1 STORMWATER SUB- ELEMENT

~~The Florida Natural Areas Inventory has prioritized several conservation areas partially or wholly within Lake County, including, but not limited to: the Green Swamp Area of Critical State Concern, and the Wekiva/Ocala Greenway. Select ecosystems of Lake County are thus fragile and closely linked with the ecological sustainability of communities within and beyond the county's boundaries. Issues of plant and animal biodiversity and water supply are among the most important environmental considerations for the County.~~

~~The county is faced with the challenge of balancing development pressures with the preservation of the natural environment. To this end, Lake County will comply with all legislation and regulations at the federal, state, and local level.~~

GOAL 0.0 ~~STORM —~~ STORMWATER ELEMENT

Lake County shall provide sound stormwater, surface water, and groundwater resource management to prevent flood damage, protect water quality, sustain natural systems, and ensure the safety and well-being of its residents. This shall be accomplished through a stormwater management program to systematically identify and correct existing deficiencies and meet future needs.

OBJECTIVE 0.0 CORRECT EXISTING DEFICIENCIES

Lake County shall correct existing stormwater deficiencies, such as decreased levels of service and degradation of surface and ground water quality. In addition, the County shall fulfill requirements of the National Pollutant Discharge Elimination System (NPDES) and Total Maximum Daily Load (TMDL) mandates, and shall enhance aquifer recharge through the management of stormwater where practical and without negative impact to water quality.

Policy 0.0.0 Implementation of Stormwater Management Program

Lake County shall assess existing information, evaluate the watersheds within the County, inventory and characterize stormwater management systems, and establish priorities based on this information to address water quality and water quantity ~~based stormwater~~ problems. The county, in coordination with the appropriate federal ~~and~~ , state and local agencies, shall seek opportunities for developing joint projects to facilitate its stormwater management program and further efforts required by the NPDES and TMDL mandates. The County shall amend its Comprehensive Plan and Land Development Regulations to reflect prevailing requirements of federal and state regulations, as appropriate.

Policy 0.0.0 Five-Year Stormwater Improvement Plan

Lake County shall establish a schedule of facility improvements in its five-year Stormwater Improvement Plan, which shall be updated annually. The Stormwater Improvement Plan, including a list of project priorities and funding, shall be incorporated into the Lake County "Schedule for Capital Improvements" and the Capital Improvement Element of the Comprehensive Plan.

Policy 0.0.0 Priorities for Stormwater Master Planning

A prioritized list of the approximately 252 watersheds in the county, as listed in the Data, Inventory and Analysis, shall be utilized in developing a work plan for performing basin evaluations. Prioritization shall be based on criteria including but not limited to drainage problems, flooding potential, receiving water body, aquifer recharge, natural wildlife and population. Lake County shall develop corrective measures for improving stormwater quality, repairing/replacing/upgrading existing infrastructure and minimizing or eliminating identified public threats.

Policy 0.0.0 Stormwater Management Regulations

Lake County shall implement, update, and improve Land Development Regulations relating to construction and maintenance of stormwater management facilities~~,~~ to prevent degradation of water bodies and wetlands, to ensure aquifer recharge, and to provide for adequate flood protection and storage. The LDRs shall ~~remain~~ be compatible with ~~those of~~ requirements of ~~the~~ regulatory agencies to ensure uniform application.

Policy 0.0.0 Funding for Stormwater Management

The County shall use the Stormwater Municipal Services Taxing Unit (MSTU) as the dedicated funding source for the continued implementation of the Stormwater Management Program.

Policy 0.0.0 Contour Interval Mapping

The County shall pursue a complete, detailed County-wide mapping at two (2) foot contour intervals or better to improve accuracy and efficiency of basin evaluations and Base Flood Elevation (BFE) determinations. The Federal Insurance Rate Map (FIRM) shall be used as a tool for development review.

Policy 0.0.0 Coordination with Adjacent Jurisdictions

Lake County shall coordinate and consult with the 14 municipalities, adjoining counties and appropriate state and federal agencies, in the implementation of the Stormwater Management Plan. The coordination and consultation shall include specifically~~,~~ issues regarding TMDL and any adopted TMDL legislation, guidelines, implementation and potential joint projects.

OBJECTIVE 0.0 NEW DEVELOPMENT AND SUBSTANTIAL REDEVELOPMENT

Lake County shall manage and coordinate its stormwater review and implementation process to meet future needs and address the potential impacts of new development. Substantial redevelopment projects shall comply with the standards for stormwater management that apply to new development consistent with the Water Management District rules.

Policy 0.0.0 Impact Assessment During Development Review

Lake County shall require, as part of the development review process, an impact assessment that addresses the effects of new development and substantial redevelopment on existing stormwater management systems. Review shall also account for the cumulative effects of stormwater management systems within individual watersheds. This review process shall consider how the stormwater management systems will operate at build-out. Each phase of a

development project shall be designed as an independent unit capable of having its surface water management needs met by the stormwater design of that phase.

Policy 0.0.0 Stormwater Conveyance Rights-of-Way

Lake County shall pursue, if necessary, the acquisition of stormwater rights-of-way and/or easements necessary for the expansion/upgrade and the operation and maintenance of the County's stormwater management system.

Policy 0.0.0 Design of Stormwater Management Systems

Lake County shall require that all stormwater management systems constructed be designed in accordance with Federal, state, regional, and local regulations. All development approval by the County shall require the applicant to submit to the County a copy of the SJRWMD or DEP stormwater permit and the NPDES notice of intent to be covered by the construction generic permit prior to any land clearing.

Policy 0.0.0 Provide Stormwater Services

Lake County shall provide adequate stormwater services to maintain the adopted level of service standards based upon, but not limited to, the following considerations:

- The protection and maintenance of the public's health, safety, and welfare;
- The protection and maintenance of the property;
- The protection of existing public investment;
- The protection of water quality and the environment;
- The reduction of operating and maintenance costs; and~~,~~
- The achievement and satisfaction of Local, State, Regional and Federal regulations.

Policy 0.0.0 Provide Effective Stormwater Treatment

Lake County, in ~~a~~ coordination~~ed effort~~ with the Water Management Districts, shall require that ~~plans for~~ new development or expansion, modifications, ~~and~~ or replacement of existing development~~, excluding phased development,~~ meet the adopted level of service~~, where such stormwater treatment is currently inadequate~~. This policy shall also apply to individual phases of development.

Policy 0.0.0 Non-Structural Best Management Practices

Lake County shall require that non-structural Best Management Practices (BMPs) be utilized in conjunction with structural BMPs to solve existing and future stormwater problems. Non-structural BMPs may include the use of conservation areas, public education, street sweeping and maintaining floodplain protection and ~~(~~capacity~~)~~ through the provision of compensating storage.

Policy 0.0.0 Cost Effective Stormwater Management

Stormwater management systems shall employ the most cost-effective pollutant control techniques available that are consistent with sound environmental management and which

provide the greatest efficiency in stormwater runoff pollutant removal. A continuing maintenance program shall be approved by the County.

Policy 0.0.0 Design Storms and Pollution Abatement Level of Service Standards

Lake County hereby adopts the following minimum level of service standards for design storms and pollution abatement level of service standards:

Table STORM 1 – Level of Services Standards for Design Storms and Pollution Abatement

FACILITY	FREQUENCY AND DURATION
Bridges	50 Year 24 Hours
Principal arterial bridges and evacuation routes	100 Year 24 Hours
Canals, ditches, swales or culverts for drainage external to the development	25 Year 24 Hours
Canals, ditches, swales, or culverts for drainage internal to the development	10 Year 24 hour
Detention and retention basins contributory to land-locked areas with no positive outlet	25 Year 96 hours
Detention/Retention Structures with a positive outlet	25 Year 24 Hours Mean Annual Storm
Houses/Buildings/Garages first floor elevation must be 18 inches or above the 100-year flood elevation	100 years, 24 hours
Storm sewers	10 year storm

Lake County shall require, prior to development approval that projects receive appropriate permits from State agencies to comply with the rules and regulations for stormwater facility design, performance and discharge.

Discharged stormwater run-off shall not degrade receiving surface water bodies below the minimum conditions as established by State water quality standards (17-302 and 17-40.420, FAC), as amended.

If the site's runoff directly discharges to Class I, Class II or Outstanding Florida Waters (OFW), then the Pollution Abatement Treatment Requirements shall be increased an additional fifty percent (50%) more than described, and off-line retention or off-line detention with filtration of the first one-half inch of runoff or off-line detention without filtration of the first inch of runoff shall be required. Lake County shall discourage the use of detention with filtration pollution abatement systems due to their high failure rate and costly maintenance; thus, Lake County shall allow detention with filtration only if detention without filtration cannot be used.

Policy 0.0.0 Design Storm Level of Service Standard for Landlocked Areas

Landlocked areas shall maintain a twenty-five (25) year ninety-six (96) hour design storm level of service standard.

Policy 0.0.0 Stormwater Management for Roadway Construction

Lake County, in coordination with the Florida Department of Transportation, shall require appropriate or suitable stormwater management systems for the construction of all arterial and collector roadways within the County. Appropriate or suitable stormwater management systems for reconstruction shall be considered by the County on a site by site basis.

Policy 0.0.0 Protection of Natural Hydrologic Functions

Lake County shall adopt LDRs to ensure that proposed stormwater management facilities do not adversely impact natural hydrologic features or functions, including but not limited to water bodies, wetlands, floodplain storage capacity, sinkholes and other karst features.

Policy 0.0.0 Protection of the Natural Hydroperiod of Water bodies

Lake County shall maintain the natural hydroperiod (timing and duration of inundation) of receiving waters when stormwater management systems are designed.

Policy 0.0.0 Protection of Recharge Volume

In addition to requiring minimum level of service standards established by the Comprehensive Plan Stormwater Sub-Element, the County shall ensure that post-development recharge volume conditions approximate pre-development recharge volume conditions within "protected recharge" and "most effective recharge" areas. This shall be accomplished in the Land Development Regulations by requiring that the first three inches of stormwater be retained on site within "protected recharge" and "most effective recharge" areas. As an alternative, an applicant may conduct a hydrological survey and site analysis to demonstrate that post-development recharge is equal to or greater than pre-development recharge.

Policy 0.0.0 Accepted Stormwater Run-Off Volume and Peak Rate Calculations

The Lake County Land Development Regulations shall include provisions for the acceptance of methods of run-off volume and peak rate calculations approved by the Water Management Districts, Florida Department of Transportation (FDOT) and Army Corps of Engineers (COE).

OBJECTIVE 0.0 MAINTAIN OR IMPROVE LEVEL OF SERVICE

Lake County shall maintain or improve the levels of service of existing stormwater facilities. The County shall employ innovative technologies, where appropriate, if they meet or exceed adopted levels of service.

Policy 0.0.0 Innovative Stormwater Management

The County shall actively develop and participate in the development of innovative and alternative stormwater management systems, Low Impact Development methods, BMP's and programs which protect and conserve the County's water resources.

Policy 0.0.0 Best Management Practices for Agriculture, Silviculture and Construction

Lake County shall require that Best Management Practices for agriculture, construction and silviculture be employed to protect the function of existing stormwater management systems and to minimize contributions of poor quality stormwater run-off to receiving water bodies.

Construction activities shall require a National Pollutant Discharge Elimination System (NPDES) permit, as appropriate.

Policy 0.0.0 Provide for Stormwater Run-Off

Lake County Land Development Regulations shall require that all new stormwater management systems provide for the safe handling of all stormwater run-off that flows into, across, and is discharged from the site without creating any additional flooding to adjacent property owners.

OBJECTIVE 0.0 FLOODPLAINS AND DRAINAGE WELLS

Lake County shall minimize flooding, protect floodplains and prohibit drainage wells for the purpose of stormwater management.

Policy 0.0.0 Minimize Flooding

Lake County shall comply with or exceed FEMA requirements and ensure that the floodplain management regulations, contained in the Land Development Regulations, minimize flooding and threats to public health and safety by approving only those developments that are consistent with them. All developments within the riverine flood hazard areas shall be designed to maintain the flood carrying capacity of the floodway such that the base flood elevations are not increased, either upstream or downstream.

Policy 0.0.0 Minimization of Threats to Life and Property

Lake County shall minimize the threat to life and property from flooding through enforcement of the Lake County Flood Ordinance.

Policy 0.0.0 Protection of Natural Flow Regimes and Floodplain Capacity

Lake County shall minimize the adverse impacts of development on floodplains by protecting the natural flow regime of and between drainage basins and the storage capacity of floodplains through the maintenance of hydraulic and hydrologic characteristics of drainage basins.

Policy 0.0.0 Drainage and Injection Wells

Consistent with the Conservation Element, Lake County shall prohibit the use of drainage and injection wells for the purpose of stormwater management. Existing drainage and injection wells located within the County shall be filled and/or capped by the owner of the well and/or the County. These drainage and injection wells, used for the purpose of stormwater management, shall be phased out if technically feasible.

OBJECTIVE 0.0 PROTECTION OF SURFACE AND GROUNDWATER RESOURCES

Lake County shall regulate the design and operation of stormwater management systems to protect the quantity and quality of surface waters, groundwater, recharge areas, springs, and springsheds.

Policy 0.0.0 Master Stormwater Management Plan for the Wekiva Study Area~~WSA~~

Lake County shall cooperate and consult with the St Johns River Water Management District, the Florida Department of Environmental Protection and adjoining local governments and municipalities in the implementation of the Wekiva Study Area regional master stormwater management plan. The County will incorporate findings, methods and recommendations of the WSA Master Stormwater Management Plan into the Comprehensive plan and LDRs as appropriate. Utilizing the WSA Master Stormwater Management Plan as a guide, the county will revise project priorities within its 5-year Stormwater Improvement Plan and the Capital Improvement Element of the Comprehensive Plan. Priority projects that have been identified within the WSA include but are not limited to: Royal Trails Drainage Inventory, Wolfbranch Sink water quality improvement, Lake Dora drainage basin evaluation, Lake Eustis drainage basin evaluation and the Lake Gertrude basin study.

Policy 0.0.0 Stormwater Management within Springsheds

Within 12 months of the effective date of this Comprehensive Plan, Lake County shall adopt LDRs that protect the quality and quantity of stormwater entering the aquifer within springsheds and springshed protection zones. These regulations shall assure adequate treatment of stormwater before it enters the aquifer, prevent the formation of solution pipe sinkholes, reduce erosion and sedimentation, and optimize stormwater retention to facilitate recharge. The county shall utilize as appropriate information contained within the publication "Protecting Florida Springs: Land Use Planning Strategies and Best Management Practices" by the Department of Community Affairs and Department of Environmental Protection.

Policy 0.0.0 Stormwater Run-off

~~No stormwater runoff shall be allowed to drain directly through any sinkhole or other karst feature. All runoff~~Stormwater run-off ~~recharging the Floridan Aquifer~~ shall be pre-treated to remove nutrients and other contaminants so that post-development water quality equals or exceeds pre-development ~~recharge~~ water quality to the greatest extent feasible. Stormwater runoff shall not be allowed to drain directly through any sinkhole or other karst feature. The County shall coordinate with the Water Management Districts and other entities to improve stormwater quality.

Policy 0.0.0 Drainage Retention Areas

All stormwater management and drainage systems proposed to be constructed in karst ~~sensitive~~ areas, areas with known sinkholes, and areas with shallow depth to limestone bedrock, shall be evaluated for the presence of sinkholes through appropriate geotechnical testing. All proposed drainage retention areas shall be tested for the presence of cavities and voids beneath them. No drainage retention areas or other stormwater facilities, excluding conveyance facilities, shall be located over unfilled voids.

Policy 0.0.0 Sinkholes

If there is an existing sinkhole within or adjacent to a development site, or any indication that a sinkhole may develop in the future, then a detailed geological/geotechnical investigation shall be required. This investigation must be conducted by a professional geologist or engineer experienced in geohydrology and a report submitted to the County for consideration. The geologic investigation shall be comprehensive ~~enough that~~and include recommendations for site planning, engineering design and construction techniques may be made. The County shall

approve, approve with conditions, or deny development proposals based upon the scale of the development and the hazards revealed within the investigation.

~~**COMMENTS AND PROPOSED CHANGES - DCA**~~

~~Policies 1.5.6, 1.5.7 and 1.5.8~~

~~The term "swales" should be revised to "roadside swales." Item 3 should be revised to state "Where infiltration systems are not feasible as determined by a professional geologist licensed in Florida, wet detention systems may be used for stormwater treatment and management. In item 4.a, delete "direct" from the first sentence. In item 4.c, delete "sensitive" from the first and second sentences. The second sentence of Item 4.c should be revised to state "Karst features within the Wekiva Study Area shall be defined as any open sinks with a connection to the aquifer, relic sinks with a connection to the aquifer, and stream-to-sink systems. Items 4.b and 5 should be revised to replace "DEP" with "appropriate water management district."~~

~~STAFF RESPONSE: Accept DCA recommendation relating to roadside swales, wet detention, connections to the aquifer, and karst features. The definition of "karst feature" is included in the definitions section. Delete term "direct" and replace with "an indication". Redefine term "sensitive karst feature" as an "aquifer connection."~~

Policy 0.0.0 Karst ~~Sensitive~~ Areas

The County shall cooperate with the Water Management District and will adopt in the Land Development Regulations appropriate, specific requirements for stormwater structures or facilities located within karst ~~sensitive~~ areas. Such requirements shall include evaluations by certified geologists or professional engineers experienced in hydrogeology that there is no subsurface connection that may cause contamination or adverse impact to the groundwater. Karst features with a ~~direct~~ connection to the aquifer will be identified and placed in a conservation easement so that they will be thereafter limited to passive recreational use.

Policy 0.0.0 Best Management Practices

All new development and redevelopment, except non-substantial redevelopment as defined in the LDRs~~projects~~, shall utilize best management practices in combination as part of a BMP treatment train to protect water quality and quantity, and minimize flooding. BMPs shall be used in the design of stormwater management facilities and systems, with particular attention to systems located in areas of "protected recharge" and "most effective recharge" as defined in ~~the Aquifer Recharge sub-element~~ this Comprehensive Plan and within karst ~~sensitive~~ areas. Such BMPs may include design standards for stormwater ponds, use of biological treatment trains for nutrient and contaminant removal, rainwater harvesting systems, incorporation of stormwater management systems into landscaping and irrigation, and minimizing directly connected impervious surface areas. These BMPs shall be incorporated into the Land Development Regulations of Lake County.

Policy 0.0.0 Additional Best Management Practices within the WSA

In addition to Best Management Practices identified in Policy 1.5.7, the following BMPs shall be established within the Wekiva Study Area and incorporated into the Land Development Regulations of Lake County:

1. All residential development shall use roadside swales with swale blocks or raised driveway culverts whenever possible, except when soil, topography, or seasonal high water conditions are inappropriate for infiltration as determined by a professional engineer licensed in the State of Florida.

1. Vegetated infiltration areas shall be used to provide stormwater treatment and management on all sites except when soil, topography, or seasonal high water conditions are inappropriate for infiltration as determined by a professional engineer licensed in the State of Florida. Design of the stormwater systems for residential and commercial uses shall use bio-retention areas (below grade vegetated areas) to increase stormwater treatment and reduce stormwater volume. Downspouts for both residential and commercial development shall be directed from the roof to vegetated areas for uptake.

1. ~~Wet detention systems shall be used for stormwater treatment and management only where infiltration systems are not feasible~~. Where infiltration systems are not feasible as determined by a professional geologist or qualified professional engineer licensed in Florida, wet detention systems may be used for stormwater treatment and management.

1. ~~Sensitive k~~ Karst features having an~~, including sinkholes with a direct connection to the~~ aquifer connection and stream-to-sink features, shall not be utilized as stormwater management facilities. Prior to subdivision approval, all depressions will be investigated by a licensed professional geologist using a professionally acceptable methodology for suitability of water retention area using generally accepted geo-technical practices with an emphasis on identification of potential connections to the aquifer. If connections are determined to exist, the depression shall not be used for stormwater retention and the area draining to this feature under pre-development conditions shall be preserved through a conservation easement.

1. All development approvals by the County shall require the applicant to submit to the ~~City~~ County a copy of the SJRWMD or DEP stormwater permit and the NPDES notice of intent to be covered by the construction generic permit prior to any land clearing.

1. Karst features with a ~~direct~~ connection to the aquifer will be identified and placed in a conservation easement ~~so that they will be thereafter~~ limited to passive recreational uses ~~subject to permitted activities~~consistent with WSA policies ~~in subparagraph (d) herein~~.

1. All components of the stormwater treatment and management system shall be owned and maintained by the responsible legal entity identified in the SJRWMD or DEP stormwater permit, typically a homeowner or property owners association.

1. Industrial uses that generate soluble pollutants shall be discouraged within the WSA. Projects within the WSA that are zoned for industrial activity shall be required to

ensure that industrial pollutants do not enter the stormwater system or come into contact with groundwater.

Policy 0.0.0 Reuse

The County will continue to seek ways to expand its efforts in reusing stormwater for irrigation, aquifer recharge, and other non-potable uses. The County will evaluate and establish, as appropriate, a threshold wherein a project that generates sufficient quantities of runoff shall be required to reuse that stormwater.

Policy 0.0.0 Wet Detention Areas

Wet detention areas shall be designed as limnic systems, and shall maintain a vegetated littoral zone as shoreline habitat and to aid in filtering pollutants and nutrients entering the wet detention area. Appropriate measures shall be provided to protect public health, safety, and welfare.

Policy 0.0.0 Stormwater Management within the GSACSC

Lake County shall conserve and protect natural resources of the GSACSC relative to stormwater, consistent with the Principles for Guiding Development for the Green Swamp Area of Critical State Concern. The County shall revise land development regulations applicable to stormwater management within the GSACSC to meet~~s~~ or exceed~~s~~ the site alteration criteria contained within Section 28-28.008 (7), Florida Administrative Code. Stormwater shall be treated to the level for quality and quantity (Levels of Service) as established by this sub-element and in conformance with the Future Land Use Element and Conservation Element.