assistance in implementing regulatory functions. The County shall designate a person to coordinate with the SFWMD and other public agencies to assist in implementing regulatory functions within Martin County, as requested. This assistance will be provided on matters related to the permitting of consumptive uses of water; artificial recharge of underground formations; construction, operation and maintenance of system improvements; and other related regulatory activities.

Policy 13.1G.6. Assistance in protecting groundwater from pollution. Martin County shall assist other agencies in protecting groundwater from point and non-point pollution sources. The County shall also promote the conservation and efficient use of water as it travels through groundwater systems, and promote maintenance of adequate supplies of high-quality groundwater. The County shall assist the state and the SFWMD in managing water quality by assisting in preventing discharge of inadequately treated wastewater and poor quality stormwater into areas of high recharge.

Policy 13.1G.7. Coordination of watershed management. The County shall coordinate its watershed management planning and implementation activities with appropriate local, regional, state and federal agencies to improve management capability; better assess new concepts, plans and technological advances; and work cooperatively to achieve economies of scale in land and water management.

Policy 13.1G.8. Coordination on water management. The County shall coordinate with the FDEP, the SFWMD, U.S. Soil Conservation Service, U.S. Geological Survey and other appropriate agencies and private utility companies on:

(1) Water management programs;

(2) Identification and analysis of local hydrology and major changes in hydrologic conditions;

(3) Systems engineering;

(4) Water conservation;

(5) Technical assessment of water management practices; and

(6) Impacts generated by planned land development on water systems improvements.

Policy 13.1G.9. Promotion of drainage issues. The County shall promote:

(1) Awareness of floodplain characteristics and drainage problems,

(2) Identification of needed structural improvements,

(3) Application of improved structural and nonstructural techniques and practices of water resource management, and

(4) Appropriate intergovernmental coordination.

Policy 13.1G.10. Water management information system. The County shall assist and cooperate with the SFWMD in developing and maintaining an information system to assist in evaluating water management programs, including aspects of water quantity, quality and use. The information system shall include continuous data collection on local hydrology; state-of-the-art concepts, practices and performance criteria; inventory and mapping of drainage system improvements; continuing data analysis; and storage of this information in a manner that enhances the County's capability to carry out its water management responsibilities. This information system shall also assist in resolving administrative, operational and maintenance issues related to the development of a regional water system. These issues will include system consolidation, possible regionalization of facilities, location of wellfields, groundwater quality/supply, saltwater intrusion and alternative concepts and plans for storage, treatment and distribution of water resources.

Policy 13.1G.11. Monitoring of new practices. Martin County shall monitor development of new water management programs, practices, performance standards and technology. It shall promote the application of those proven cost-effective and adaptable to local conditions. The County may adopt provisions that are more restrictive than those of state and regional agencies to further promote water quality and supply as it considers necessary.

Policy 13.1G.12. Minimizing stormwater runoff impacts. The County shall continue to work with other agencies to achieve a reasonable means of minimizing the adverse impacts of stormwater runoff for existing and future land use activities on Lake Okeechobee and Indian River Lagoon.

Policy 13.1G.13. Identification of wells. Martin County shall assist the SFWMD in identifying free-flowing FAS wells.

Policy 13.1G.14. Revision of wellfield protection regulations. Martin County shall revise the adopted wellfield protection component of the Land Development Regulations, as needed, using data provided by the SFWMD, through the Upper East Coast Water Supply Plan.

Policy 13.1G.15. Criteria for new wellfields. Martin County shall cooperate with the SFWMD in preparing and using criteria to establish the location and withdrawal rates of new wellfields and pumpage schedules for existing SAS wellfields to minimize adverse impact. These activities shall include assessing of wellfield drawdown on wetlands and collecting pumpage and water level data.

Policy 13.1G.16. Evaluation of landfills. Martin County shall request assistance from the SFWMD in evaluating existing landfills and developing criteria for the location and operation of new landfills.

Policy 13.1G.17. Location of wellfields. Martin County shall investigate the feasibility of locating wellfields within state, regional or local parks.

Policy 13.1G.18. Coordination for water allocation plans. Martin County shall coordinate with the SFWMD, City of Stuart, Village of Indiantown, Village of Tequesta, Town of Jupiter, South Martin Regional Utility, Palm Beach County, City of Port St. Lucie and St. Lucie County to develop water allocation plans.

Section 13.5. St. Lucie River and Estuary Sub-element

13.5.A. *Background.* The environmental issues facing the St. Lucie River and Estuary are of particular concern to Martin County. The quantity of pollutants, silt, and fresh water reaching the river and estuary have increased over time, degrading these natural resources.

Multiple factors are collectively causing these problems and jeopardizing the health of the river and estuary. They include:

(1) Excessive and unnecessarily high peak discharges from the C-44, C-23, C-24, and C-25 canals during heavy rain events;

(2) Very low base flows during the dry season due to changes in drainage basins, especially for the north fork of the St. Lucie River;

(3) Excessive pollutant loading from land use changes (such as residential, highways, commercial, agricultural);

(4) Reliance on septic tanks in many areas around the estuary and lagoon;

(5) Discharges of fuel and wastewater from boats, and shoreline and bank erosion related to boat traffic;

(6) Absence of stormwater systems in many watersheds or lack of maintenance for existing systems;

(7) Excessive accumulations of organic sediments on the river bottom and in the water column, causing habitat loss.

Freshwater flows. Perhaps the single most important action is to control the timing, quality, rate and volume of freshwater flows into the river and estuary. This action could significantly reduce organic and silt loading and provide for a more environmentally sensitive range of salinities in the river and estuary. Most of the surface water basins contributing fresh water to the St. Lucie River and Estuary have primary canals and control structures outside Martin County's direct control. The operation of these canals must be controlled differently. The most

likely way to effect this change is to work with the SFWMD and the U.S. Army Corps of Engineers. It is important to insist on improvements to the regulation schedule (e.g., timing), improvements to the quality of water reaching these canals and longer attenuation of peak discharge volumes before they are released to the river and estuary.

Accomplishing these changes is possible and feasible, starting with construction of wetland filters (e.g., stormwater treatment areas) and storage reservoirs and restoration of natural areas. Storage structures serve several purposes, including stormwater treatment, reduction of peak discharges and augmentation of base flows, which are too low on average in the dry season. Stormwater treatment areas improve water quality, and restoration of natural areas provides storage, water quality improvement and habitat. Solutions should maximize the use and conservation of natural systems and conform to the wetland and upland habitat protection policies in the CGMP. In 2006 the South Florida Water Management District began constructing a storage reservoir and stormwater treatment area on 12,000 acres purchased with assistance from Martin County. This reservoir and stormwater treatment area implement a portion of the Indian River Lagoon element of the Comprehensive Everglades Restoration Plan. Construction was completed in 2023, and the project is in its operation and testing phase until the Army Corps of Engineers accept the facilities.

While large-scale, regional actions could significantly improve the health of the river and estuary, cumulative impacts from local freshwater influences must also be considered and resolved. Adding to the degradation of the river and estuary is the combination of (1) unregulated stormwater discharges from old urban and agricultural areas, (2) continued use of septic systems around the river and estuary and (3) lack of maintenance for permitted drainage systems.

Protective initiatives. Retrofitting older drainage systems is a challenge. However, Martin County can take actions to protect the river and estuary, especially during infill development or infrastructure improvements such as road widening, canal improvements, culvert and storm sewer replacements or bridge replacements. These include:

(1) Requiring the use of best management practices and green infrastructure, such as exfiltration trenches, oil and grease separators, grassed swales, settling basins, energy dissipaters at outfalls, porous pavement, and sediment and trash traps in reconstruction projects;

(2) Implementing a street sweeping/particulate removal program in older urban areas with high asphalt coverage;

(3) Implementing an educational program to reduce the use of phosphorus and nitrogen fertilizer in residential subdivisions;

(4) Requiring infill and new construction to meet current standards; and

(5) Encouraging surface discharges from weirs and discharge gates along with appropriate maintenance of drainage canal sediments.

The County has worked with the FDEP to provide land-based and mobile pump-out facilities to handle sewage from boats. Mandatory pump-out of live-aboard and transient vessels should be strictly enforced by state and local marine patrols. This prevents sewage generated by boats from entering the river and estuary. Through its Clean Marina Program works to control fuel and solid waste releases into the waterways of Martin County. Several marinas in Martin County have been certified under this program.

With the adoption of a Boat Facility Siting Plan, marina redevelopment and siting receive extensive review, which helps protect the river and estuary. The Manatee Protection Plan established boat speed limits to help protect the animal and indirectly protect shorelines and banks from the effects of boat traffic.

Also important is maintaining new public and private water management systems and eliminating septic systems near the river and estuary, which requires a long-term commitment by Martin County. As part of a final order issued by the FDEP, according to the Clean Waterways Act, subparagraph 403.067(7)(a)9., Florida Statutes, the County was required to submit a wastewater treatment and onsite sewage treatment and disposal system (OSTDS) remediation plan to FDEP. These plans aim to identify short-and long-term projects for implementation to

reduce elevated levels of nitrogen and phosphorous to achieved BMAP TMDL targets. The County's projects are listed in the BMAP Statewide Annual Report (STAR), which is updated annually. These changes are taking place as funding allows.

Finally, the worst accumulations of organic muck/ooze in the river and estuary must be cleaned up. The presence of organic sediments on the river bottom and in the water column is largely a product of canal discharges. The sediments have accumulated to the point that they cover the hard bottom, excluding or smothering sea grasses and shellfish. Changes in canal management alone are not sufficient to reverse this negative trend. They must be coupled with immediate, significant sediment removal by appropriate regulatory agencies.

Achieving a cleaner, healthier, St. Lucie River and Estuary and Indian River Lagoon will require action both locally and regionally. Significant improvements cannot be accomplished without a plan and a set of scheduled, prioritized actions to be carried out. Their costs and benefits must be explained to the public.

Congress approved the Comprehensive Everglades Restoration Plan (CERP) to correct the environmental damage done to the south Florida ecosystem by the Central and South Florida Flood Control Project. The CERP is a restoration project for all of south Florida, jointly funded and implemented by the U.S. Army Corps of Engineers (federal partner) and the SFWMD (local/state partner).

A study of the Indian River Lagoon component of CERP, the Indian River Lagoon-South Feasibility Study (IRL Plan), was completed in August 2002. The final Project Implementation Report for the IRL Plan was approved by the U.S. Army Corps of Engineers in March 2004. The Report addresses the timing, attenuating, cleaning and distribution of freshwater discharges to the St. Lucie River and Estuary from its watersheds. The Plan authorized significant restoration of physically and biologically degraded areas in the southern part of the lagoon and its watershed, while providing for other water-related needs of the region, including sustainable agriculture, water supply and maintenance of existing flood protection.

The IRL Plan will:

(1) Restore a more natural volume and distribution of freshwater deliveries from the watershed through reservoir storage;

(2) Reduce excessive nutrient loads contributing to muck/ooze formation, plankton blooms, and fish kills by establishing STAs in the watershed;

(3) Improve habitat for estuarine plants and animals by restoring more natural freshwater flows and reducing pollution loading;

(4) Increase spatial extent and functional quality of watershed wetlands through restoration and creation;

(5) Improve spatial extent and functional quality of native upland/wetland habitat in the watershed by establishing large blocks of habitat as conservation areas;

(6) Divert some freshwater flows to more natural locations in the watershed;

(7) Restore water quality and more natural bottom communities in the river and estuary by removing muck/ooze and enhancing habitat;

(8) Increase the water supply to a growing population of south Florida;

(9) Maintain existing levels of flood protection;

(10) Improve opportunities for tourism, recreation and environmental education; and

(11) Enhance commercial and recreation fisheries and support industries.

Martin County recognizes the significant environmental benefits the IRL Plan provides to the County and understands that every effort was made to place any authorized structures on already disturbed areas, to reduce

environmental impacts. The CGMP allows for certain upland and wetland impacts as CERP is implemented. These impacts and locations are not specified in the CERP documents and will be identified in later reviews. However, the location, extent and environmental impacts of structures, connections and restoration efforts are explicit in the IRL Plan. Reviews by Martin County and the agencies have identified localized impacts and determined they are acceptable relative to the over-all benefits of the IRL Plan. ~~It has been recognized nationally as a model for environmental restoration and Martin County is contributing to project costs for land acquisition through its $50 million Lands for Healthy Rivers Initiative. Federal and state contributions for the entire project will exceed $1 billion.~~

Martin County recognizes that the IRL Plan may be updated, but the goal to restore the St. Lucie River and Estuary must be maintained. The County can provide critical leadership in advocating for federal funding of the Plan and assisting with its expeditious implementation at the local/state level.

Goal 13.2. To improve water quality and management in the St. Lucie River and Estuary to attain and maintain a stable estuarine ecosystem capable of supporting healthy native seagrasses and oysters and their dependent species.

Objective 13.2A. To work to correct major causes of river impacts by establishing appropriate water quality regulations and by developing programs to retrofit existing areas.

Policy 13.2A.1. Reduction of discharges. Martin County shall reduce the rate and quantity of freshwater discharges, sediment and nutrient loads entering the St. Lucie River through cooperation with the appropriate regulatory agencies and development of programs to address all freshwater discharges. Toxic pollutants in these waters and their sources shall be identified and their discharges shall be eliminated.

Policy 13.2A.2. Stormwater master plan. Martin County shall implement a Storm Water Master Plan to control sediments and nutrient discharges from non-point sources to the St. Lucie River and Indian River Lagoon. It shall include a program for controlling sediments/discharges from areas already developed.

Policy 13.2A.3. Efforts for manatee protection. Martin County shall maintain a Boat Facility Siting Plan and a Manatee Protection Plan.

Policy 13.2A.4. Water quality standards. Martin County shall implement water quality standards that establish acceptable ranges and deposition rates for freshwater discharges, sediments and nutrients entering the St. Lucie River.

Policy 13.2A.5. Management of freshwater and stormwater releases. Martin County shall coordinate with the U.S. Army Corps of Engineers, SFWMD and FDEP to improve management of Lake Okeechobee releases and stormwaters and waters from local tributaries entering the C-44 canal (Okeechobee Waterway).

Policy 13.2A.6. Improvement of canal and stormwater management. Martin County shall coordinate with the SFWMD and FDEP to improve canal management and stormwater management in the C-23 and C-24 canals for waters entering the St. Lucie River.

Policy 13.2A.7. Cooperation with regional freshwater management efforts. Martin County shall cooperate with regional efforts to establish alternatives to current freshwater management practices and structures. These efforts may include creation of additional storage capacity for the C-44, C-23, and C-24 canals, diversion of fresh water to the Everglades or retrofitting of existing canal structures.

Policy 13.2A.8. Collaboration to identify freshwater discharge problems. Martin County shall participate with SFWMD and other local governments in the St. Lucie River basin in a program to identify freshwater discharge problems not addressed by current regulations and to ensure they are addressed by the appropriate jurisdiction of local government. The County shall establish an effective and cost-effective program to correct Martin County's share of these problems. ~~The design of this program shall recognize the NPDES stormwater program and shall try to use the assessment, monitoring and implementation format established by that program to the best extent possible.~~

Policy 13.2A.9. Use of natural water management methods. Where feasible, natural systems of water management shall be used in lieu of structural alternatives (such as constructing channels or discharge canals). In water management systems where canals are necessary, Martin County shall encourage features that improve water and habitat quality, such as planted littoral zones, use of vegetation to stabilize bare ground adjacent to canals and other appropriate best management practices.

Policy 13.2A.10. Regional cooperation in balancing needs. Martin County shall cooperate in regional efforts to balance the needs for flood control, water supply, water quality, protection of the environment and a strong local economy.

~~*Policy 13.2A.11. Protection of base flow needs.* Martin County shall protect the base flow needs of the estuary and monitor the Everglades settlement to ensure protection of base flows.~~

Objective 13.2B. To cooperate with local organizations on new and existing issues affecting the St. Lucie River and Estuary.

Policy 13.2B.1. Leadership role in correcting issues. Martin County shall take a leadership role in correcting issues not being addressed at the state and federal level.

Policy 13.2B.2. Cooperation among agencies on clean-up. Martin County shall continue working to increase cooperation among local agencies and organizations for management and cleanup of the St. Lucie River and Estuary.

Policy 13.2B.3. Promotion of muck/ooze removal. Martin County shall promote muck/ooze removal that provides long-term improvement to the water quality and habitat of the St. Lucie River.

Policy 13.2B.4. Education of the public on the IRL Plan. Martin County shall work to educate the public on the values and necessity of the IRL Plan to achieve a healthy estuary and lagoon.

Goal 13.3. To obtain Congressional authorization, funding, and implementation of the IRL Plan and the Project Implementation Report, along with a long-term plan for completion of CERP improvements for the Everglades is Martin County's top priority for improving the health of the river and estuary.

Objective 13.3A. To work with the federal and state partners of the IRL Plan to restore ecological values, including biodiversity, to the St. Lucie River and Estuary.

Policy 13.3A.1. Establishment of natural freshwater flows. Martin County shall work to reestablish a natural pattern of freshwater flows to the St. Lucie River and Estuary through reservoir storage of excess water on agriculturally impacted lands in Martin and St. Lucie Counties.

Policy 13.3A.2. Improvement of water quality. Martin County shall work to improve water quality in the St. Lucie River and Estuary using STAs and green infrastructure~~on affected lands~~ to remove excessive nutrients.

Policy 13.3A.3. Improvement of wetlands habitat. Martin County shall work to improve habitat for estuarine plants and animals in the St. Lucie River and Estuary by restoring more normal freshwater inflows (affecting timing, duration, distribution, and quality of flows).

Policy 13.3A.4. Increase in extent and quality of wetlands. Martin County shall continue to protect wetlands by preservation and restoration to increase spatial extent and functional quality of watershed wetlands.

Policy 13.3A.5. Matching funds for wetlands. Martin County shall provide matching funding to improve spatial extent and functional quality of native upland/wetland habitat throughout the watersheds by establishing large blocks of habitat as conservation areas in public ownership.

Policy 13.3A.6. Collaboration to increase native species. Martin County shall work with the responsible federal and state agencies to increase diversity and abundance of native plant and animal species, including threatened and endangered species.

Policy 13.3A.7. Advocacy for preparation of a St. Lucie River Master Plan. Martin County shall petition the SFWMD to prepare a St. Lucie River Master Plan to guide and coordinate public and private cleanup and long-term management of the estuary.

Policy 13.3A.8. Improvements in Indian River Lagoon management plan. Martin County shall insist that the Indian River Lagoon ~~SWIM (~~Surface Water Improvement and Management~~)~~ (SWIM) Plan includes a set of scheduled, prioritized improvements, funding sources for each improvement and an explanation of the costs and benefits for each improvement. The County shall insist that the Lagoon SWIM Plan include, at a minimum, evaluations of proposals to (1) divert unneeded fresh water south to the Everglades, (2) provide additional storage within the basin and (3) amend the regulation schedules of the C-44, C-23 and C-24 canals to balance the needs of flood control and drainage with the needs of a healthy estuarine ecosystem in the St. Lucie River and Indian River lagoon.

Policy 13.3A.9. Assistance in developing SFWMD water management plan. Martin County shall help develop SFWMD's water management plan to ensure proper management of the St. Lucie River basin.

Policy 13.3A.10. Collaboration with FDEP on dredge and fill criteria. Martin County shall work with the FDEP to establish appropriate dredge and fill criteria that encourage the public and private sectors to remove the worst accumulations of ooze from the river. This process shall involve balancing the harmful effects of dredging activity with the long-term benefits of improved water quality and habitat of the St. Lucie River.

Policy 13.3A.11. Identification of disposal and storage sites. Martin County shall work with the FDEP to identify permittable disposal and storage sites for ooze removed from the St. Lucie River.

Objective 13.3B. To work with the federal and state partners of the IRL Plan to restore economic values and social well-being to area residents.

Policy 13.3B.1. Collaboration with state partners on water supplies. Martin County shall work with the state partner to ensure adequate water supplies that meets the needs of a growing population of south Florida.

Policy 13.3B.2. Collaboration with federal and state partners on flood protection. Martin County shall work with the federal and state partners to maintain existing flood protection throughout the watersheds of the area.

Policy 13.3B.3. Collaboration with economic agencies on opportunities. Martin County shall work with local economic agencies to improve opportunities for job creation, tourism, recreation and environmental education.

Policy 13.3B.4. Collaboration with trade groups on fisheries. Martin County shall work with various trade groups to enhance commercial and recreational fisheries as well as boating and its associated support industries.

Goal 13.4. To consider implementing additional measures beyond those specified in Sections 13.2 and 13.4~~3~~.

Objective 13.4A. The following policies shall be used when considering additional stormwater management actions for the St. Lucie River and the estuary.

Policy 13.4A.1. Stormwater quality level of service. Martin County shall develop a stormwater quality level of service that shall complement the state's minimum regulatory standards.

Policy 13.4A.2. Cooperation on creation of pollution load reduction goals. Martin County shall cooperate with the SFWMD in creating pollution load reduction goals that will become the basis for limiting sediment loads, nutrient loads and the volumes and rates of freshwater discharges entering the St. Lucie River.

Policy 13.4A.3. Basin approach to stormwater management. Martin County shall undertake a basin or watershed approach to addressing stormwater management in order to provide cost-effective, large-scale solutions.

Policy 13.4A.4. Project priority. Martin County shall give highest priority to projects that reduce harmful impacts on the St. Lucie River.

Policy 13.4A.5. Balance between immediate and future needs. Martin County shall work to strike a balance between the need for immediate improvements and the need for further monitoring or assessment.

Policy 13.4A.6. Funding of stormwater master plan. Martin County shall establish a permanent source of funding for implementation of the County stormwater master plan.

Policy 13.4A.7. Actions for ~~first-phase objectives~~best management practices. Martin County shall identify actions that can accomplish the ~~first-phase~~best management practices as identified in the notice of intent permit to use NPDES Generic Permit ~~objectives~~ in a cost-effective and locally acceptable manner.

Policy 13.4A.8. Stormwater level of service for retrofitting. Martin County shall adopt a stormwater level-of-service standard for retrofitting existing urban development that is at least as high as that for new development. The County shall require the development to achieve that level of service where cost-effective options exist.

Policy 13.4A.9. Balancing of stormwater quality and economic development. Martin County shall exercise flexibility in applying best management practices and retrofit options to balance the need for improved stormwater quality with economic development. Such practices and retrofit options might include exfiltration trenches, oil and grease separators, grassed swales, settling basins, energy dissipators, sediment and trash traps, porous pavement, ~~and~~ street sweeping, and other green infrastructure, as well as other means to remove trash and sediments before they enter the estuary.

Policy 13.4A.10. Public works improvements and stormwater treatment. Martin County shall expand the scopes of work for public works improvements, such as road widening, to accomplish improved stormwater treatment in high-priority areas of existing development considering potential future flood risks associated with tidal flooding, storm surge, and rainfall in association with sea level rise. The County shall develop an appropriate funding source to accomplish the additional work.

Policy 13.4A.11. Priority to areas with highest impact. Martin County shall give the highest priority to action in developed urbanized and agricultural areas that have the greatest impact on water quality in the St. Lucie River basin.

Policy 13.4A.12. Priority to septic tank problem areas. Martin County shall prioritize septic tank problem areas for connection to centralized wastewater disposal facilities pursuant to 163.3177, F.S.

Policy 13.4A.13. Public information on stormwater management. Martin County shall initiate a public education program that takes advantage of existing programs, to inform all existing and new development and potential residents of stormwater runoff management and its importance to the recovery and maintenance of the St. Lucie River estuary/Indian River Lagoon.

Section 13.6. North and Northwest Forks of the Loxahatchee River Sub-element

Goal 13.1. To improve water quality and management in the North and Northwest Forks of the Loxahatchee River to attain and maintain a stable ecosystem capable of supporting healthy native vegetation and their dependent species.

Objective 13.1A. To work to correct major causes of river impacts by establishing appropriate water quality regulations and by developing programs to retrofit existing areas.

Policy 13.1A.1. Reduction of discharges. Martin County shall manage the rate and quantity of freshwater discharges, sediment and nutrient loads entering the North and Northwest Forks of the Loxahatchee through cooperation with the appropriate regulatory agencies and development of programs to address all discharges. Toxic pollutants in these waters and their sources shall be identified and their discharges shall be eliminated.