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

***DRAFT* AQUIFER RECHARGE SUB-ELEMENT**

November 14, 2005

This is the latest draft and contains revisions from Blanche Hardy, Director of Environmental Services and LPA member Keith Schue.

GOAL NAT 1

To maintain an adequate quality and quantity of aquifer recharge to protect potable water supplies, and ensure the protection of natural systems.

OBJECTIVE 1.1: METHODOLOGY

Lake County will coordinate with federal, state, and local agencies to study and describe aquifer recharge areas, and the vulnerability of ground water resources.

Policy NAT 1.1-1: Aquifer Recharge Maps

Lake County shall utilize best available aquifer recharge maps created by state agencies. For the purposes of this Comprehensive Plan, the County shall recognize the term "protected recharge" to mean areas with an annual recharge rate of 10 inches or greater, or characterized by Type A hydrologic soils.

Policy NAT 1.1-2: Floridan Aquifer Vulnerability Assessment (FAVA) Map

Lake County shall coordinate with the Florida Geological Survey, Water Management Districts and FDEP to 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, including primary, secondary and tertiary protection zones, karst features, springs and sinks.

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.

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This map shall be prepared using technology developed by the Florida Geological Survey and designed to provide a detailed 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. The County will also utilize the report titled Florida Geological Survey Report on Investigation 104: Wekiva Aquifer Vulnerability Assessment (WAVA).

Some of the applications of the FAVA map 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.

The term "aquifer vulnerable" shall be defined as the tendency or likelihood for contaminants to reach the top of the applicable aquifer system after introduction at land surface based on existing knowledge of natural hydrological conditions.

Policy NAT 1.1-3 Springshed Maps

Lake County shall utilize best available springshed maps created by state agencies. The term "springshed" shall be defined as the land areas that contribute surface water and rainwater to spring flow.

Policy NAT 1.1-3: Support of Federal, State, and Local Agencies

Lake County will assist federal, state, and local agencies agencies in studying the impacts of all land uses on hydrologic resources including but not limited to recharge areas, springs, wetlands and land surrounding Outstanding Florida Waters located in Lake County. The Lake County Comprehensive Plan shall be amended, and the Land Development Regulations updated, as necessary based on these studies and best available information from these agencies.

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Policy NAT 1.1-4: Aquifer Monitoring Programs

Lake County will cooperate with federal, state and local agencies, local governments and interest groups in the implementation of on-going aquifer-monitoring programs.

Policy NAT 1.1-5: 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.

Policy NAT 1.1-6: Intergovernmental Coordination

Lake County shall collaborate with federal, state and local agencies in studying the surficial and Floridan aquifers, springs, karst features and surface waters as they apply, and in determining the most appropriate actions to take in order to protect these resources.Approaches and measures to accomplish this shall be developed consistent with the intergovernmental coordination element of the comprehensive plan.

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OBJECTIVE NAT 1.2: CONSERVATION OF THE AQUIFER RESOURCE

The County shall 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. The following policies shall apply generally within Lake County.

Policy NAT 1.2-1: Water Conserving Plumbing Fixtures

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

Policy NAT 1.2-2: Irrigation Rain Sensors

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

Policy NAT 1.2-3: Golf Course Ordinance

Lake County shall comply with the adopted Golf Course ordinance as it applies to, water conservation, reuse and drought management. In order to ensure the development of environmentally friendly golf course construction, the county shall require new golf course developers to meet requirements of the Audubon International Signature Program and enroll in its monitoring and evaluation program.

Policy NAT 1.2-4: Surface and Subsurface Hydrology

Lake County shall require that the hydrology of a site be utilized in determining land use as opposed to land use determining hydrology. This entails discouraging any land use that would significantly alter surface ground water levels, recharge, water quality; or have an adverse effect on the environment.

Policy NAT 1.2-5: Best Management Practices

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Lake County will use best management practices and performance standards to maximize open space, limit impervious surfaces, promote protection of natural vegetation, buffer karst sensitive areas, maximize recharge volumes, and treat recharge stormwater to protect groundwater quality and quantity. Such practices and standards shall be included in the Land Development Regulations.

Policy NAT 1.2-6: Recharge Projects

Lake County will continue to work with state agencies to evaluate potential projects that would allow for increased recharge to occur in Lake County. The County shall seek to partner with federal, state, and local agencies and jurisdictions for funding, technical assistance, and implementation of recharge projects. Based upon the results of analysis, the County may implement additional recharge projects in suitable locations

Policy NAT 1.2-7: Minimizing Impact to Natural Hydrology

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

Policy NAT 1.2-8: 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, 6) methods of reducing pollution and nutrient loads to the aquifer through an education program that consists of, at a minimum, brochures, a speakers bureau, and slide show.

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OJECTIVE 1.3: PROTECTED RECHARGE AREAS, AREAS OF AQUIFER VULNERABILITY, AND SPRINGSHEDS

Lake County recognizes the need to provide special protection of recharge areas defined as "protected recharge areas", areas vulnerable to aquifer contamination, springsheds in order to safeguard natural systems and water supplies. The following policies pertain to these areas.

Policy NAT 1.3-1: Protection Strategies

The County will actively pursue the following to enhance the protection of groundwater resources:

- 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 "right plant-right place" and Florida Friendly landscaping approaches to lawn and landscape design;
- Employ active street sweeping that includes the collection of lawn and landscaping debris to reduce nutrient loading to the aquifer;
- Establish water conservation programs;
- Foster local stewardship "adopt a springs" type programs and other incentive and volunteer springshed awareness and protection programs
- Adopt state criteria 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

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into protected recharge areas, wetlands, and areas of aquifer vulnerability including but not limited to features such as sinkholes, solution pipes, and springs;

- Consult federal and state agricultural agencies and research institutes to review the use of agricultural chemicals to ensure that recommended application rates are protective of water quality where ground water is particularly vulnerable.

Policy NAT 1.3-2 Emphasis on Low Intensity Use

Within undeveloped parts of the county characterized by protected recharge areas, areas most vulnerable to aquifer contamination, and within identified springsheds including but not limited to applicable portions of the Wekiva Study Area, existing low intensity land uses shall be preferentially maintained as the best option for protecting the quality and quantity and groundwater resources.

Policy NAT 1.3-3: 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 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 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 NAT 1.3-4: Design Strategies for Aquifer Recharge Protection

Development within a protected aquifer recharge area or in an area most vulnerable to contamination shall be required to maintain pre-development net retention in a manner that protects ground and surface water quality. Exemptions may be given for agricultural activities utilizing Best Management Practices adopted by FDEP,

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USDA, NRCS, and IFAS that protect ground and surface water quality. The use of stormwater capture, swales, dry wells, grass parking, porous pavement, pervious concrete, turf blocks and other innovative technologies shall be encouraged as a method of protecting aquifer recharge. Porous pavement, pervious concrete and turf blocks however shall not be used to completely fulfill this requirement because these materials tend to become impervious over time.

Policy NAT 1.3-5: Secure Lands for Aquifer Protection

Where feasible, Lake County shall purchase or secure conservation easements on protected aquifer recharge lands, and property that contains unique or sensitive karst features.

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Policy NAT 1.3-6: Site Specific Review

Lake County shall, at the applicant's expense, seek a site specific determination by an independent State-licensed Professional Geologist or Professional Engineer who can demonstrate equivalent competence to determine whether a site lies within a protected aquifer recharge area as defined in Policy 1.1-1 or is most vulnerable to contamination of the Floridan Aquifer. The Land Development Regulations shall include the requirement of a hydrologic report for all protected recharge areas as part of site evaluation prior to development. This report will assess total recharge potential and sensitive hydrologic or karst features of the site. The Land Development Regulations will stipulate recharge requirements based on the proposed land use and site hydrology.

Policy NAT 1.3-7: Land Development Regulations

The County shall adopt into the Land Development Regulations, an overlay classification(s) which sets overlay design criteria and standards for protected aquifer recharge areas, areas most vulnerable to contamination, and springsheds.

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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 vegetation and/or use of native or water wise plant materials suitable for on-site ecological and soil conditions;
2. requirements to utilize on-site retention of rain and storm water for active and passive irrigation where feasible and effective;
3. requirements to implement "right plant – right place" and water wise landscaping standards;
4. minimum open space standards;
5. design standards for natural water retention areas;
6. standards to ensure water quality;
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 sinks as undeveloped open space with ample buffering and native vegetation; and
10. regulations regarding the use and maintenance of onsite sewage treatment and disposal systems (OSTDS).

Policy NAT 1.3-8: Additional Requirements for Development within Protected Recharge Areas

In addition to regulations adopted pursuant to Policy NAT 1.3-5, the County shall require that all development within protected recharge areas comply with the following measures:

1. Stormwater retention facilities shall be located in those areas with the highest rate of percolation, except in areas than contain sensitive karst features such as sinks which provide direct conveyance to the aquifer without the benefit of filtration;

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 and open space areas. These areas

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shall be maintained in their natural state and protected from disruption during site construction; and

3. pervious parking materials, grass parking areas, and smaller parking stalls may 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.

Policy NAT 1.3-9: Zones of Protection

The County shall develop and implement zone of protection ordinances and land development regulations to protect spring recharge basins, including but not limited to applicable areas of the Wekiva Study Area, and areas that drain into sinkholes and other karst features exhibiting recharge and/or contaminant migration potential. The County shall utilize the DEP/DCA publication "Protecting Florida Springs: Land Use Planning Strategies and Best Management Practices" to develop these ordinances and land development regulations.

Policy NAT 1.3-10: Sinkholes

The County shall require that if development occurs on property containing a sinkhole, or stream or creek connecting to a sinkhole, the applicant must at a minimum preserve a 150 foot buffer on either side of the sinkhole, stream or creek to ensure that there will be no encroachment. Necessary stormwater treatment must occur outside of this natural buffer to contain stormwater runoff.

Policy NAT 1.3-11 Rapid Infiltration Basins

The County will require compliance with all state agency rules relative to the siting and construction of rapid infiltration basins within springsheds and environmentally-sensitive areas, including but not limited to the WSA and GSACSC.

Policy NAT 1.3-12: Protocol for Determining Suitability

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The County shall develop protocols for review in determining the suitability of a site, with respect to protected recharge areas, areas of aquifer vulnerability, and spring systems for a proposed change in future land use, zoning, or conditional use.

Policy NAT 1.3-13: Homeowner Literature

As a condition of development approval, the County shall require that when development occurs within or adjacent to environmentally sensitive areas (including protected recharge areas), homeowner 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.

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OBJECTIVE NAT 1.4: PREVENTION OF CONTAMINATION OF AQUIFER RESOURCES

The County shall evaluate proposed commercial, industrial, business and residential land use to achieve a higher degree of protection for the County's ground water resources and prevent contamination of the aquifer.

Policy NAT 1.4-1: Land Development Regulation Updates

Lake County shall amend its Comprehensive Plan and update its Land Development Regulations, using information collected by federal, state, and local agencies during future ground water quality studies. These updates shall address but are not limited to:

1. public wellfield siting, per the adopted Wellhead Protection Ordinance;
2. siting of industrial land uses which use regulated substances 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 regulated substances, including but not limited to pesticides and fertilizers.

Policy NAT 1.4-2: Continued Enforcement of Regulations

Lake County shall 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.

Policy NAT 1.4-3: 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

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as defined in 9J5.003 (38) F.A.C. by participating in programs at the local level.

Policy NAT 1.4-4: Regulation of Hazardous Wastes in Protected Aquifer Recharge Areas and in an Area Most Vulnerable to Contamination

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 regulated 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 regulated materials or generate hazardous waste shall be restricted within protected aquifer recharge areas and in an Area Most Vulnerable to Contamination. Large quantity generators (>1000 kg per month) may be prohibited in protected aquifer recharge areas and in an Area Most Vulnerable to Contamination.

Policy NAT 1.4-5: Coordinate Facilities producing, using, handling and storing regulated materials with Land Use

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

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