

**Draft PUBLIC FACILITIES ELEMENT
NATURAL GROUND WATER AQUIFER RECHARGE SUB-
ELEMENT
GOALS AND OBJECTIVES
9J-5.011(2)**

The Florida Natural Areas Inventory has prioritized several conservation areas partially or wholly within Lake County, including, but not limited to: the Green Swamp, 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 (Federal, State, Regional and Local) as it pertains to Lake County's environmental sensitive areas.

COMMENT: Will this preface be repeated at the beginning of every public-facility's sub-element of the Comp Plan? If it is included here, please edit to more directly address aquifer recharge and springsheds. Also the Wekiva Study Area (rather than the Wekiva-Ocala corridor) should be mentioned when explaining aquifer recharge protection. The last sentence should refer to both legislation and regulations.

GOAL NAT 1

~~To Conserve The Quality and Quantity of Potable Water Available to Lake and Surrounding Counties.~~ To maintain an adequate quality and quantity of aquifer recharge to protect potable water supplies, and ensure the protection of natural systems.

OBJECTIVE NAT 1.1: CONSERVATION OF THE AQUIFER RESOURCE

~~The County shall Upon plan adoption,~~ safeguard the quality and quantity of the surficial and Floridan aquifers, to protect and enhance the capabilities of the ground water recharge areas for the present and future water supply of Lake County and ensure protection of natural systems including springs and wetlands.

Policy NAT 1.1-1: Significant Aquifer Recharge Map and Definition

Lake County shall amend its Comprehensive Plan and Land Development Regulations based on the ~~adopted~~ significant aquifer recharge area and significant recharge area map(s) created by the St. Johns River and Southwest Florida Water Management Districts for Lake County, pursuant to Sections 373.095 (3) and 373.0937, Florida Statutes.

COMMENT: This is an important activity, but it is not the only recharge-related mapping needed. The term "significant recharge" is a specific derivative of the Bluebelt Act-- legislation that authorizes county governments to create a tax relief incentive for

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landowners to protect recharge land. The “significant recharge” threshold is based on a county-specific evaluation performed by the St Johns River Water Management District. That assessment used a weighted average technique to obtain a mean recharge value for each county in the District’s jurisdiction. The value determined for Lake County (13 inches annual recharge) is extremely high due to the county’s large expanse on pervious, undeveloped, permeable soils with great aquifer recharge capacity. (Orange County, on the other hand, has a lower threshold assigned to it for “significant recharge” due to its lower average recharge characteristics and more developed impervious areas.)

Although a 13 inch “significant recharge” threshold based on a Lake County average may be appropriate for deciding how many landowners within a certain taxing area should qualify for tax relief, this is not an appropriate or a sufficient threshold for other decisions, such as standards of development. For example, within a single springshed that crosses county lines, it would not make sense for development on each side to comply with very different recharge standards simply because of figures that are based on geological boundaries.

*“Significant recharge” is applicable to the Bluebelt law, but we also need an appropriate threshold or thresholds set upon which development regulations can be based. The St Johns River Water Management District has published a series of maps depicting recharge areas for each county within its jurisdiction including standard breakpoints of 0-4 inches, 4-8 inches, 8-12 inches, and 12 or more inches. Typically 8 inches and above is considered a threshold worthy of attention. **The St Johns River Water Management District, in its Water Resource Atlas specifically recommends that counties utilize this information within elements of their comprehensive plan, including the future land use, aquifer recharge, potable water and sanitary sewer elements.** I am providing this information to the county for reference and, consistent with this explanation, strongly recommend that the Aquifer Recharge Element utilize these thresholds in developing Comp Plan and Land Development Regulations protective of recharge. Ignoring high recharge areas that are below an ultra-high 13 inch threshold established for a fundamentally different purpose is not appropriate. (Elsewhere in the Comp Plan, including within this element, the term “high recharge” is used, but it is not clear what this means.)*

Another important map series that should be included here relates to implementation of the Wekiva Parkway and Protection Act. That legislation makes particular reference to “Most Effective Recharge”. This is a term specific to the Wekiva Basin and defined by St Johns Water Management District rule 40C-41.063(3) F.A.C. based on soil type; and its application will be extended to the Wekiva Study Area through rule-making authorized by the new Wekiva statute. The DCA publication “Guidelines for Preparing Comprehensive Plan Amendments for the Wekiva Study Area pursuant to the Wekiva Parkway and Protection Act” spells out how to address this within the Comp Plan (page 8). A revised rule for Most Effective Recharge should be adopted by the Water Management District,

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but in the interim, the DCA suggests mapping Type A soils as determined by the U.S. Soil Conservation Service while also allowing other geotechnical information to be submitted by an applicant that can be used in making a site-specific determination. DCA also calls for a mapping of karst features within the Wekiva Study Area. Both of these maps are available and should be included to comply with DCA guidelines.

Policy NAT 1.1-2: Required Use of Water Conserving Plumbing Fixtures

The County shall require the use of water conserving plumbing fixtures in all new development.

COMMENT: Are water conserving plumbing fixtures defined in the LDRs, and how is this requirement enforced?

Policy NAT 1.1-3: Hydrologic Reports

The Lake County Land Development Regulations shall include the requirement of a hydrogeologic report for all areas of the County now classified as areas of significant recharge by the Water Management Districts. As significant recharge areas are identified ~~and adopted~~ by the Water Management Districts consistent with Policy NAT 1.1-1, the Comprehensive Plan and Land Development Regulations will be amended accordingly. The hydrogeologic report will determine the recharge potential of the site and the Land Development Regulations shall stipulate the recharge requirements based on proposed land uses and site hydrogeology.

COMMENT: Is this a county-wide report, or a report required to be written by an applicant seeking approval for development? For reasons explained earlier, this policy should use a more appropriate recharge threshold (>8 inches), especially within springsheds. Also state that within the Wekiva Study Area, applicants need to supply information leading to a determination of Most Effective Recharge. The second sentence seems to be out of place since it does not relate to hydrologic reports.

Policy NAT 1.1-4: Support Water Management Districts

Lake County shall assist the St. Johns River and Southwest Florida Water Management Districts in the preparation of a report detailing the impacts of all land uses on recharge areas and land surrounding Outstanding Florida Waters located in Lake County. This report shall be based on the conclusions of other studies

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completed by appropriate Federal, State, and local agencies. The Lake County Comprehensive Plan shall be amended, and the Land Development Regulations then updated, to implement appropriate recommendations of this report.

COMMENT: What is the timeframe for this study? The policy seems to have been recycled from the existing Comp Plan, however since that was written numerous studies actually have been conducted by the Water Management District and DEP about recharge. If another study is desired, then I suggest conducting a total water budget analysis to account for not only the impact of land use on recharge, but also on the impact to aquifer levels due to withdrawal for consumptive use. This total groundwater picture would be more valuable in making land use decisions.

Another study or set of studies worth supporting would include a delineation of other springsheds within Lake County such as Gourdneck (Apopka) Springs. Significant work has occurred for the Wekiva springshed system, but it would also be appropriate for a detailed springshed delineation to occur for Gourdneck, especially considering the potential negative impacts on groundwater water quality and quantity from anticipated growth in the four corners area. I also recommend a study to research the potential impacts of anticipated growth on the Green Swamp Potentiometric High Surface and related wetlands and surface water hydrology of the Green Swamp.

Policy NAT 1.1-5: Aquifer Monitoring Program

Lake County shall establish, in cooperation with Florida Department of Environmental Protection, the St. Johns River and Southwest Florida Water Management Districts, U.S. Geological Survey, and Lake County Water Authority, a thorough aquifer-monitoring program.

COMMENT: Please add the Florida Geological Survey to this list. I also strongly recommend adding a policy that provides for monitoring springs, spring runs, stream-to-sink features, and identification/monitoring of karst features. The Water-Action-Volunteer program could be added as an additional monitoring partner and means of involving the citizens of Lake County in resource protection.

Policy NAT 1.1-6: Golf Course Ordinance

Lake County shall comply with the adopted Golf Course ordinance as it applies to reuse and drought management.

Policy NAT 1.1-7: Intergovernmental Coordination

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The County shall continue to collaborate with the Florida Department of Environmental Protection, St. Johns River and Southwest Florida Water Management Districts, U.S. Geological Survey, and U.S. Soil Conservation Service both in studying the surficial and Floridan aquifers and in determining the most appropriate actions to take in order to protect the resource.

COMMENT: Please add the Florida Geological Survey and Lake Water Authority to this list.

Policy NAT 1.1-8: Provide Net Retention for Aquifer Recharge

Consistent with Policy 7-2.2 of the Conservation Element, significant aquifer recharge areas that are considered appropriate for development, based on hydrogeologic condition and existing land use shall be developed so as to continue to maintain pre-development net retention. Exemptions shall be given for agricultural activities utilizing Best Management Practices adopted by FDEP, USDA, SCS, and IFAS that protect ground and surface water quality. The use of porous pavement, concrete, turf blocks and other innovative technologies shall be encouraged as a method of protecting aquifer recharge.

COMMENT: Please add the word "pervious" in front of concrete. Porous pavement, pervious concrete, and turf block should not be used to completely fulfill this requirement because these materials tend to become impervious over time.

Policy NAT 1.1-9: Provision of Technical Assistance

Lake County shall provide technical assistance to the appropriate Federal, State and local authorities for use in studying the surficial and Floridan aquifers and determining the most appropriate actions for protecting these resources.

COMMENT: Please add springs and karst features to this.

Policy NAT 1.1-10: Secure Aquifer Recharge Lands

Where feasible, Lake County shall purchase or secure conservation easements on significant aquifer recharge lands.

COMMENT: Areas with recharge rates greater than 8 inches are also appropriate for consideration too when looking at property to purchasing for conservation. Please also

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include language supporting the purchase of land that contain springs, seeps, sinks, or other karst features.

Policy NAT 1.1-11: Educational Enhancement

Lake County, through the Public Outreach Program of Environmental Services, shall participate in enhancing the function and quality of the education of its citizens about: 1) the current water conservation policies, 2) fragility of the aquifer, 3) methods to reuse and conserve water, 4) well-abandonment problems and rules, and 5) benefits of drought resistant plants (xeriscape™) through an education program that consists of, at a minimum, brochures, a speakers bureau, and slide show.

COMMENT: The term Xeriscape (which is a trademark name) should probably be replaced with Florida Friendly Landscaping. Please also add to the list of educational topics: 6) methods of reducing pollution and nutrient loads to the aquifer.

Policy NAT 1.1-12: Site Specific Review of Significant (>13 inches/year with rapidly permeable soils) Aquifer Recharge Areas and Areas where the Floridan Aquifer is most vulnerable (the tendency or likelihood for contaminants to reach the top of the specified aquifer system after introduction at land surface based on existing knowledge of natural hydrogeological conditions) to contamination.

Lake County shall, at the applicant's expense, seek a site specific determination by an independent State-licensed geologist to determine whether a site lies within a bona fide significant aquifer recharge area or is most vulnerable to contamination.

COMMENT: Once again, a 13 inch "significant recharge" criteria is an ultra-high threshold. 8 inches would be more appropriate, especially within springsheds. For the Wekiva Study Area, this site specific review should be required to determine whether property is located within a Most Effective Recharge Area or contains karst features. Policy Nat 1.1-13 below is intended for "high" recharge areas too, so a site specific determination will be needed anyway in order to know when that policy applies.

Policy NAT 1.1-13: Development Within High and Significant Aquifer Recharge Areas and/or Areas Where the Floridan Aquifer is Most Vulnerable to Contamination

Development within a high aquifer recharge, significant area or in an area most vulnerable to contamination areas shall be required to

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maintain pre-development net retention in a manner that protects ground and surface water quality. The use of porous pavement and concrete, turf blocks and innovative technologies shall be encouraged as a method for fulfilling this policy. Agricultural activities utilizing Best Management Practices shall be deemed to have satisfied this policy.

COMMENT: Once again, it is not clear what qualifies as "high recharge" in this context. Porous pavement, pervious concrete, and turf block should only partially count toward fulfilling this requirement because these materials tend to become impervious over time. In order to remain consistent with agency rules for the Wekiva, please add a qualifying sentence such as "Notwithstanding this policy, the county shall require compliance with all agency rules adopted within the Wekiva Study Area."

Policy NAT 1.1-14: Comprehensive Ground Water Monitoring

The County shall cooperate with the cities, agencies and interest groups to develop a comprehensive ground water quality monitoring program. This program, using FDEP ground water quality information as a base for ambient ground water quality, shall monitor the County's ground water to determine the extent of any future ground water contamination. The results of this program will be given to the SJRWMD for incorporation into its management plans for Lake County.

COMMENTS: I am not sure what is meant by "interest groups" or what management plans are being referred to here for aquifer recharge. I recommend combining this policy with NAT 1.1-2 which deals with the same subject matter.

Policy NAT 1.1-15:

The County shall develop and enact into the Land Development Regulations, an overlay classification which sets alternative design criteria and standards to protect the functions of the high aquifer recharge areas or in an area most vulnerable to contamination.

The following shall be addressed in regulating development and creating land development regulations:

1. requirements to minimize impervious surfaces (including foot pads) considering open space incentives, pervious parking areas, and maintenance of existing native

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- vegetation and/or use of native or water wise plant materials suitable for on-site ecological and soil conditions;
2. incentives to utilize on-site retention of rain and storm water for active and passive irrigation;
 3. incentives to implement “right plant – right place” and water wise landscaping standards;
 4. minimum open space standards;
 5. design standards for natural water retention areas; and
 6. establish standards to ensure water quality.

COMMENT: Please replace the word “alternative” with “overlay” in the first sentence since “alternative” could imply that the requirements are optional.

Please also add

7. *protection of the aquifer from saltwater intrusion*
8. *regulations regarding the use of pesticides and fertilizers*
9. *regulations that protect sensitive karst features such as springs and inks as undeveloped open space with ample buffering and native vegetation.*
10. *regulations regarding the use and maintenance of onsite sewage treatment and disposal systems (OSTDS).*

Policy NAT 1.1-16: Requirements for Proposed Developments within High Recharge Areas or in an Area Most Vulnerable to Contamination

The County shall require that all development within high recharge areas or in an area most vulnerable to contamination comply with the following measures, unless there is conflict with code provisions for buffers between developments, site stormwater requirements, and parking or other improvements:

1. stormwater retention facilities shall be located in those areas with the highest rate of percolation;
2. natural vegetation and/or use of water wise plant materials suitable for on-site ecological and soil conditions shall be used for required buffers, open space area shall be maintained in its natural state and protected from disruption during site construction; and
3. pervious parking materials, grass parking areas, and smaller parking stalls shall be permitted where it can be demonstrated to adequately serve the need of on-site use and result in greater recharge than under current code requirements.

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COMMENT: Same comment regarding "high recharge". Also the above recharge protection policies should not be secondary to buffer or parking requirements. It is appropriate that development proposals be modified or reduced if necessary to address recharge needs and also meet conventional buffer, parking, and stormwater requirements. Please remove the phrase "unless there is..."
Stormwater retention facilities should not be located directly on top of sinks, therefore after the first item please add "except in areas that contain sensitive karst features such as sinks which provide direct conveyance to the aquifer."

Policy Nat 1.1-18: Correction of Failing Septic Tanks

The County and DOH shall establish an evaluation mechanism to correct failing septic tanks including, but not limited to, septic tank inspection, repair, alteration, maintenance and/or pumping, and siting requirements, in the Green Swamp Area of Critical State Concern and the Wekiva River Protection Area and in Areas Most Vulnerable to Contamination.

COMMENT: "The county shall coordinate with DOH to..."
This should apply to the Wekiva Study Area, not just the Wekiva River Protection Area. I also recommend adding that the county will coordinate with DOH in the implementation of septic tank rules required pursuant to the F.S.369 Part III.

OBJECTIVE NAT 1.2: PREVENTION OF CONTAMINATION OF AQUIFER RESOURCES

Deleted: ,T

The County shall investigate underground storage tank regulation violations evaluate proposed commercial and small business land use to achieve timely response to enforcement situations and a higher degree of protection for the County's ground water resources.

Deleted: toenforcement

COMMENT: This objective should apply to big business and industrial uses too.

Policy NAT 1.2-1: Land Development Regulation Updates

Lake County shall amend its Comprehensive Plan and update its Land Development Regulations, using information collected by the DEP during future ground water quality studies, to protect the aquifer. These updates shall address but not be limited to:

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1. public wellfield siting, per the adopted Wellhead Protection Ordinance;
2. siting of industrial land uses which use hazardous materials or generate hazardous waste;
3. siting of additional household hazardous waste collection facilities for households and conditionally exempt small quantity generators of hazardous waste;
4. protection of the aquifer from saltwater intrusion;
5. activities regarding the use of pesticides and fertilizers, per the adopted Golf Course Ordinance.

COMMENT: The last item should not just be limited to golf courses.

Policy NAT 1.2-2: Continued Enforcement of Regulations

Lake County shall continue to cooperate with State and Federal agencies in enforcing regulations pertaining to the protection of the surficial and Floridan aquifers from regulated materials and wastes, including those material governed and/or equal, but receiving special exemption under, the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), and/or other Federal, State and Local codes requiring the management of materials that may be harmful or dangerous to the environment, such contaminants as hazardous and biological wastes, and petroleum products including, but not limited to: fuel oils, transportation fuels, machinery fluids and their wastes.

Policy NAT 1.2-3: Floridan Aquifer Vulnerability Assessment (FAVA) Map

Lake County shall prepare a Floridan Aquifer Vulnerability Assessment (FAVA) Map on a county-wide scale to determine areas within the county vulnerable to contamination of the Floridan aquifer.

Natural processes or human activities can introduce contaminants to ground water either through pollution of surface-water bodies or by infiltration through soils and sequences of sediments and rocks that overlay Florida's aquifer systems.

This map shall be prepared using technology developed by the Florida Geological Survey and designed to provide a detailed

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distribution of relative vulnerability based solely on natural properties of hydrogeology. The map shall not include anthropogenic factors such as land use and contaminant loading. An aquifer vulnerability model prepared using Lake County county-specific data, would help determine which areas within the county were the most and least vulnerable and allow for establishment of appropriate development standards.

Some of the applications of the FAVA map would include well-head protection, springshed protection, source-water protection, watershed and ecosystem comprehensive planning, land-use planning/zoning, land conservation and as a component of ground-water susceptibility models.

*COMMENT: This is a good policy. Since the modeling will actually be performed by agencies, please change the first sentence to "Lake County shall coordinate with the Florida Geological survey, Water Management Districts, and DEP to..."
The mapping effort should also include identification of primary, secondary, and tertiary protection zones. The Comp Plan needs to be clear that its definition of Areas Most Vulnerable to Contamination includes primary and secondary protection zones, karst features, springs, and sinks. Please also state that the county shall utilize the report titled Florida Geological Survey Report on Investigation 104: Wekiva Aquifer Vulnerability Assessment (WAVA) that has already been prepared for the Wekiva Study Area.*

Policy NAT 1.2-4: Development of Local Regulations

Lake County shall develop local regulations for inclusion into the Land Development Regulations, including a Lake County scale version of the State's FAVA map, to augment State and Federal regulations pertaining to the protection of the surficial and Floridan aquifers, as previously noted in Policy NAT 1.2-4.

Policy NAT 1.2-5: Regulated and/ or Hazardous Waste Disposal

Lake County shall cooperate with all State and Federal authorities in the regulation and disposal of regulated and/or hazardous wastes as defined in 9J5.003 (38) F.A.C. by participating in programs at the local level.

Policy NAT 1.2-.5A: Regulation of Hazardous Wastes in Significant Aquifer Recharge Areas and in an Area Most Vulnerable to Contamination

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Lake County shall prohibit the disposal of hazardous wastes in all areas of the County. Small quantity generator (<1000 kg per month) businesses that use hazardous materials or generate waste shall be regulated so as to ensure that proper handling and disposal practices are adhered to. The location of new businesses that use hazardous materials or generate hazardous waste shall be restricted within significant aquifer recharge areas and in an Area Most Vulnerable to Contamination. Large quantity generators (>1000 kg per month) shall be prohibited in significant aquifer recharge areas and in an Area Most Vulnerable to Contamination.

Policy NAT 1.2-6: Compliance With Local Regulations to Provide Enforcement Capabilities

The County will provide enforcement capabilities and procedures to achieve a higher degree of protection for the County's ground water resources.

Policy NAT 1.2-7: Coordinate Facilities producing, using, handling and storing regulated materials ~~Storage Tanks~~ with Land Use

The County shall utilize the information provided by the inventory of facilities producing, using, handling and storing regulated materials ~~storage tanks~~ in making land use decisions to avoid incompatible development in areas with high ground water pollution potential.

COMMENT: Please add a policy here and/or in the Solid Waste element supporting continuation of the county aquifer monitoring program for landfills.

OBJECTIVE NAT 1.3: LAND USE ISSUES RELATED TO CONSERVATION OF WATER RESOURCES, WETLANDS, FLOODPLAINS, NATURAL HABITATS, NATURAL VEGETATION, ENVIRONMENTALLY SENSITIVE AREAS, AND MINING ACTIVITIES.

Within federal, state and/or local designated environmentally sensitive lands and/or listed conservation areas, Lake County Shall Protect the Features of the Natural Environment through the Following Policies.

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COMMENT: It is appropriate for the Comprehensive Plan to contain policies that are appropriately specific to the unique characteristics of a particular natural resource or ecosystem. It is not clear what areas would actual fall under this very broadly worded objective. This needs to be clear, especially if the language will be repeated in other elements. What constitutes “environmentally sensitive” land and what exactly does “designated” mean? Does this automatically include environmental planning areas such as the Wekiva River Protection Area, Wekiva Study Area, and Green Swamp—or maybe only certain areas within them? Does this include land within urban parks? What about the distant springshed outside of the Wekiva Study Area, which is also “designated” on some maps. Would this objective include all recharge areas, wetlands, floodplain, and habitat areas because they have also been “designated” in some fashion? The assemblage of words in this objective is so broad that depending on the attorney for hire, this could be interpreted as inclusive of the entire county or none of the county.

Policy NAT 1.3-1: Surface and Subsurface Hydrology

The hydrology of a site should be utilized in determining land use as opposed to land use determining hydrology. This entails discouraging any land use that would significantly alter surface ~~and subsurface~~ ground water levels, recharge, water quality; or have an adverse effect on the environment, unless such impacts can be successfully mitigated in accordance with accepted mitigation policies and practices. Such mitigation shall be subject to approval by Lake County.

COMMENT: It is not clear what “accepted mitigation policies and practices” are in this context. To have value, this policy should clearly state that the county shall give priority to the consideration of land uses that protect the environment and natural hydrology of a site, over those that require mitigation.

Policy NAT 1.3-2: Reduction of Density of Waterfront Development

Lake County shall implement policies aimed at controlling the density of waterfront development.

COMMENT: This waterfront policy belongs in a different element, such as FLU and Conservation.

Policy NAT 1.3-3: Protection of the Water Quantity, Water Quality and Hydrology in Federal, State and/or Local Designated Environmentally Sensitive Lands and/or Conservation Areas.

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Special consideration shall be given to the protection of the water quantity, water quality and hydrology of Federal, State and/or Local designated environmentally sensitive lands and/or conservation areas as defined in Chapter 369, Part III, Florida Statutes.

COMMENT: The identified statute (Chapter 369 Part III) is the Wekiva Parkway and Protection Act, so the subject and title of this policy should be "Wekiva Study Area". Regardless, the policy as written is not very meaningful. What would be useful is a statement that commits to the adoption of Land Development regulations responsive to the unique characteristics of the Wekiva Study Area, consistent with the Act, and to facilitate the implementation of agency rules. Please also include a qualifier stating that notwithstanding any policy or Land Development Regulation, the county shall require compliance with all rules adopted by the Water Management District, DOH, and DEP.

OBJECTIVE NAT 1.4: FEDERAL, STATE AND/OR LOCAL DESIGNATED ENVIRONMENTALLY SENSITIVE LANDS AND/OR CONSERVATION AREAS

The County shall require ~~To provide that post-development recharge volume conditions~~ within all Federal, State and/or Local designated environmentally sensitive lands and/or conservation areas approximate pre-development recharge volume conditions.

COMMENT: This is a good example of why overbroad references are a problem. Not all federal, state, or local environmentally sensitive lands and/or conservation areas are positive recharge areas. Many are low recharge or discharge areas (wetlands). Some lands are designated as environmentally sensitive or conservation for reasons that have nothing to do with recharge or springshed protection. The Wekiva Parkway and Protection Act clearly provides justification for the Wekiva Study Area and enables the St Johns River Water Management District to adopt rules accordingly. If the county would like to make this a requirement elsewhere too, then appropriate data and analysis are needed to explain why. In addition to specific spring system issues, a principle reason for protecting recharge is to replenish the Floridan Aquifer continuum, a primary source of drinking water. This would have special applicability to the Green Swamp because of its significant contribution to the potentiometric surface high point in Central Florida, and it may have general applicability to high recharge areas county-wide. So applying this pre-post recharge policy within identified springsheds, the Wekiva Study Area, and within the Green Swamp could be defended, or perhaps even on county-wide basis could be defended. However applying it to undefined environmentally-sensitive and conservation areas is shaky.

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OBJECTIVE NAT 1.5: RAPID INFILTRATION BASINS

Lake County shall prohibit the construction of rapid infiltration basins within primary recharge areas of all Federal, State and/or Local designated environmentally sensitive lands and/or conservation areas in order to limit Nitrogen transport to the aquifer.

COMMENT: The term "primary protection zone" should be used instead of "primary recharge area". The same problem with broad references applies here. This is fundamentally a springshed issue, so I recommend deleting the broad reference and instead simply state that the county shall prohibit Rapid Infiltration basins within primary protection zones of known springsheds, including but not limited to the Wekiva Study Area.

OBJECTIVE NAT 1.6 HIGH RECHARGE AREAS

The policies and Land Development Regulations of the County shall continue to recognize the need to preserve recharge capabilities of the area. Both quality and quantity of water shall be protected to preserve these resources and the natural communities supported by it. The following policies shall pertain to all Federal, State and/or Local designated environmentally sensitive lands and/or conservation areas

COMMENT: Once again, this objective is a problem because it assumes that all environmentally-sensitive and/or conservation areas are high recharge areas. It would be appropriate to simply make this an objective covering high recharge areas as the title suggests. Replace the second sentence with: "The following policies shall pertain to high recharge areas." Of course, we still need a definition for "high recharge" in this context (I recommend greater than 8 inches.)

Policy NAT 1.6-1: Preservation of Natural Recharge Characteristics

As funds are available the County shall actively pursue property acquisition to preserve the natural recharge characteristics of property while also providing a direct benefit to the public.

COMMENT: This policy is redundant to NAT 1.1-10.

Policy NAT 1.6-2: Irrigation Rain Sensors

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The County shall require irrigation rain sensors on all new irrigation systems in accordance with the Florida Standard Building Code.

COMMENT: I recommend making this a county-wide policy like the requirement for low-use water fixtures in Policy NAT 1.1-2. (NOTE: It would be extremely helpful to structure this element with one objective that contains policies that are intended county-wide, another specifically for high-recharge areas, and another for springshed.)

Policy NAT 1.6-3: Low Flow Plumbing Devices

The County shall require the use of low flow plumbing devices in new construction and renovations in accordance with the Florida Standard Building Code.

COMMENT: This policy is redundant to Nat 1.1-2.

Policy NAT 1.6-4: Golf Courses

In order to ensure the development of environmentally friendly golf course construction, the county shall require golf course developers to meet requirements of the Audobon International Signature Program and enroll in their monitoring and evaluation program.

Policy NAT 1-6.5: Sinkholes

If a development occurs on a property containing a stream connecting to a sinkhole, the applicant must preserve a 100 foot buffer on either side of the creek to ensure that there will be no encroachment on the creek.

COMMENT: This appears to have been lifted from the Mt. Dora Comp Plan. It is actually a lesser standard than what is recommended by the DCA/DEP publication "Protecting Florida's Springs". That publication recommends three protective zones that extend 175 feet from a sinkhole or stream-to-sink feature. Please follow the DCAP/DEP recommendations.

Policy NAT 1-6.6: High Recharge Areas

Within high recharge areas, the land development regulations shall require developers to retain the first three inches of water on site.

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This is consistent with the St. Johns River Water Management District's regulations for recharge areas. As an alternative, a developer can conduct a hydrological survey and analysis of an area for review. This analysis must show that redevelopment recharge is equal to or greater than post development recharge. Other options include retaining the 100 year storm event or 96 year 24 hour storm event on site.

COMMENT: The first two sentences of this are similar to the Wekiva Basin Most Effective Recharge criteria adopted by the St Johns Water Management District (although it says "equal to or greater", rather than "approximate") --But the last sentence is different. The District's 40C-41.63(3) rule can not be violated, so a qualifier that defers to the agency rule for lands in that area is needed. I recommend researching what the District's standards are, and then deciding to what extent the county wishes to adhere to something greater. What does the county actually plan to enforce?

Policy NAT 1-6.7: Environmentally Sensitive Areas

As a condition of development approval, the County shall require that when development occurs within or adjacent to environmentally sensitive areas (including high recharge areas), homeowner's documents will be required to address the nature of the sensitivity and how to protect the natural features of the site. The County shall also require that the developer prepare and provide for distribution, brochures to enhance public awareness of these resources.

~~OBJECTIVE NAT 1.7: DEVELOPMENT WITHIN THE GREEN SWAMP AREA OF CRITICAL STATE CONCERN AS IT RELATES TO THE PROVISION OF PUBLIC FACILITIES~~

~~Lake County Shall Protect its Aquifer Recharge Areas. Protection of Ground water Resources in the Green Swamp Area of Critical State Concern is Required by the Principles for Guiding Development for the Green Swamp Area of Critical State Concern.~~

~~Policy NAT 1-7.1: Protection of Ground Water Resources~~

~~Lake County shall protect its ground water recharge areas from development that would substantially reduce the amount of recharge. Protection of aquifer recharge areas in the Green Swamp Area of Critical State Concern is required by the Principles for Guiding Development for the Green Swamp Area of Critical State Concern.~~

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COMMENT: I think that this objective which makes specific reference to the Florida Administrative Code "Principles for Guiding Development for the Green Swamp Area of Critical State Concern" is of value and should be retained.

OBJECTIVE NAT 1.8: NATURAL RESOURCE IMPACTS

~~The County shall maintain or improve the quality and function of natural drainage systems, ground and surface waterways, recharge areas and associated natural resources through emphasis on non-structural approaches to floodplain management.~~

COMMENT: This is a good policy that should be retained, at least in rural areas.

GOAL NAT 2

Springshed recharge areas "upstream" from the spring discharge are vital areas to protect. The comprehensive plan should identify the areas of high recharge to our springs and provide the guidance that leads to their long term protection.

OBJECTIVE 2.1: LAND USES

In areas of undeveloped high ground water recharge within the identified springshed, existing low density and intensity land uses shall be preferentially maintained as the best option for protection of the water quality and quantity.

COMMENT: This is a good objective, but there is not a policy under it that addresses this point. Should it be a policy?

Policy 2.1-1: Primary Zones of Protection

Undeveloped areas of high ground water recharge within a springshed shall be included within delimited primary zones of protection.

COMMENT: This policy is confusing. Is it saying that only undeveloped areas of high recharge will be included within zones that the county establishes for springshed protection? If so, then this is an extremely harmful policy. In this context, it is also not

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clear what constitutes an “undeveloped area.” (A developed area may still contain undeveloped pieces of land with a karst feature that should be protected.) Primary, secondary, and tertiary protection zones should be determined through objective FAVA modeling, as they already have been for the Wekiva Study Area. Although the feasibility of corrective action may vary, measures to protect the springshed ought to occur in both developed and undeveloped areas. I recommend a policy that recognizes primary and secondary protection zones determined by the WAVA model, but then also states that the county will work with agencies to identify other aquifer protection zones through a county-wide FAVA modeling effort. Please include the WAVA map in the Comp Plan.

Policy 2.1-2: Protocol for Determining Suitability

Develop protocol for determining suitability, with respect to spring system protection, of a particular site for proposed land uses during review of land use change (comprehensive plan amendment).

COMMENT: In addition to a land use change, this should apply to the rezoning of property, and to staff consideration of a specific site plan.

Policy 2.1-3: Zone of Protection Ordinances

Develop and implement zone of protection ordinances and land development regulations to protect spring recharge basins and areas that drain into sinkholes and other karst features.

COMMENT: Please add a sentence stating that the county shall utilize the DCA/DEP joint publication “Protecting Florida Springs: Land Use Planning Strategies and Best Management Practices” to develop these ordinances and land development regulations.

Policy 2.1-4: Intergovernmental Coordination

Develop approaches and measures needed to protect and restore ground water and springs through intergovernmental coordination element of the comprehensive plan.

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COMMENT: In cooperation with other local governments, state agencies, and the Lake County Water Authority.

OBJECTIVE 2.2: STORMWATER PROTECTION STRATEGIES

In developed portion of identified high ground water recharge within a springshed, the County will establish specific stormwater protection strategies.

Policy 2.2-1: Springshed High Recharge Areas

The County will actively pursue the following actions within developed areas of springshed high recharge areas:

- Institute stepped-up stormwater management practices and use of karst-specific and low impact design options through design and redesign of county operated stormwater management facilities and through added treatment criteria for new development or redevelopment areas;
- Heighten public education targeted to homeowners regarding proper lawn and landscaped area fertilization and irrigation;
- Emphasize use of natural xeriscape™ approaches to lawn and landscape design; Employ active street sweeping;
- Establish water conservation programs; and
- Foster local stewardship "adopt a springs" type programs and other incentive and volunteer springshed awareness and protection programs.

Policy 2.2-2: Stormwater Management in Sensitive Karst Areas

- Adopt the SJRWMD's sensate karst procedure, or equivalent, for the design and construction of stormwater management systems in karst areas.
- Provide pre-treatment, in the form of swales, berms, ponds, or dry basins, to runoff that currently discharges directly into sinkholes, solution pipes, or springs.

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- In the most sensitive karst areas, consult DEP, IFAS, and DACS to review the use of agricultural chemicals to ensure that recommended application rates are protective of water quality in areas where ground water is particularly vulnerable.

OBJECTIVE 2.3: BETTER ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS (OSTDS)

Policy 2.3-1: Better OSTDS Siting Within the most vulnerable areas of spring recharge basins, permit only alternative OSTDS technologies, which are currently capable of removing up to 75 percent of nitrogen from OSTDS effluent. Provide incentives that will encourage the use of more efficient nitrogen-removal technologies as they become available.

COMMENT: State that this shall apply, but not be limited to primary and secondary protection zones within the Wekiva Study Area, consistent with DOH rules. I also recommend adding a policy that supports efforts to establish a maintenance program for septic and enhanced septic systems within springsheds. Please also add a policy to prohibit the depositing of sludge or wastewater residuals within areas of aquifer vulnerability, including but not limited to primary and secondary protection zones within the Wekiva Study Area.

Please include a policy within this element requiring the use of Advanced Wastewater Treatment (AWT) technology for central sewer services along with proper siting and maintenance within known springsheds, including but not limited to the Wekiva Study Area consistent with DEP, DOH, and Water Management District rules. A statement cross referencing the Sanitary Sewer element would appropriate too.