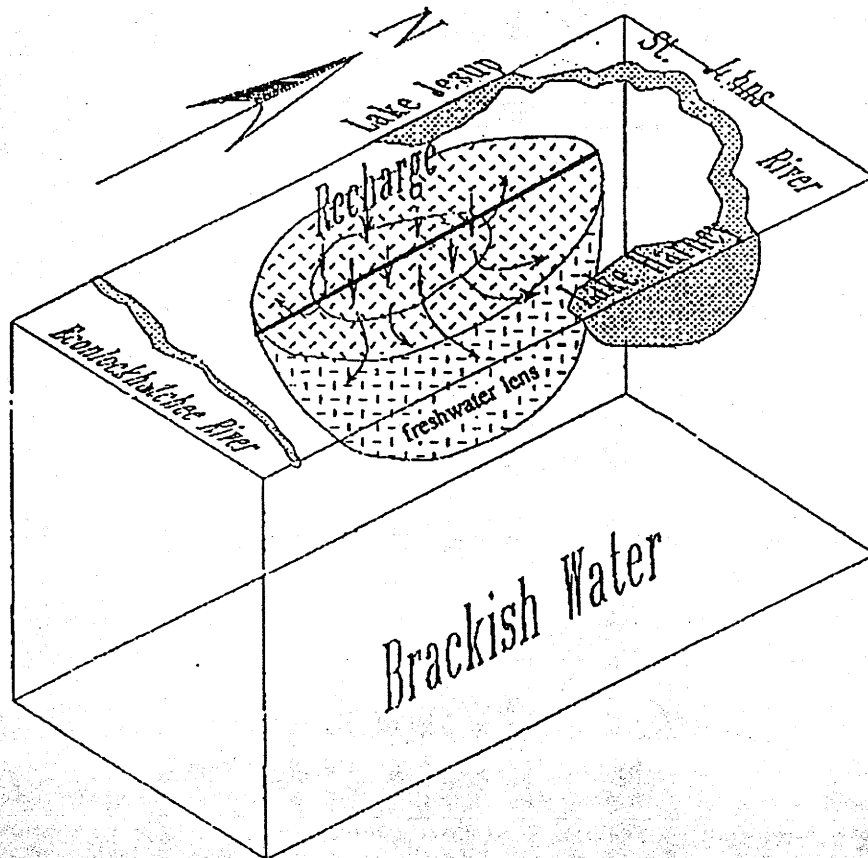


Geneva Freshwater Lens

Task Force

A Report to the Legislature



December 1, 1993

GENEVA FRESHWATER LENS TASK FORCE
REPORT TO THE LEGISLATURE

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EXECUTIVE SUMMARY

This report, presented to the President of the Senate and the Speaker of the House, is in response to legislation enacted by the 1993 Florida Legislature in House Bill 1343 (Appendix A), and provides an overview of the planning and regulatory programs of state, regional, and local governments that affect the management and protection of the Geneva Freshwater Lens, which is located in northeast Seminole County. The Geneva Freshwater Lens is a portion of the Floridan aquifer that forms an isolated, freshwater lens surrounded by non-potable saltwater.

The legislation created the Geneva Lens Task Force, and defined the parameters of the work to be accomplished by the Task Force. The Legislature asked the Task Force to report on the effectiveness of existing programs, because the Geneva Freshwater Lens is an isolated, sole source aquifer that is heavily relied upon by the community in the vicinity of the town of Geneva in northeast Seminole County. The Legislature further directed the Task Force to recommend actions for addressing any deficiencies discovered by the Task Force.

The Task Force members were appointed from agencies of the state, regional and local government, a member of the "Save Our Bubble" organization, and regulated communities within Seminole County (Appendix B). The Legislature directed the St. Johns River Water Management District to provide staff support, asked the Task Force to meet no later than August 1, 1993, and to provide a report by December 1, 1993.

The report describes the hydrology and geology of the Geneva Freshwater Lens, previous scientific investigations of this lens, existing and proposed land uses, existing resource management problems, including significant gaps in the scientific understanding of the Geneva Freshwater Lens, and 52 specific recommendations of the Task Force to improve the protection and management of the Geneva Freshwater Lens. Recommendation 1 provides a Preliminary Delineation of the Geneva Freshwater Lens, based on the correlation between the location of ground water containing a chloride concentration of 250 mg/l and the 20 foot contour elevation of the land surface.

The overall management of the Geneva Freshwater Lens for the public benefit will be best served through the timely implementation of all of the Task Force recommendations. Certain of these recommendations are most critical, requiring the special attention of the Legislature (Section 4.1).

Recommendation 17 is one of the most critical elements in the report. The development and implementation of the hydrogeologic investigations are necessary for building sound management strategies for the Geneva Freshwater Lens, as identified in several other Task Force recommendations, including the following:

- delineation and monitoring of the freshwater-saltwater interface;
- location of confining units that separate the surficial and Upper Floridan aquifers;

- identification and protection of specific recharge features,
- development of an interactive hydrogeologic model for use in cumulative impact analyses of ground water withdrawals.

The Task Force recommends that the Legislature direct the St. Johns River Water Management District to initiate these investigations (outlined in Appendix E), and for the Legislature to support the accelerated implementation schedule through the allocation of funds to the District for the express purpose of completing these investigations in a timely manner.

The Task Force has recognized that the Geneva Freshwater Lens is an isolated, sole source aquifer in the rapidly growing Central Florida region, and that the exportation of this limited resource outside of the Geneva Freshwater Lens area is not a desirable management practice. Currently, if an applicant demonstrates consistency with the criteria of the consumptive uses of water regulatory program (Chapter 40C-2, F.A.C.), the St. Johns River Water Management District does not have the statutory authority to deny such exportation. The Task Force recommends that the Legislature consider an amendment to Part II of Chapter 373 of the Florida Statutes to give the District the specific authority to implement Recommendation 2 for the Geneva Freshwater Lens.

Section 3.0 of this report provides the detailed recommendations of the Task Force, with explanations and notations on the probable requirements for regulatory amendments by the appropriate agencies. Section 4.0 groups the recommendations by agency. **The Task Force recommends that the Legislature direct the appropriate agencies to implement recommendations that do not require rule amendments by December 31, 1994, and recommendations that do require rule amendments by July 1, 1995, unless otherwise noted.**

The Task Force acknowledges that its recommendations carry costs; costs to the agencies that must implement new programs and/or improve existing programs, and costs to the public. Funding sources must be identified if the recommendations of the Geneva Freshwater Lens Task Force are to be implemented and the interest of the public served.

The Task Force wishes to recognize Representative Marvin Couch, Senator Gary Siegel and their staffs for sharing their vision of sound management of the Geneva Freshwater Lens, and their efforts to protect this valuable resource. Thanks also to the citizens of Geneva for showing that the public can play a beneficial role in the regulatory and planning processes, and for becoming partners in striving for a better Florida.

1.0 INTRODUCTION

1.1 Geneva Freshwater Lens Task Force

The Legislature of Florida, in 1993, enacted the **Geneva Freshwater Lens Task Force Act** (Appendix A.) to determine if existing programs of Seminole County, the St. Johns River Water Management District (SJRWMD), the Florida Department of Environmental Protection (FDEP), the Department of Health and Rehabilitative Services (HRS), the Department of Community Affairs (DCA), Florida Department of Agriculture and Consumer Services (DACS), and the East Central Florida Regional Planning Council (ECFRPC) provide full and adequate protection of the quality and quantity of water available for public use within the Geneva Freshwater Lens.

The Geneva Freshwater Lens Task Force (Task Force) was created to provide a means by which representatives of the agencies listed above, environmental organizations, industry, and the public at large could evaluate the management needs of the Geneva Freshwater Lens, and to recommend actions for addressing any deficiencies that were encountered. The Task Force membership is listed in Appendix B.

The Task Force, chaired by Ms. Patricia T. Harden, a member of the SJRWMD Governing Board, convened on May 19, 1993. Based on the guidance from the Legislature, the Task Force investigated the following:

- whether additional studies are needed to assess the resource and its protection needs;
- whether any additional planning, regulatory, or other measures are needed to manage the resource properly, and;
- whether any legislation is needed to authorize these measures.

The Task Force, which met 11 times between May 19 and November 15, 1993, gathered information on all of the pertinent issues regarding the assessment, management and protection of the Geneva Freshwater Lens, including the land use and planning, hydrology and geology of the lens, ground water recharge, on-site disposal and treatment systems (septic tanks), regulatory programs, and agricultural best management practices. A detailed listing of these presentations is found in Appendix C.

The Task Force visited the Geneva Freshwater Lens area twice. A tour of the area was conducted on June 24, 1993, and included the City of Sanford Site 10, a wastewater reuse facility on the western edge of the Lens area, the Seminole County Osceola landfill in the northeast, a storage tank remediation site in the Town of Geneva, and Heath Springs, a natural feature of the area. A public workshop was held in Geneva on September 16, 1993 to provide the residents of the Geneva area an up-date on the Task Force, and an opportunity for the Task Force to take testimony from the public. The workshop was attended by 30 residents.

1.2 Description of the Geneva Freshwater Lens Area

The Geneva Freshwater Lens is located in northeast Seminole County, and on the outskirts of Orlando, one of the nation's fastest growing metropolitan areas. The general area of the Geneva Freshwater Lens, covering approximately 26 square miles, is bounded by the St. Johns River and Lake Harney on the north and east, the Econlockhatchee River to the south, and Lake Jesup to the west (Figure 1). The City of Orlando is about 20 miles southwest of the town of Geneva, and Sanford is 7 miles west, but the boundaries of the Greater Orlando Metropolitan Area are expanding into this part of Seminole County, and currently are approximately 6 miles to the south of the Geneva area (Figure 2). The Seminole County Beltway, a part of the greater Orlando beltway network, is being constructed on an alignment that traverses Lake Jesup, which is only about 6.5 miles from the Geneva Freshwater Lens. Figures 3 and 4 are aeriels showing the general features of the Geneva area, including Lakes Jesup and Harney on the west and east, respectively (Figure 3). Principal roadways include State Road 46, an east-west connector (Figure 3), and County Road 426, a north-south connector (Figure 4).

1.3 Existing and Future Land Uses

The Geneva area is rural in character, consisting of agricultural lands, rural residential lands, public lands, recreation, and low density residential and commercial uses in the town of Geneva, itself. The 1990 population of the area was approximately 4,000.

Seminole County has instituted land use designation, and water and sewer policies to provide for the protection of the Geneva Freshwater Lens. Prior to the 1991 update of the County's Comprehensive Plan, the Geneva area was designated for agriculture, and residential uses at a maximum density of 1 unit per acre. During the 1991 Comprehensive Plan update, the County recognized the need to protect the water supply for existing and future residents, and to encourage continued agricultural uses and; therefore, modified the plan.

The East Seminole County Rural Area Plan (1991 Comprehensive Plan) designates the Geneva area as a part of the East Seminole County Rural Area. The elements of this plan are an effort to retain the rural character of the Geneva Area by encouraging the continuation of agricultural operations, and establishing three (3) similar, yet distinctive, land use designations. Key elements include reliance on small individual residential wells and on-site disposal and treatment of wastewater with septic tanks on large residential lots. Rural residential development at 1 unit per 5 and 10 acres represents 79.5 percent of the land use designation within the lens area, while commercial and low density residential (1 unit per 1 and 3 acres) represents 0.5 percent. Public lands, including the County's Osceola Landfill, the City of Sanford's Site 10 (a wastewater reuse facility), a fire station and the Geneva Elementary School, account for 16 percent of the land uses in the Geneva area. Figure 5 shows the future land use categories approved by Seminole County for the Geneva area. The County predicts that the population of the Geneva area will continue to grow to approximately 8500 residents over the next 20 years, but will maintain its rural character under this Plan.

GENEVA AREA NORTH

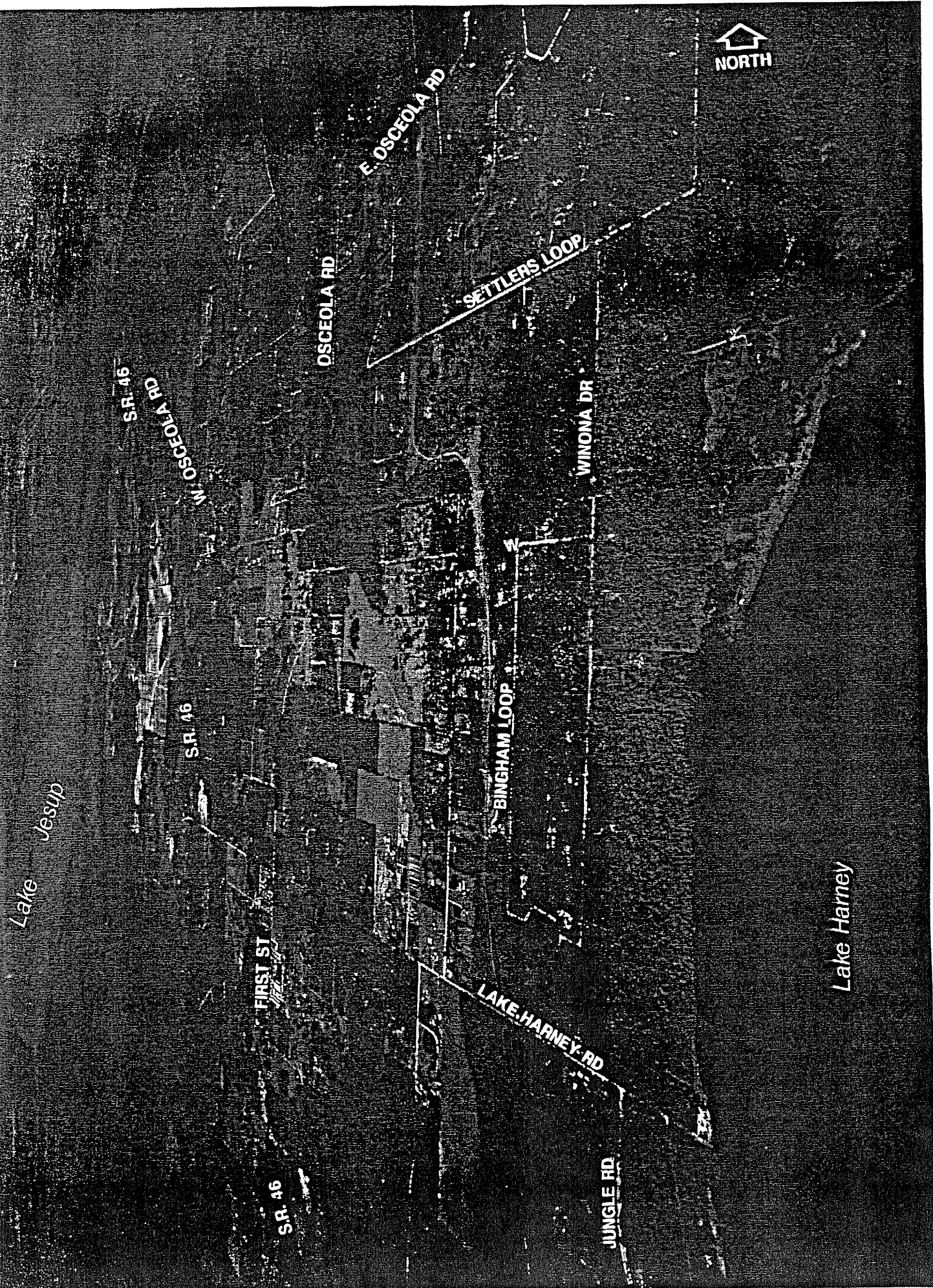
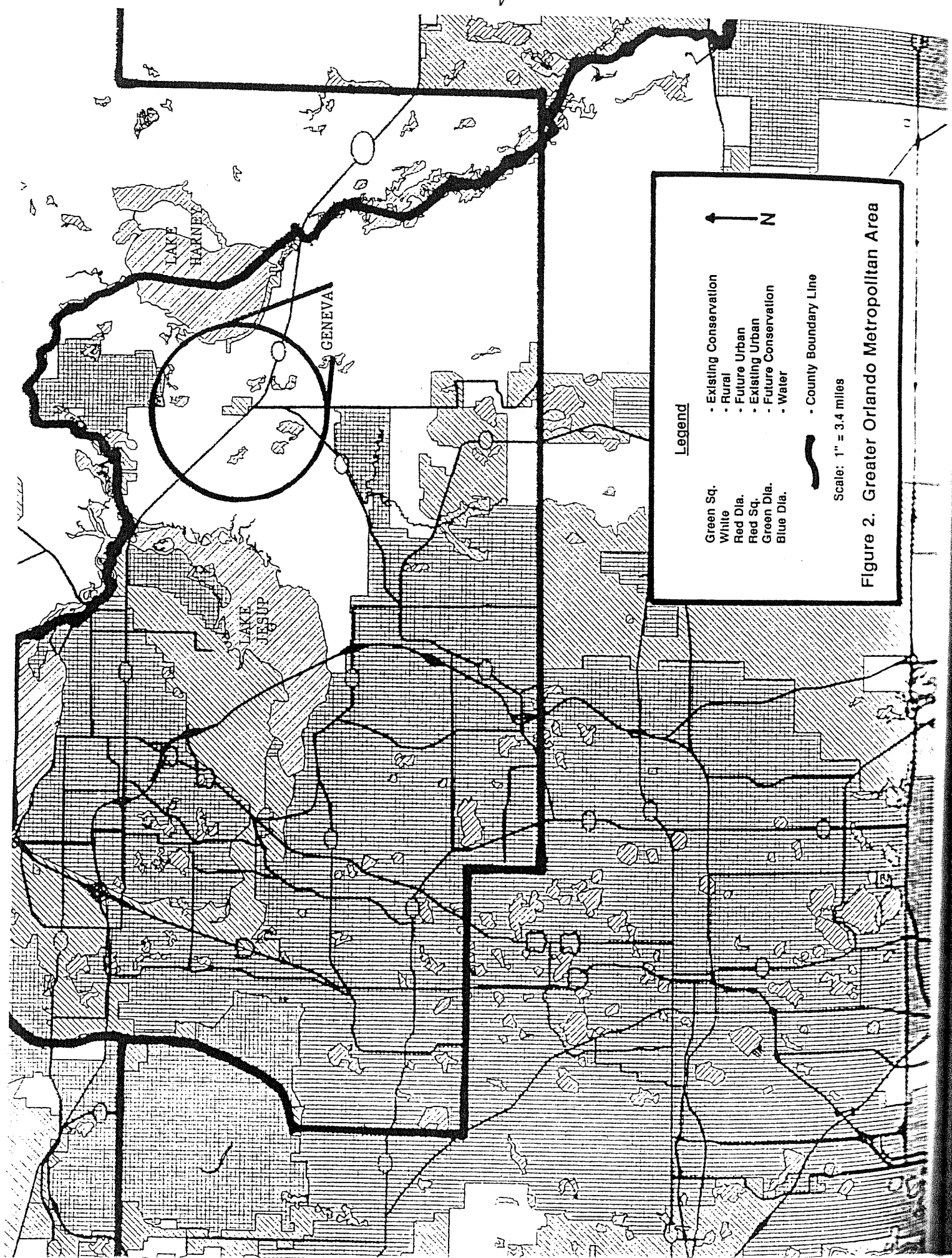


FIGURE 3 - AERIAL PHOTOGRAPH OF GENEVA FRESHWATER LENS AREA (NORTH)



Legend

- Green Sq.
- White
- Red Dia.
- Red Sq.
- Green Dia.
- Blue Dia.
- Existing Conservation
- Rural
- Future Urban
- Existing Urban
- Future Conservation
- Water
- County Boundary Line

Scale: 1" = 3.4 miles

Figure 2. Greater Orlando Metropolitan Area

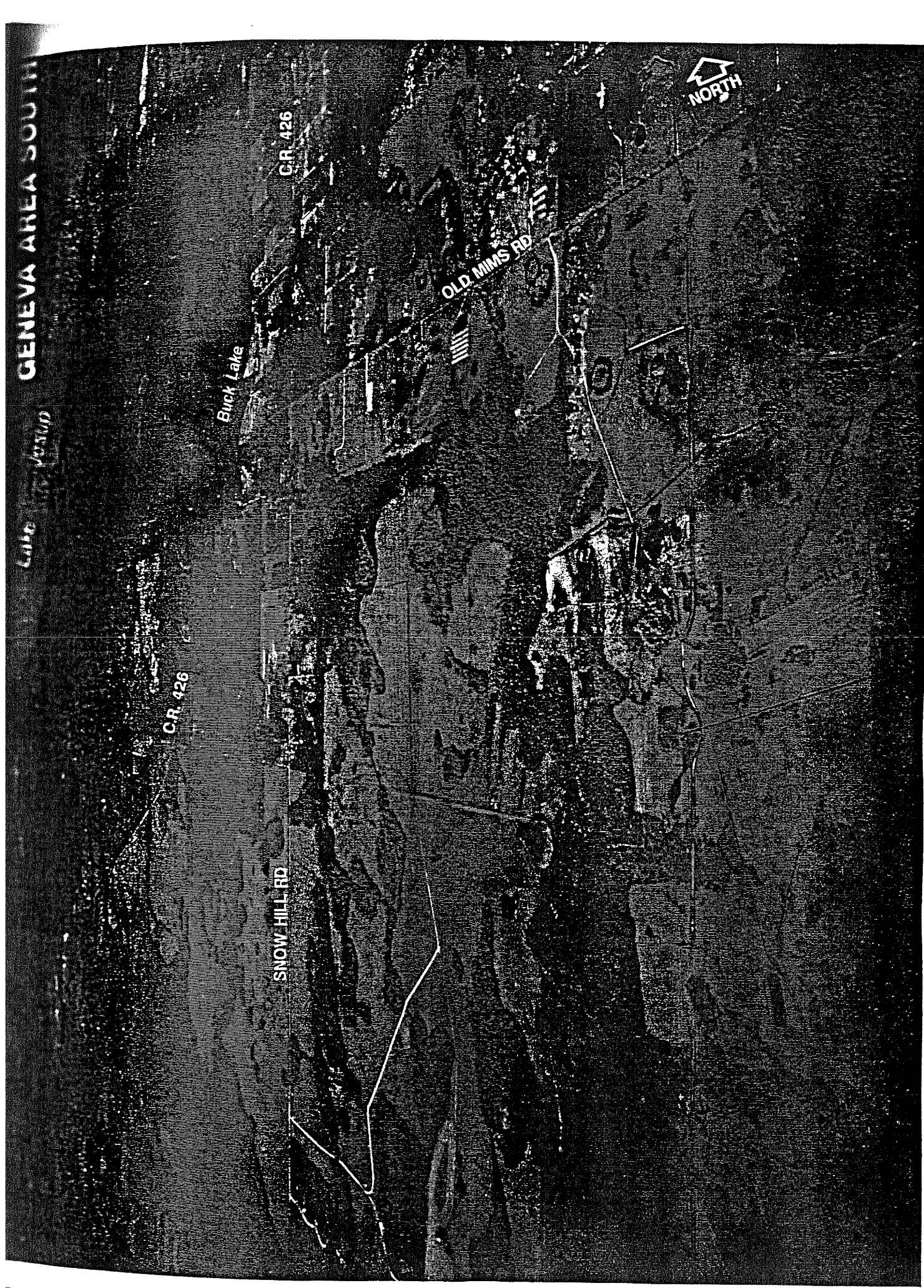
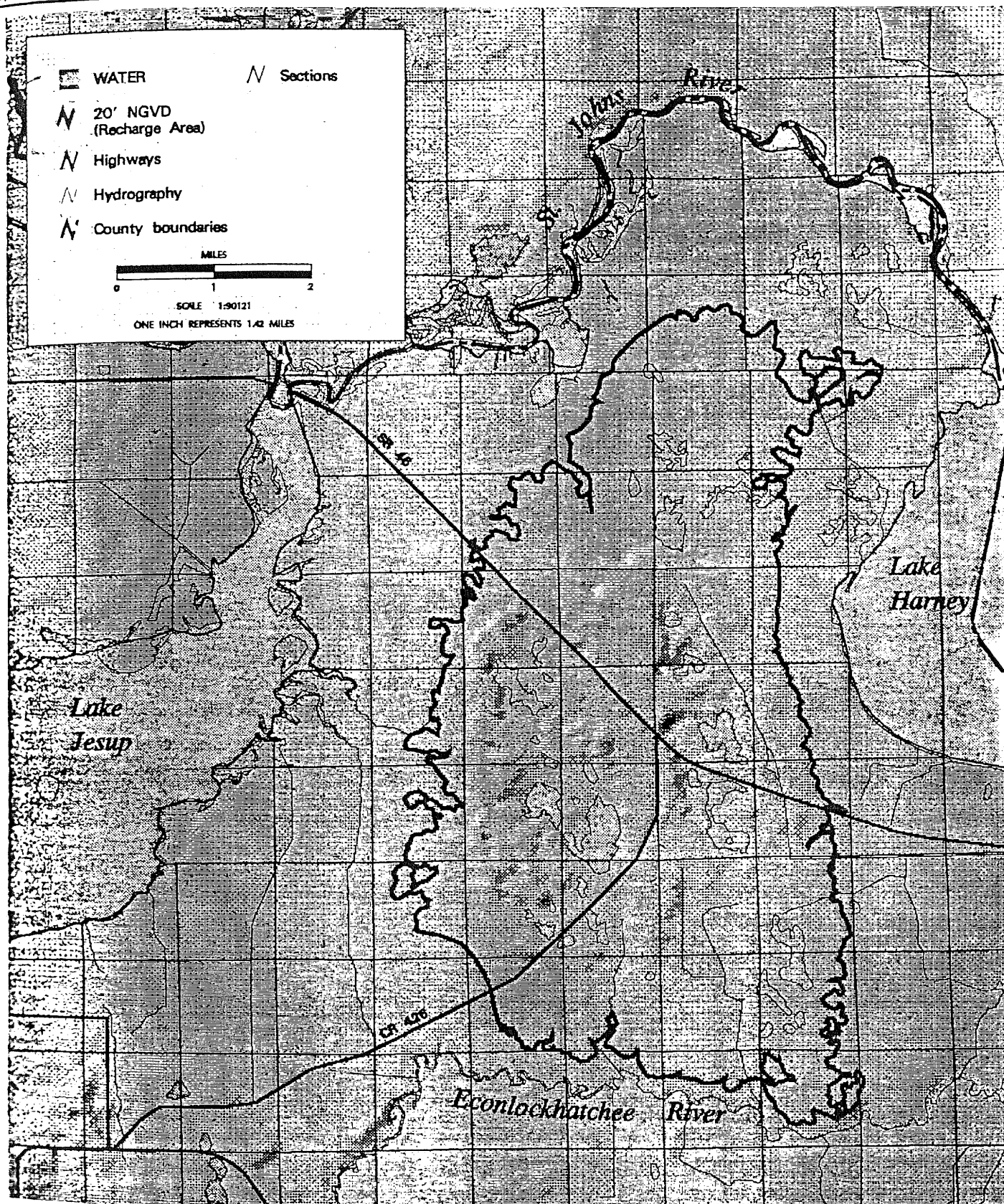


FIGURE 4 - AERIAL PHOTOGRAPH OF GENEVA FRESHWATER LENS AREA (SOUTH)



LENS RECHARGE AREA
(Determined from lithology
of the relict pleistocene
beach ridges)

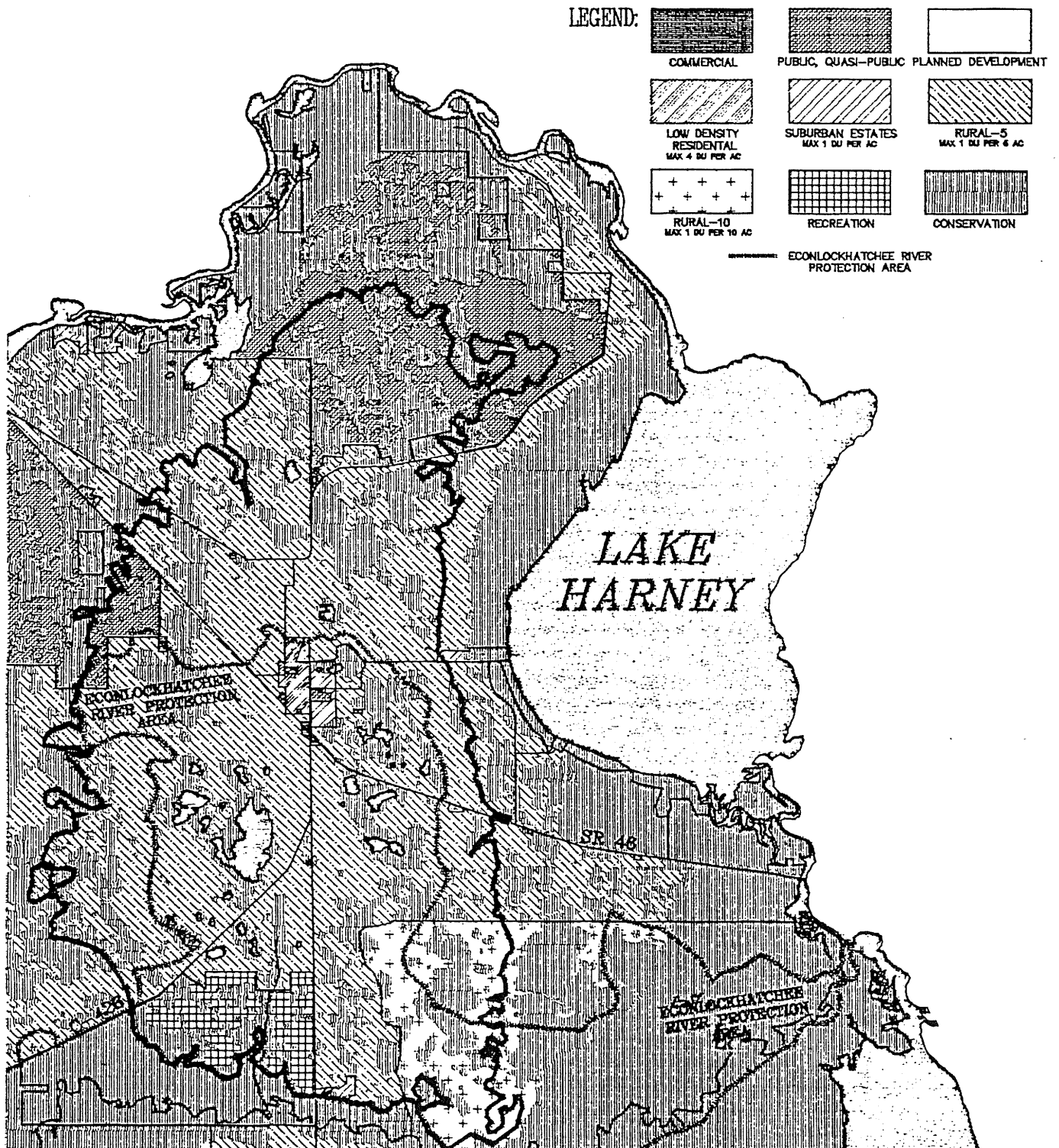
Figure 1.
Preliminary Geneva Lens
Delineated Area



St. Johns River
Water
Management
District

FIGURE 5.

FUTURE LAND USE IN THE GENEVA LENS



2.0 HYDROLOGY AND GEOLOGY

2.1 Introduction

The Geneva Freshwater Lens, located in northeast Seminole County, is a portion of the Floridan aquifer system that forms an isolated freshwater lens surrounded by non-potable saline water containing a total chloride concentration greater than 250 mg/l (Figure 1). Freshwater in the aquifer is maintained solely from local precipitation falling on an area of comparatively high altitude surrounding an area centered around the town of Geneva. This freshwater lens can be laterally defined as all active recharge areas with an elevation above the 20 ft NGVD (national geodetic vertical datum) contour, plus an area less than 20 ft. NGVD east of Geneva along the west shore of Lake Harney. The area is bounded by the valley of the St. Johns River on the north and east, the Econlockhatchee River Valley to the south, and the lowlands along the shore of Lake Jesup to the west. A sole source aquifer has been approved by the Federal Government in Volusia County, just to the north and east of the Geneva area.

2.2 Previous Investigations

A general description of the ground-water resources of Seminole County was made by Stringfield (1934). In a later publication (Stringfield, 1936), information about Seminole County was included in a study of the water resources of the Florida Peninsula. Stubbs (1937) also reported on the ground-water hydrology of Seminole County, with emphasis on the water supply for the city of Sanford. Data reports by Heath and Barraclough (1954), Barraclough (1962a), and an interpretive report by Barraclough (1962b) provided a reconnaissance of the ground-water resources of Seminole County. Tibbals (1977) studied the availability and quality of ground water in the county and delineated recharge and discharge areas. However, the scope of each of those reports was county-wide or larger, and the only comprehensive study of the lens was made by Phelps and Rohrer in 1987. The most recent studies to be performed on the Geneva Freshwater Lens area include publications by Boniol, et al, 1993, which examined the recharge features of the lens and the SJRWMD, 1990, which documented preliminary computer modeling of the lens area.

2.3 Geomorphology

Land surface elevations in the uplands around Geneva are generally greater than 25 ft NGVD and exceed 75 ft NGVD in several areas, while elevations in the surrounding lowlands range from approximately 5 ft NGVD to 25 ft NGVD. The area of relatively high elevation has been termed "Geneva Hill" (Phelps and Rohrer 1987) and is believed to be a remnant of a series of ancient, coast-parallel beach ridges (Figure 6). Dissolution of limestone in the underlying Floridan aquifer system has produced karst topography in the Geneva Hill area. Examples of karst features include an irregular, rolling landscape, lack of well-defined surface drainage, sinks, and round lakes caused by sinkhole formation.

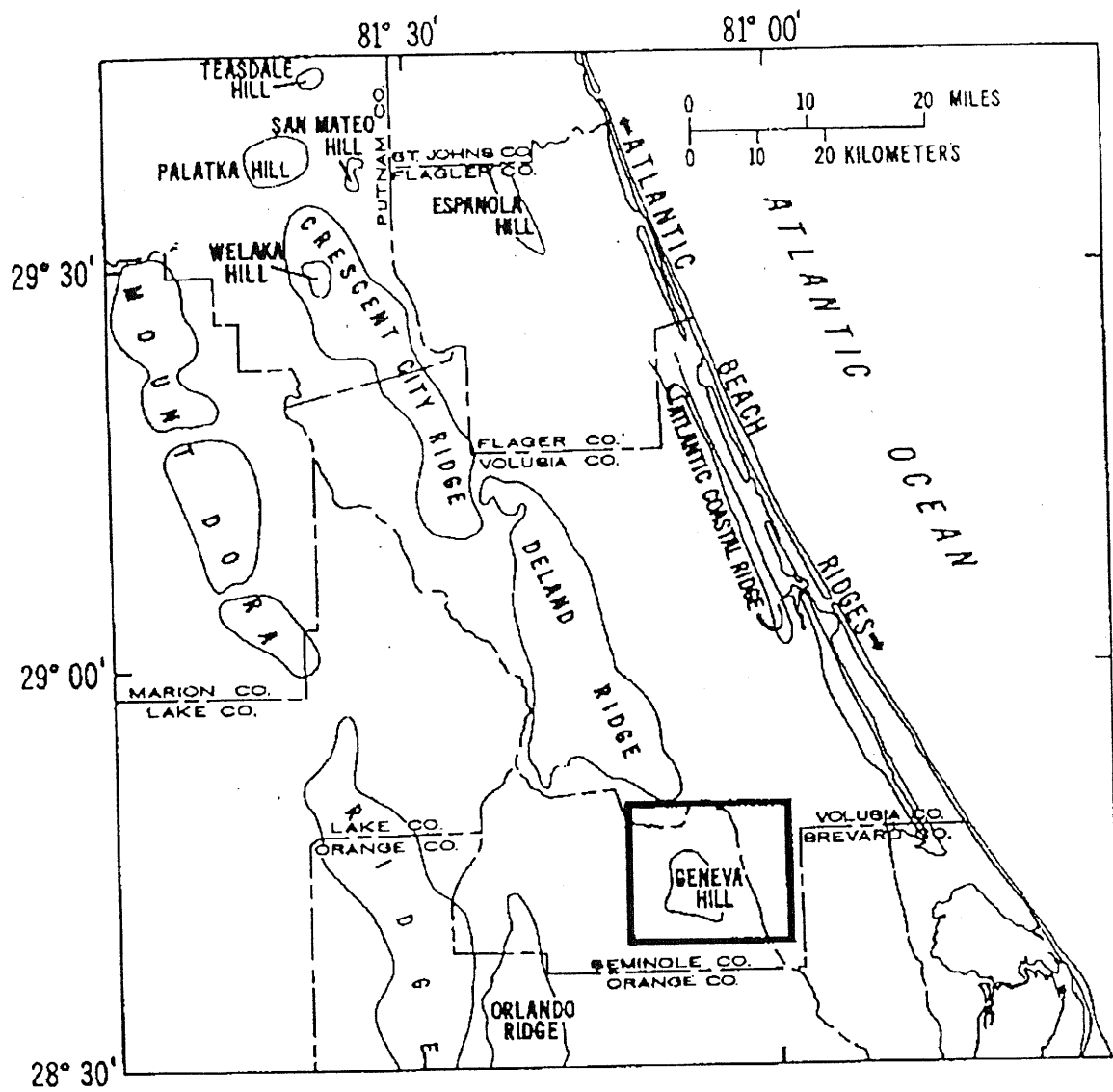


Figure 6. Location of the Geneva Hill - a Pleistocene relict beach ridge

2.4 Hydrogeologic Framework

The sediments underlying the Geneva area can be grouped in order of increasing depth, into three hydrogeologic units: 1) a surficial aquifer system; 2) a confining unit; and 3) the Upper Floridan aquifer system. Table 1 and Figure 7 show the relationship of these units.

Table 1. Geologic and Hydrogeologic Units of the Geneva Freshwater Lens Area

EPOCH	GEOLOGIC UNIT	LITHOLOGY	HYDROGEOLOGIC UNIT
Pliocene to Holocene	undifferentiated deposits	sand, silt, & clay	surficial aquifer
Miocene	undifferentiated deposits, Hawthorn Group	shell, clay, clayey sand, sandy phosphatic limestone	portions of the surficial aquifer, confining unit
Eocene	Ocala Limestone, Avon Park Formation	limestone, dolomitic limestone, dolostone	Upper Floridan aquifer

2.4.1 Surficial Aquifer System

The surficial aquifer system is composed of Pliocene to Holocene-age sand and clayey sand deposits ranging in thickness from 10 to 70 ft (Phelps and Rohrer 1987). It is thickest and contains the most sand on Geneva Hill, and consists of predominantly fine-grained sediments in the lowlands near the Econlockhatchee and St. Johns rivers and Lake Jesup. The water table, or upper surface of the zone of saturation, exists within the surficial aquifer throughout the Geneva Freshwater Lens area. In low-lying areas the water table is close to land surface, but it can be as much as 20 ft below land surface in areas of higher elevation. On Geneva Hill, the surficial aquifer is thick enough and permeable enough to be used to a limited extent for domestic supply and lawn or garden irrigation (Phelps and Rohrer 1987). Within the Geneva Freshwater Lens area, the quality of water in the surficial aquifer is generally similar to that within the freshwater portion of the Upper Floridan aquifer, except that iron concentration is often higher in surficial aquifer wells than in Upper Floridan aquifer wells.

2.4.2 Intermediate Confining Unit

Shell, clay, clayey sand, and phosphatic limestone deposits of Miocene and post-Miocene age form an intermediate confining layer between the surficial and the Upper Floridan aquifer systems. These sediments range from approximately 20 to approximately 60 ft in thickness. The

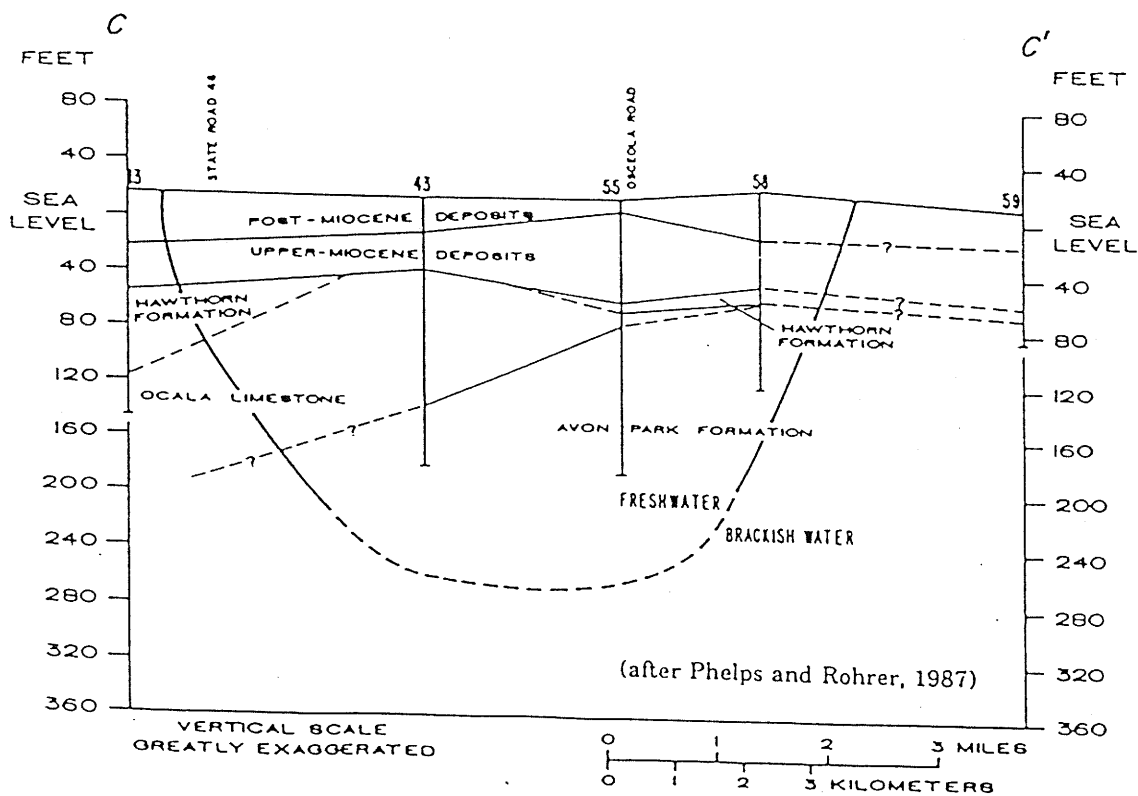
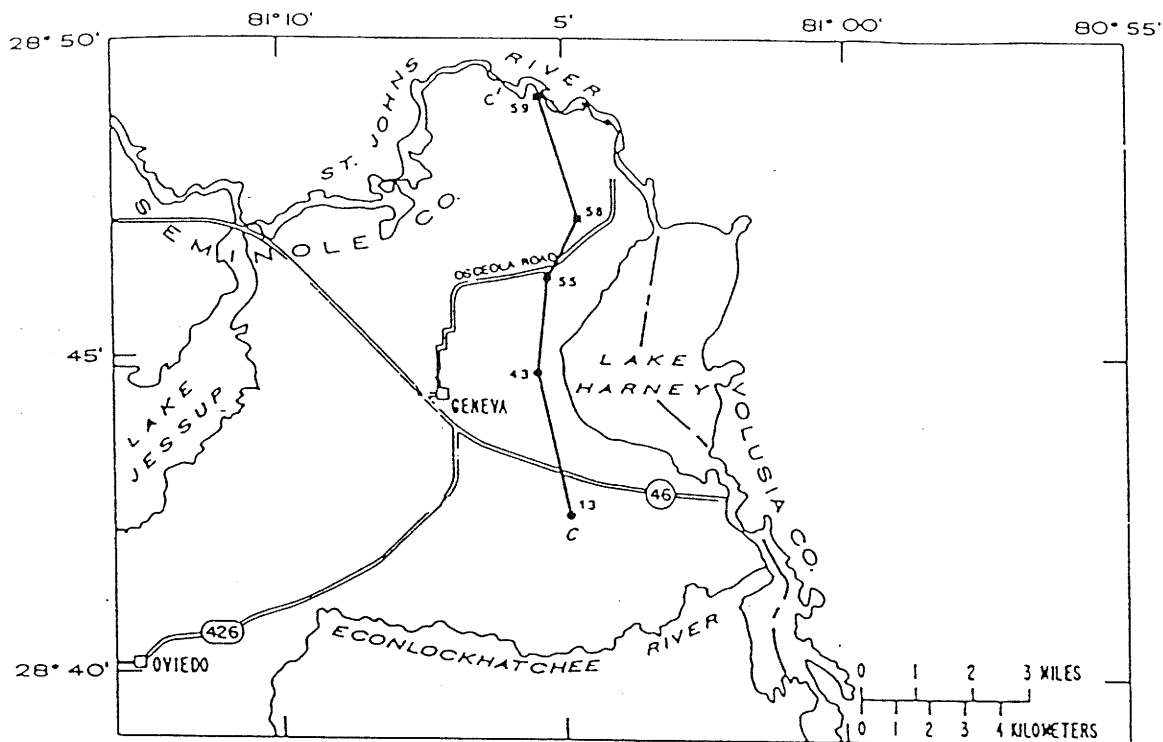


Figure 7. North-south Geological Cross-section

clay layers are generally thinner and less continuous beneath the Geneva Hill than in lowland areas surrounding the hill. However, due to the discontinuous, interfingering nature of the relatively impermeable clay beds and coarser, more permeable shell beds and clayey sand layers, the vertical permeability and thickness of this confining layer can change dramatically over relatively short horizontal distances. In addition, sinkhole formation causes disruption of the confining layer with possible in-filling by coarser sands from the surficial aquifer system. As a result, in some portions of Geneva Hill the confining layer has been completely breached and the surficial aquifer system is in direct contact with the Upper Floridan aquifer.

2.4.3 Floridan Aquifer System

The Floridan aquifer system is composed of limestone, dolomitic limestone and dolostone from the Eocene Epoch and, in some locations, sandy phosphatic limestone at the base of the Miocene Hawthorn Group. This sequence of poorly to well-consolidated rocks is greater than 1500 ft thick. Beneath the Geneva Freshwater Lens area, however, freshwater exists only within the top 200 to 300 ft of the Upper Floridan aquifer. Uppermost within the Floridan aquifer system is the Ocala Limestone, consisting predominantly of relatively soft, poorly lithified, white limestone. Beneath the Ocala Limestone lies the Avon Park Formation, which consists of alternating layers of soft limestone and hard, well-lithified dolostone and dolomitic limestone. Water recharging from the surficial aquifer system dissolves the limestone and dolostone, and, over long periods of time, solution cavities form along bedding planes and along vertical fractures. The permeability of the Upper Floridan aquifer can be very high due to the abundant solution cavities that are present. For this reason most wells in the Geneva Freshwater Lens area are constructed with casings seated into the top of the Upper Floridan aquifer with open hole intervals extending at least several tens of feet into the aquifer.

2.5 Recharge and Freshwater Lens Formation

Recharge occurs to the Floridan aquifer from the surficial aquifer wherever a downward gradient exists. The average annual elevation of the water table on Geneva Hill ranges (depending upon location) between approximately 20 ft NGVD and 55 ft NGVD (Phelps and Rohrer 1987). The average annual elevation of the potentiometric surface of the Upper Floridan aquifer on Geneva Hill ranges between approximately 15 ft NGVD and 20 ft NGVD. The potentiometric surface is defined as the surface to which the water level will rise in a well tightly cased into the Upper Floridan aquifer system. The water table is thus higher than the potentiometric surface of the Upper Floridan aquifer throughout Geneva Hill. This water-level difference causes a downward hydraulic gradient to exist between the surficial aquifer and the Upper Floridan aquifer. The rate of recharge depends upon both the magnitude of the hydraulic gradient and the thickness and permeability of the confining beds. Estimated recharge rates in the Geneva Freshwater Lens area range from less than 1 in/yr to greater than 12 in/yr (Boniol, et al 1993) with the highest rates occurring near the central portions of the Geneva Hill. Recharge rates significantly greater than 12 in/yr may occur locally in sinkhole depressions where

the confining layers have been breached. Phelps and Rohrer (1987) computed a 30-year areal average recharge rate for the area covered by Geneva Hill of 10.8 in/yr (11.3 million gallons per day). Recharge occurs at relatively low rates within the area covered by the Geneva Freshwater Lens north and northeast of Geneva Hill, where the water table elevation is only slightly above the Upper Floridan aquifer potentiometric surface. However, although recharge is reduced in these areas, land areas having surface elevations between 20 and 25 ft NGVD within lens area are believed to provide additional recharge and are included within the delineated area of the lens.

Throughout the lowlands surrounding the Geneva Freshwater Lens area, an upward hydraulic gradient exists because the elevation of the potentiometric surface is higher than the elevation of the water table and often higher than land surface elevation. These lowlands are discharge areas (areas of artesian flow) for the Upper Floridan aquifer and essentially exist outside the areas delineated in Figure 1. In these areas the uppermost part of the Upper Floridan aquifer contains brackish water, resulting from the mixing of ancient seawater with fresh recharge water. Geochemical analyses performed by Phelps and Rohrer (1987) support the conclusion that the Geneva Freshwater Lens is the result of local rainfall flushing ancient seawater from the Floridan aquifer system. Water quality analyses of Upper Floridan aquifer wells indicate that the recharge occurring predominantly on Geneva Hill has been sufficient to produce and maintain portions of the lens that extend beyond Geneva Hill. The Geneva Freshwater Lens, for the purposes of the Task Force, includes the area approximately enclosed by the 20 ft topographic contour plus a portion of the lowland along the western shore of Lake Harney.

3.0 ISSUES AND RECOMMENDATIONS

The Task Force, after hearing technical presentations, discussing the technical issues and receiving testimony from the residents of the Geneva Freshwater Lens area, evaluated the issues and developed a series of recommendations for the management and protection of the Geneva Freshwater Lens. The first, and most basic issue to be acted upon by the Task Force was the delineation of the Geneva Freshwater Lens. All of the other recommendations, generally, are grouped in two categories - water quantity and water quality. All of the issues and recommendations are summarized in the matrix found in Appendix D.

3.1 Preliminary Lens Recharge Area Delineation

Recommendation 1. That the "Preliminary Lens Recharge Area Delineation" be based on the 20 ft (NGVD) contour prior to development, using a static line, based on the quadrangle maps referenced in the United States Geological Survey Report titled "Water Resources Investigation 86-4078" and that within the 20 foot contour line that delineates the lens recharge area additional resource sub-areas be identified, as further information is obtained.

This preliminary delineation (Figure 1) is based on the information that is available today, generally that the 250 mg/l chloride isochlor has a close correlation to the 20 ft contour elevation. The Task Force recognizes that a preliminary delineation is necessary to implement any other recommendations, but that additional field data, and the refinement of hydrogeologic models may result in adjustments to this delineation, and the identification of resource sub-areas, such as areas of highest recharge, areas lacking distinct confining materials between the surficial and Upper Florida aquifers, or natural features like sinkholes.

3.2 Water Quantity

This group of recommendations revolves around the central issue of managing the Geneva Freshwater Lens as a water supply. The characteristics of withdrawals, recharge and changing land uses could affect the quantity of water available in the future. The relationships between the District's Consumptive Uses, Water Well Construction and Surface Water Management regulations (40C-2, 40C-3 and 40C-4 F.A.C.) and the County's Comprehensive Plan and Land Development Code are critical to the recommended management strategies.

Recommendation 2. That the exportation of water from the Geneva Freshwater Lens Recharge area to outside of the recharge area be prohibited, unless previously permitted or adjudicated. (*Legislative Action required*)

Exportation from the Geneva Freshwater Lens area will result in a net reduction in supply within the area of the lens. Currently the SJRWMD does not have statutory authority to prohibit exportation of water, if consumptive uses of water permitting criteria are met. Legislative action

would be required to implement this recommendation.

Recommendation 3. That prior to the issuance of any surface water management or consumptive use permit (by the SJRWMD or FDEP), applicants must obtain a certification from Seminole County that the proposed project is consistent with the comprehensive plan and any zoning ordinances; and prior to issuance of any final development orders or building approvals by Seminole County, the County will require that applicants obtain any necessary surface water or consumptive use permits from the SJRWMD (or FDEP.) *(Require changes to SJRWMD rules & Seminole County ordinances)*

Better coordination between the SJRWMD and Seminole County will result in better resource management. The Task Force looked to a similar provision in the SJRWMD's regulations regarding the Wekiva River Hydrologic Basin, which requires "Local Government Notification".

Recommendation 4. That the SJRWMD develop a model of the ground water system of the Geneva Freshwater Lens area to implement in the Consumptive Use permitting program for the consideration of cumulative impacts to the Geneva Freshwater Lens area. *(Requires changes to SJRWMD rule)*

Recommendation 5. That the SJRWMD develop specific criteria for the evaluation of cumulative impacts in the Geneva Freshwater Lens area through the Consumptive Use (CUP) rule (40C-2, F.A.C.) including (a) the movement of the saline-freshwater transition zone, and (b) impacts to legal existing users. Furthermore, the Task Force recommends that these cumulative impact criteria be established in 40C-2, F.A.C. within one (1) year of the completion of the revisions to the ground water model of the Geneva Freshwater Lens. *(Requires changes to SJRWMD rule)*

A limiting factor for water supply in the Geneva Freshwater Lens area is the chloride concentration of the ground water. The distribution and amount of withdrawals could affect existing legal users of the lens. An active model, based on improved data collection, would be an important tool in evaluating the possible impacts of withdrawals. Once the model is developed, it can be a strong tool in the SJRWMD's efforts to evaluate the possible impacts of proposed uses of the Geneva Freshwater Lens.

Recommendation 6. That the SJRWMD and Seminole County cooperate to distribute materials on xeriscaping to residents of the Geneva Freshwater Lens area.

Recommendation 7. That Seminole County modify its building ordinances to require ultra-low-flow fixtures for new construction within the Geneva Freshwater Lens area. *(Requires changes to County ordinances)*

Domestic water uses represent a substantial part of water use in the Geneva Freshwater Lens area. All efforts made to address domestic uses, through conservation, will contribute to sound water supply management in the area.

Recommendation 8. That Seminole County require centralized collection and treatment of wastewater, and reuse of the treated wastewater within the Geneva Freshwater Lens area, if the County approves a zoning density that is greater than 1 unit per acre in the Geneva Freshwater Lens area. The wastewater treatment plant must treat the wastewater at least to public use access standards, and be consistent with current state regulations, or those regulations as amended. *(Requires changes to County Policy or ordinance)*

Recommendation 8 is project-specific - encouraging Seminole County to require centralized collection and treatment of wastewater generated from high density development (greater than 1 unit/acre) that the County might approve in the future. This recommendation also encourages FDEP to require certain treatment levels for this wastewater.

Recommendation 9. The Task Force encourages Seminole County to allow the importation of effluent treated to public use access standards, and consistent with current state regulations, or those regulations as amended, to the Geneva lens for purposes of recharge. *(Requires County Policy)*

Recharge is an important characteristic of the overall water budget of the Geneva Freshwater Lens. The use of treated effluent would be a method of promoting recharge to the lens. The quality of the effluent reused on the lens is critical to protecting the water quality of the lens.

Recommendation 10. That when a proposed project, which requires a surface water management permit (MSSW or stormwater discharge) and a CUP, the surface water management permit should be issued only upon issuance of the CUP. *(Requires changes to SJRWMD rules)*

The Task Force recognizes that regulatory coordination is important in resource management. In the case of the Geneva Freshwater Lens, availability of water is the critical issue, and the SJRWMD should organize its regulatory efforts accordingly.

Recommendation 11. That the SJRWMD and Seminole County delineate areas of high recharge and storage within the Geneva Freshwater Lens, and that the SJRWMD, Seminole County and appropriate state agencies develop appropriate protective measures for these areas, as they are delineated. *(Requires rule/ordinance changes for County, SJRWMD, FDEP, and HRS)*

Certain natural features within the Preliminary Lens Recharge Area Delineation are most important for recharge and the storage of surface water. This recommendation reinforces the recommendation, made within the Task Force's recommended delineation, to continue to investigate the nature of the recharge area, and delineate sub-areas. The proposed hydrogeologic study of the Geneva Freshwater Lens will refine the delineation of the lens and sub-areas within the lens. Any resource protection/management strategies that result from the hydrogeologic study will need to be specific to the Geneva Freshwater Lens, while recognizing any recharge criteria developed by the Statewide Recharge Task Force. The development of additional protective

measures should consider the degree to which (a) changes in land use affect the quantity of recharge; (b) stormwater retention and detention systems can provide for recharge of rainfall runoff resulting from changes in land use without resulting in unacceptable water quality impacts; and (c) varying land use practices in recharge areas affect the quality of ground water.

Recommendation 12. That the SJRWMD modify its MSSW rule (40C-4, F.A.C.) to prevent the reduction in recharge to the Geneva Freshwater Lens. *(Requires changes to SJRWMD rules)*

Surface water management practices could affect the recharge characteristics of a site. Certain designs protect recharge characteristics. Recommendation 12 is meant to provide interim measures for reasonably maintaining recharge quantity and quality, as related to proposed land development, until the comprehensive effort of Recommendation 11 is completed.

Recommendation 13. That the SJRWMD or Seminole County implement a well registration program, requiring all well owners in the Geneva Freshwater Lens area to register wells in a time not to exceed two (2) years. The well registration should include all relevant information on the wells and their uses. *(Requires changes to SJRWMD rules & County ordinances)*

Recommendation 14. That the SJRWMD modify its Water Well Construction (40C-3 F.A.C.) rule's threshold to a 0 inch diameter, and require that all new wells obtain a water well construction permit. *(Requires changes to SJRWMD rules)*

Recommendation 15. That the SJRWMD develop specific water well construction criteria designed to provide higher levels of protection for wells, which are currently regulated and unregulated by 40C-3 F.A.C., to be constructed within the Geneva lens. *(Requires changes to SJRWMD rules)*

Recommendation 16. That the SJRWMD amend 40C-3 F.A.C. to include special construction criteria for maximum depth, using data collected for the preparation of the analytical model of the lens. *(Requires changes to SJRWMD rules)*

Currently the SJRWMD's rules do not apply to certain classes of small wells. These types of small wells represent a significant portion of the current withdrawals from the Geneva Freshwater Lens, and it is estimated that these withdrawals will represent an even larger percentage in the future. To better manage the lens, knowledge of these small wells is critical. Well construction methods, including depth, are important in understanding and managing the freshwater - saltwater interface of the Geneva Freshwater Lens. The Task Force recognizes that Recommendations 13 through 16 target small users of water, generally private residences, and that the SJRWMD should modify the well construction rule with a sensitivity to an efficient, timely process that does not place an undue burden on the regulated public.

Recommendation 17. That the SJRWMD develop and implement additional hydrogeologic investigations, including data collection, ground water model development, and the investigation of the relationship between land uses and the rates of recharge for the Geneva Freshwater Lens area, in northeast Seminole County. Any well drilling and testing associated with these investigations should be conducted by the SJRWMD. The SJRWMD shall, also, investigate the feasibility of the installation of metering devices on domestic wells.

Recommendation 18. That the SJRWMD develop a plan and budget to carry out the research needs necessary for the implementation of protective measures, and that the Florida Legislature allocate funds to accelerate the necessary collection and analyses of these data.

The Task Force recommends that the SJRWMD develop and implement additional hydrogeologic investigations, including data collection, ground water model development, and the investigation of the relationship between land uses and the rates of recharge for the Geneva Freshwater Lens area, in northeast Seminole County. Any well drilling and testing associated with these investigations should be conducted by the SJRWMD. The SJRWMD should design and implement a pilot study to investigate the quantities of water used for domestic purposes.

Previous investigations of the Geneva Freshwater Lens have given us the limited knowledge that exists on this resource. The long-term management of the Geneva Freshwater Lens, which is relied upon by the residents of the Geneva Freshwater Lens area, will necessitate refinement of our knowledge. Appendix E contains the draft plan and budget requested by the Task Force. Appropriation of funds by the Legislature would allow the SJRWMD to accelerate these critical investigations.

Recommendation 19. The Task Force encourages the Geneva "Save Our Bubble" Organization to assist Seminole County and the SJRWMD in their efforts to obtain current pumping information from residential wells in the Geneva Freshwater Lens area, through voluntary metering and monitoring. Said assistance must be under the supervision of the SJRWMD.

The rural residential character of the Geneva Freshwater Lens area means that access is limited. The importance of domestic uses on the model refinement makes it imperative that information be gathered from domestic wells. The "Save Our Bubble" organization's assistance in gaining access to information will be important for the agencies to implement Task Force recommendations 13 through 17 in a timely manner.

3.3 Water Quality Issues

The long-term protection of the Geneva Freshwater Lens will require that the water supply be protected from contamination. The Task Force looked at several issues, including storage tanks, on-site disposal and treatment systems, excavations, agricultural best management practices, and hazardous material transport and storage.

Recommendation 20. That the Florida Department of Environmental Protection (FDEP) and/or Seminole County implement a registration program for fuel and other petroleum storage tanks, and that this registration program require tank registration within two (2) years for all tanks that are unregulated or exempt from 17-761 or 17-762 F.A.C. Tank registration should include size, use and approximate age of tanks. *(Requires changes to FDEP rule and County ordinances)*

Recommendation 21. The Task Force further recommends that FDEP or Seminole County develop, within the tank registration program, incentives for early registration of tanks. *(Requires County or FDEP Policy)*

Recommendation 22. That FDEP amend chapters 17-761 and 17-762, F.A.C. to require that the most stringent criteria and requirements in these regulations be implemented in the Geneva Freshwater Lens area, and that any exemptions afforded in these rules that are less protective be considered for deletion. *(Requires changes to FDEP rules)*

Storage tanks represent potential sources of ground water contamination. Chapters 17-761 and 17-762, F.A.C. regulate some, but not all tanks. These recommendations are meant to identify unregulated tanks, and to provide the best possible management of those tanks that are regulated under these rules. One approach to implementation of Recommendations 20, 21 and 22 is to amend the appropriate rules and ordinances. The Task Force believes that a viable alternative to rulemaking would be a detailed memorandum of understanding between FDEP and Seminole County addressing tank registration and incentives.

Recommendation 23. That the SJRWMD amend the Management and Storage of Surface Waters rule (40C-4, F.A.C.) to include specific criteria, including location and size of excavations adjacent to wetlands, sinkholes and lakes, to prevent direct connections to the Floridan aquifer in the Geneva Freshwater Lens area. The Task Force also recommends that Seminole County amend its ordinances, with the assistance of the SJRWMD, to include the same modifications. *(Requires changes to SJRWMD rule and County ordinances)*

Due to the geology of the Geneva Freshwater Lens area, excavations could pose a threat to the quality of water being recharged into the lens. Specific design criteria for excavations should be developed and codified in the rules of the SJRWMD and Seminole County. The purpose of these criteria would be to prevent direct connections between the surface of the ground and the Geneva Freshwater Lens, through the removal of the confining materials between the surficial and Floridan aquifers. Rule amendments should include presumptive criteria, and appropriate site-specific hydrogeologic data collection and analyses.

Recommendation 24. That the FDEP (Central District Office), Seminole County and the SJRWMD initiate a coordinated effort to evaluate existing permits in the Geneva Freshwater Lens area, and conduct coordinated field inspections for compliance with existing, applicable regulations by November 1994.

Recommendation 25. That Seminole County make a formal, written request of FDEP that they be copied on all permit applications received by FDEP in Seminole County.

A concerted effort by all agencies to be knowledgeable of possible activities within the Lens area, and to verify compliance with permits is a necessary component of any resource management program. The purpose of these two recommendations (24 & 25) is to upgrade the level of permit enforcement and compliance for solid waste, wastewater, storage tanks, mssw, stormwater discharge, and consumptive permits that have been issued in the Geneva Freshwater Lens area.

Recommendation 26. That the SJRWMD and FDEP design and implement a network to determine, monitor and evaluate the freshwater/saltwater interface of the Geneva Freshwater Lens.

Saltwater intrusion is one of the most fundamental water quality concerns for the Geneva Freshwater Lens. As a part of the over all data collection and monitoring effort, the evaluation of this interface is extremely important. This is a recommendation for the SJRWMD to design and implement a monitoring well network as a component of the hydrogeologic Plan (Appendix E). Implementation would be accelerated with Legislative funding. FDEP would only be involved in the network, as it relates to spills in the Geneva Freshwater Lens area.

Since the Geneva Freshwater Lens area depends only to a limited extent on public water supplies, and since the majority of the population consumes untreated water from private wells, it is necessary that the Lens be viewed as a single source drinking water aquifer, and be protected as such. The Task Force offers the following recommendations regarding this issue. Unless stated otherwise, these recommendations apply to the rules and regulations of FDEP.

Recommendation 27. Land application of treated domestic or individual waste (including sludge) for the purpose of disposal should be prohibited unless the ground water quality criteria (primary and secondary drinking water standards and minimum criteria "free froms") are met at the site boundary without benefit of a zone of discharge (ZOD). The only practical way of compliance with this requirement is to meet the criteria at "the end of the pipe".

Recommendation 28. All new sanitary landfills and expansions of existing landfills should be constructed with synthetic and composite liners according to the most stringent requirements of chapter 17-701, F.A.C., and no zone of discharge should be allowed for such facilities.

Recommendation 29. Zones of discharge for all existing facilities discharging to groundwater should be reviewed for ground water quality standards violations. If violations are found, the ZOD should be modified, or eliminated, according to new monitoring plans designed for these facilities.

Recommendation 30. New domestic sewerage lines should be constructed to minimize leakage to no more than 50 gallons per inch of pipe diameter per mile per day.

Recommendation 31. New industrial waste pipe lines should be constructed to minimize leakage to no more than 25 gallons per inch of pipe diameter per mile per day.

Recommendation 32. New underground pipelines transporting pollutants (as defined in section 376.301(12) F.S. or any contaminant as defined in section 403.031(1) F.S.) should be constructed to prohibit leakage into the soil or the ground water.

Recommendation 33. The SJRWMD staff should develop special stormwater rules that will maximize recharge and water quality protection in the Geneva Freshwater Lens. (*Requires changes to SJRWMD rules*)

Recommendation 34. Reuse of treated effluent through rapid rate infiltration should be prohibited unless the reclaimed water is treated to meet drinking water standards.

Recommendation 35. Reuse should be allowed only in slow rate infiltration systems using public access quality effluents, as specified in chapter 17-600, F.,A.C.

Recommendation 36. Golf courses, nurseries, animal feeding and breeding lots, and mining operations should develop site-specific BMPs for handling their waste streams. Facilities choosing not to develop BMPs should be required to operate under an industrial waste permit from FDEP.

Recommendation 37. The SJRWMD and FDEP should cooperate in conducting a study to evaluate the effectiveness of the Zone of Discharge (ZOD) concept in protecting the ground water against contamination from facilities discharging directly or indirectly into the ground water (such as wells sinkholes, and excavations dug into the surficial aquifers) with special emphasis on pesticides, hydrocarbons, and other organic chemicals.

Recommendation 38. FDEP, HRS and Seminole County should investigate the feasibility of monitoring ground water quality associated with sludge and septage disposal.

Recommendation 39. Require DACS, FDEP, Seminole County and SJRWMD to develop and implement outreach programs for Best Management Practices (BMPs) for mixing, loading and storage of chemicals within the Geneva Freshwater Lens area.

Since the Geneva Freshwater Lens area depends on on-site disposal and treatment systems for wastewater treatment, special attention should be placed on the use and monitoring of on-site disposal and treatment systems within the Geneva Freshwater Lens area. The following Task Force recommendations 40 through 43 are directed to these systems, and unless otherwise noted, are directed to the Department of Health and Rehabilitative Services (HRS) for rule amendments.

Recommendation 40. Recommend that HRS issue annual operating permits to all non-single family residential on-site disposal and treatment systems, and evaluate the feasibility of the inspection of residential systems on a periodic basis.

Recommendation 41. Prohibit the disposal of septage on the Geneva Freshwater Lens, unless it meets the same quality as Grade 1 wastewater residuals.

Recommendation 42. Encourage HRS to develop performance standards in 10D-6 for the use of innovative designs and/or alternative disposal systems (i.e. composting toilets and drip irrigation systems), and encourage Seminole County to investigate incentive programs for the use of such systems.

Recommendation 43. HRS should develop specific performance standards for on-site sewage disposal systems, if necessary, for additional water quality protection in the Geneva Freshwater Lens area.

The transport, handling and disposal of hazardous materials in the Geneva Freshwater Lens area, as elsewhere, carries with it the risk of ground water contamination. The Task Force evaluated existing programs for hazardous materials, and makes the following recommendations (44, 45, 46, 47, 48, and 49) regarding hazardous materials programs, as they relate to the Geneva Freshwater Lens within an overall Seminole County program.

Recommendation 44. Direct Seminole County staff to ensure that a hazardous materials program, adequate to protect the Geneva Freshwater Lens, is in existence in the County Comprehensive Plan.

Recommendation 45. That the Seminole County staff in cooperation with FDEP, evaluate existing programs for their strengths and deficiencies. This evaluation should investigate the feasibility of conducting a public outreach program to inform the public of existing facilities related to hazardous waste collection and transfer, promoting the establishment of a Hazardous Waste Generators Co-Op and, establishing a waste exchange/milk-run pilot project in the Geneva Freshwater Lens area. Encourage Seminole County staff to draft a county-wide hazardous materials ordinance. Seminole County and FDEP should investigate grants and funding sources for these hazardous materials programs as a part of this over-all effort.

Recommendation 46. Seminole County should evaluate, organize, train, and equip a Geneva hazardous materials emergency response team and/or appoint a designee to represent Geneva on the Seminole County haz-mat team.

Recommendation 47. Seminole County should institute a Hazardous Materials Merit Award program for local businesses.

Recommendation 48. Encourage Geneva residents and community organizations, such as "Save Our Bubble" to create a hazardous materials advisory group for the purposes of educating existing and new businesses and to make formal recommendations to Seminole County and state agencies regarding hazardous materials programs.

Recommendation 49. That the Legislature direct FDOT to investigate the feasibility of a National Transportation Safety Board (NTSB) study for the Geneva Freshwater Lens area.

Recommendation 50. That the Seminole County Natural Lands Advisory Committee investigate the possibility of placing Heath Springs on the acquisition list for purposes of water quality protection.

Recommendation 51. That FDOT, at the direction of the Legislature, and Seminole County investigate the feasibility of protecting Heath Springs and the Snowhill Road Sinkhole Lake, from existing non-point source pollution.

Heath Spring and a sinkhole lake adjacent to Snowhill Road are two natural hydrogeologic features that deserve special protective measures. The acquisition of the spring would provide Seminole County with the opportunity to actively manage this water resource feature. Non-point source pollution (e.g. surface runoff from roadways and other developed land uses) could be introduced into the Geneva Freshwater Lens through these two natural features.

Recommendation 52. The Task Force recommends that Seminole County maintain the current intensity and density of land uses for the Geneva Freshwater Lens area that have been adopted by Seminole County in its current comprehensive plan. Prior to approval of any proposed plan amendments, Seminole County should consider the recommendations of the Geneva Lens Task Force.

Comprehensive plans are not static documents. Landowners have the right to request changes to the intensity and density approved for their properties. The Task Force recognizes that the current Seminole County Comprehensive Plan (1991 revision) has elements to protect the Geneva Freshwater Lens. The Task Force encourages the County to consider the recommendations in this report before approving any Comprehensive Plan amendments in the Geneva Freshwater Lens area.

4.0 TASK FORCE RECOMMENDATIONS BY AGENCY

The Task Force recommendations described in Section 3.0 of this report are organized below to indicate which agency would be responsible for implementation. Section 4.1 identifies Task Force recommendations that will require Legislative action for full implementation. If the recommendation directs action from more than one agency, the recommendation is repeated for each agency. Unless otherwise noted in the recommendation, the Task Force recommends that these actions be taken under the following timeframes. *For actions that can be implemented under existing rules, regulations and ordinances, the Task Force recommends that the Legislature direct the appropriate agency to implement the Task Force recommendation by December 31, 1994. For those actions that require amendments to existing rules, regulations or ordinances, the Task Force recommends that the Legislature direct the appropriate agency to implement the Task Force recommendations by July 1, 1995.*

4.1 Florida Legislature

The majority of the Task Force recommendations can be implemented within existing rules and policies of the affected agencies; however, a few critical recommendations would require action from the Legislature. The actions are to provide specific statutory authority to implement the recommendation, or to provide funding support to implement the recommendation.

Task Force encourages the assistance of the Florida Legislature for recommendations 1, 2, 4, 5, 17, 18, 26, 49, 51.

4.2 Florida Department of Environmental Protection (FDEP)

The following recommendations are directed towards the FDEP: 2, 11, 20, 21, 22, 24, 26, 27, 28, 29, 30, 31, 32, 34, 35, 36, 37, 38, 39, 45

4.3 Florida Department of Health and Rehabilitative Services (HRS)

The following recommendations are directed towards HRS: 11, 38, 40, 41, 42, 43

4.4 St. Johns River Water Management District (SJRWMD)

The following recommendations are directed towards SJRWMD: 2, 3, 4, 5, 6, 10, 11, 12, 13, 14, 15, 16, 17, 18, 23, 24, 26, 33, 37, 39

4.5 Seminole County

The following recommendations are directed towards Seminole County: 3, 6, 7, 8, 9, 11, 13, 20, 21, 23, 24, 25, 38, 39, 44, 45, 46, 47, 50, 51, 52

4.6 Department of Agriculture and Consumer Services (DACS)

The following recommendation is directed towards DACS: 39

Appendix A

(Geneva Freshwater Lens Task Force Legislation)

the Legislature to advise, coordinate,
providing a definition, creating the Geneva
Freshwater Lens Task Force; providing for
membership; providing for meetings of the task
force; requiring the task force to report to
the Legislature; providing for agencies to
cooperate with the task force; providing for
travel expenses and per diem; requiring the St.
Johns River Water Management District to
provide administrative and fiscal support to
the task force; providing an effective date.

WHEREAS, the Legislature recognizes the importance of
the Geneva Freshwater Lens, a limited freshwater resource
surrounded by salinized water on all sides and below, and
requires coordination of the programs of Seminole County, the
St. Johns River Water Management District, the Department of
Environmental Regulation, the Department of Health and
Environmental Services, the Department of Agriculture and
Rehabilitative Services, the Department of Community Affairs, the
Consumer Services, the Department of Planning Council, and others,
and

WHEREAS, the Legislature recognizes the need to ensure
that existing programs of the aforementioned entities offer
full and adequate protection of the quality and quantity of
water available for public use within the Geneva Freshwater
Lens, NOW, THEREFORE,

Be It Enacted by the Legislature of the State of Florida:

1

CODING: Words stricken are deletions; words underlined are additions.

Section 2. Geneva Freshwater Lens Task Force.--

(1) The Legislature finds that current responsibility for the management of the Geneva Freshwater Lens is distributed among multiple entities, that management of this unique, hydrologically isolated segment of the Floridan aquifer may require special protection, that the Floridan aquifer may require special protection, and that uncertainty exists as to whether existing programs are adequate to address the extent and nature of development pressure existing and proposed in the vicinity of the Geneva Freshwater Lens.

(2) The Geneva Freshwater Lens Task Force is created to provide a means by which representatives from state agencies, local government, the water management districts, environmental organizations, industry, and the public at large can evaluate the management needs of the Geneva Freshwater Lens for the proper protection of the public interest and to recommend actions for addressing any deficiencies discovered.

(3) The task force shall consist of the following:

- (a) The secretary of the Department of Environmental Regulation or its successor agency, or his designee.
- (b) The secretary of the Department of Health and Rehabilitative Services, or his designee.
- (c) The secretary of the Department of Agriculture and Consumer Services, or his designee.

2

CODING: Words stricken are deletions; words underlined are additions.

[illegible]

(e) The Executive Director of the N. A. A. P. C.

(f) The Executive Director of the East Central Florida Water Management District

(g) A member of the governing board of the St. Johns Regional Planning Council.

River Water Management District, appointees:

(h) One member selected by the "Save Our Dubblo"
organization.

(i) One member from the Board of County Commissioners
of the County or designated staff.

(i) Four members appointed by the Board of County

1. One representative from the agricultural community within Seminole County.

2. One representative from the borrow pit industry
within Seminole County.

3. One representative from the environmental community within Seminole County.

4. One hydrogeologic report on the Gonova Reservoir.

(4) The task force shall be chaired by the governing board member of the St. Johns River Water Management District who may appoint an alternate chairperson to serve in his absence.

(5) The task force shall meet at the call of its chairperson or at the request of a majority of its members. However, the task force shall have its first meeting no later than August 1, 1993.

14

CODING: Words stricken are deletions; words underlined are additions.

5. Recommendations for future management of the Congo Freehold
Lands, including:

(a) Whether any additional studies are needed to
the resource and its protection needs.

(b) Whether any additional planning, regulatory, or other measures are needed to properly manage the resource.

(c) Whether any legislation is needed to authorize
those measures.

(7) In carrying out its responsibilities, the task
force is authorized to call upon any department, office,
division, agency, or political subdivision of the state to
supply such data, reports, or other information it deems
necessary. Each department, office, division, agency, or
political subdivision of the state is authorized and directed
to the extent consistent with law, to cooperate with the task
force and furnish it with such information, personnel, and
assistance as necessary to accomplish the purposes of this
act.

(B) Members of the task force shall serve without compensation, but shall be entitled to per diem and travel expenses in accordance with § 112.061, Florida Statutes.

(9) The St. Johns River Water Management District
shall provide administrative and fiscal support for the task
forco.

Section 3. This act shall take effect upon becoming

3

41

Words underlined are additions

Appendix B

(Geneva Freshwater Lens Task Force Members)

GENEVA FRESHWATER LENS
TASK FORCE MEMBERS

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Appendix C

(Presentations to the Geneva Freshwater Lens Task Force)

PRESENTATIONS TO THE
GENEVA FRESHWATER LENS TASK FORCE

June 24, 1993

- 1 Geography of the Geneva Lens Area
By Mr. Tony Vanderworp, Director of Planning And Government
Seminole County
- 2 Geology and Hydrogeology of Central Florida
By Mr. Chris Sweazy, P.G., Department of Resource Management
St. Johns River Water Management District
- 3 Geology and Hydrogeology of the Geneva Lens Area
By Ms. Trudy Phelps, Water Resources Division
United States Geological Survey
- 4 Geology and Hydrogeology of the Geneva Lens Area
By Hugh Mitchell-Tapping Ph.D., Director
Division of Water Use Regulation
Department of Resource Management

July 21, 1993

- 1 Geneva Lens Groundwater Hydrogeologic Model
Mr. Brian McGurk, P.G., Department of Surface Water Programs
St. Johns River Water Management District
- 2 The Area of Critical State Concern and Development of Regional Impact (DRI) Program
By Mr. Henry Bittaker, Program Administrator,
Bureau of State Planning, Department of Community Affairs
- 3 Functions of the Regional Planning Council
By Mr. Jeff Jones
East Central Florida Regional Planning Council

August 16, 1993

Seminole County Natural Lands Program
By Ms. Colleen Logan, Senior Planner
Seminole County Planning Department

Seminole County Borrow Pit Ordinance
By Mr. Glenn Semanisin, P.E.
Seminole County Engineering Department

Inventory of Groundwater Discharge Sources in the Geneva Lens Area
By Ms. Sara Whitaker, P.G.
Department of Environmental Protection

Update of State Tanks Regulation
By Mr. John Svec,
Department of Environmental Protection

Regional Groundwater Modelling and Needs and Sources Program
By Ms. Barbara Vergara, Director,
Ground Water Programs/Technical Support
St. Johns River Water Management District

September 1, 1993

Wekiva Protection Act and Wekiva River Hydrologic Basin Rule
By Ms. Kathryn Mennella, Sr. Assistant General Counsel
St. Johns River Water Management District

Recharge of the Geneva Hill
By Mr. Charles Tibbals, Sub-District Chief
United States Geological Survey

September 16, 1993

St. Johns River Water Management District
Consumptive Use Permitting
By Mr. Chris Sweazy, P.G., Department of Resource Management
St. Johns River Water Management District

St. Johns River Water Management District
Management and Storage of Surface Waters Permitting (MSSW)
By Mr. Hal Wilkening, P.E., Department of Resource Management
St. Johns River Water Management District

Hydro-Geotechnical Recommendations
By Devo Seereeram, Ph.D.
Representing Seminole County Hydrogeologic Expert

September 27, 1993

Agriculture Best Management Practices
By Mr. Darrell Smith
Department of Agriculture and Consumer Services

November 15, 1993

Hazardous Substance Management
by Phillip A. Graves, CHMM

Appendix D

(Issues and Recommendations Matrix)

ISSUES AND RECOMMENDATIONS MATRIX

The Issues and Recommendations Matrix is a working document that was developed and used by the Geneva Freshwater Lens Task Force during the course of its deliberations. The matrix organizes the resource issues into two (2) categories; water quantity (8) and water quality issues (2).

As the Task Force proceeded with its discussions and developed recommendations, the matrix evolved. The recommendations listed in the matrix represent motions made by Task Force members. The wording of the successful motions was refined by the Task Force for inclusion as final recommendations in the body of this report (Section 3.0). Therefore, some minor discrepancies exist between the matrix (a working document) and the Task Force recommendations to the Legislature.

Water Quantity Management Issues:

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1	Preliminary Lens Recharge Area Delineation	Geneva Lens Law	• 250 mg/l chloride isoclor limit • 20 ft. contour selection M.S.L. (N.G.V.D.) • Determine what causes change in delineation • Set date certain for any future re- definition • Lateral vs. vertical definition	That the item description be changed to read "Preliminary Lens Recharge Area Delineation" based on the 20 foot contour prior to development, using a static line, based on the quadrangle maps referenced in the USGS Report (Water Resources Investigation 86-4078). That the recommended action should state "that within the 20 foot contour that delineates the lens recharge delineation area, as further information is obtained, additional resource sub-areas should be identified." That pending additional information the dimensions of the entire lens area be defined.	Approved Unanimous Approved 8:1 Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
2	Consumptive Use • Permit Thresholds - 6 inch or larger well - 100,000 gpd average withdrawal - 1 million gpd pump capacity • Metering	40C-2, F.A.C. 373, F.S.	• Reduce permit thresholds - reduce minimum well diameter - Reduce threshold to 2" including all non-residential and require meters - Investigate feasibility of requiring metering of residential uses - reduce maximum average withdrawals - reduce pump capacity - might require change in 373.219 (domestic use exemption)	To reduce consumptive use permit thresholds and require meters on all wells (2 inches or greater in diameter) for all no-residential uses, and investigate the feasibility of requiring meters for residential areas. Motion to above action tabled until District staff can provide more data referencing what can be done for residential users.	Fails Fails

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
2 (Con't)	Consumptive Use	40C-2, F.A.C. 373, F.S.	• All new wells to have meters - cost share on retrofit of existing wells • No exportation of water outside the lens • Cumulative Impacts	To prohibit exportation of water from the Geneva lens recharge area to outside of the recharge area, unless previously permitted or adjudicated. That the St. Johns River Water Management District develop specific criteria for evaluation of cumulative impacts in the Geneva Lens including the movement of saline-freshwater transition zone over the long term and impact on legal existing uses.	Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
3	Distribution of Existing and Future Withdrawals • Zoning/Land-Use Planning	40C-4/40C-3/ 40C-4/40C-42 HRS County Comp. Plan	• Larger wellfields v.s. distributed withdrawal points. • Permitting coordination. - require MSSW/stormwater permitting concurrent with CUP - require County-SJRWMD permitting coordination	That prior to issuance of any surface water permit or CUP (by the SJRWMD or DEP), applicants would have to obtain a certification by Seminole County that the project is consistent with the comprehensive plan and any zoning ordinances; and, prior to issuance of any final development orders or building approvals Seminole County would require that applicants obtain any necessary surface water permits or CUP (from SJRWMD or DEP).	Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
3 (Con't)	Distribution of Existing and Future Withdrawals	40C-4/40C-3/ 40C-4/40C-42 HRS	• Permitting coordination. - require MSSW/stormwater permitting concurrent with CUP - require County-SJRWMD permitting coordination	That the Task Force recommends that Seminole County maintain the current intensity and density of land uses for the Geneva Freshwater Lens area that have been adopted by Seminole County in it's current comprehensive plan. Prior to approval of any proposed plan amendments, Seminole County should consider the recommendations of the Geneva Lens Task Force.	Approved Unanimous
	• Zoning/Land-Use Planning	County Comp. Plan		Disclaimer relevant to the Geneva Lens area, special regulations be included on all deeds, contracts, and permits and any other official documents.	Fails, no second on motion.
	• District Modelling		• Cumulative impact modelling coordination into CUP application review process.	That the District should develop a model of the ground water system of the Geneva freshwater lens area, to implement in the CUP program to consider cumulative impacts to the Geneva freshwater lens area.	Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
4	Water Conservation • Domestic Use - xeriscape - plumbing fixtures • Agricultural Use	40C-2 HRS County	• Domestic Use: - ordinances to encourage conservation. - gray water for lawn irrigation - cisterns - mandating ultra low-flow fixtures in new construction - adoption of a xeriscape ordinance - public education program - irrigation system improvements • new v.s. retrofit - more restrictive watering hours • Agricultural Use. - irrigation system improvements	That the District and Seminole County should cooperate together to distribute materials on xeriscaping to the residents of the Geneva lens. That Seminole County modify the building ordinances to require ultra-low flow fixtures for new construction within the Geneva lens area.	Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
5	Reuse • Effluent Disposal - City of Sanford	40C-2 FDEP County	• Take-back agreements. • Funding of reuse distribution lines/cost-share. • Elimination of septic tanks in new subdivisions.	That Seminole County shall require centralized collection and treatment of wastewater, and reuse of the treated wastewater within the Geneva lens, if the County approves a zoning density greater than 1 unit per acre in the Geneva lens area. The wastewater treatment plant must treat the wastewater, to tertiary levels at least to public use access standards, and <u>be consistent with current state regulations or as those regulations are amended.</u>	Approved 8:1
	• Stormwater as a Source		• MSSW/stormwater permitting coordination with consumptive use needs. • Encourage the importation of effluent treated to public access standards to lens for recharge. • Prohibit any future discharge other than use of reclaimed water for consumptive use (DEP).	That when a proposed project, which requires a surface water management permit (MSSW or stormwater discharge) and a CUP, the surface water management permit should be issued only upon issuance of the CUP. To encourage the County to allow the importing of effluent treated to public use access standards and be <u>consistent with current state regulations, or as those regulations are amended</u> , to the Geneva lens for recharge.	Approved Unanimous
					Approved 7:2

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
6	Recharge Protection - Stormwater recharge criteria - Blue Belt Amendment	Blue Belt Amendment/40C-4/40C-42, F.A.C. County Comp. Plan County Ordinances	- Delineate areas of high recharge - Preserve areas of high recharge (i.e. sinkholes/wetlands/lakes) - Identify areas of most significant storage and recharge (i.e. sinkholes/wetlands/lakes) and provide for their complete protection. - zoning - MSSW/Stormwater criteria - Additional enforcement of Blue Belt Constitutional Amendment	That the District and Seminole County delineate areas of high recharge/storage within the Geneva lens and the SJRWMD, Seminole County, and appropriate state agencies are directed to develop appropriate protective measures for these areas as these areas are delineated. To direct the District to modify the MSSW rule to prevent reduction in recharge characteristics of the Geneva lens as shown in the District's map of the Geneva lens preliminary delineation. Reduction of natural topography in the Geneva lens recharge area, be limited to 6 feet above the normal season high water table. To prevent water from being wasted through evaporation that normally recharges the Geneva lens.	Approved 8:1 Approved Unanimous Fails

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
6(cont)	Recharge Protection		• Modify District and County regulations to increase run-off storage volumes in stormwater pond designs. - in closed basins maintain existing drainage characteristics - in open basins provide storage to prevent loss of recharge capabilities • 17-40 - High/prime recharge areas to be defined.	That reuse of treated effluent through rapid rate infiltration should be prohibited unless the reclaimed water is treated to meet drinking water standards. That reuse is allowed only in slow rate infiltration systems using public access quality effluent, as specified in chapter 17-600, F.A.C. To direct the District to modify the MSSW rule to prevent reduction in recharge characteristics of the Geneva lens as shown in the District's map of the Geneva lens preliminary delineation. The District shall amend its stormwater discharge rule (40C-42, F.A.C.), and the County its appropriate ordinance(s) to require that stormwater discharges be in accordance with Best Management Practices (BMP) requiring shallow, vegetated swales and retention areas designed to distribute stormwater infiltration to the maximum extent possible in the Geneva Lens area.	Approved Unanimous Approved Unanimous Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
7	Well Construction • 6 inch or larger non-potable • 4 inch or larger potable wells • Recording of wells - new - existing • Construction Criteria	40C-3 HRS	• Reduce thresholds for District well construction permits. (fees for new wells, - no fee for retroactive permitting of existing wells) • Construction Criteria. - limit total well depth - require metering • District designate screening criteria for casing seating depth, and sealants, etc. • Limit density of wells per area (County or District). • Require each new well to penetrate saltwater interface and backplug to producing zone or specified distance above interface.	To create a system that requires all well owners in the Geneva Lens area to register wells in a time not to exceed 2 years, with the SJRWMD or Seminole County, including all available relevant information on the well and it's use. To reduce the 40C-3, F.A.C., thresholds to 0" diameter and require all new wells to get a water well construction permit. That the District develop specific water well construction criteria designed to provide higher levels of protection for wells currently unregulated and regulated (40C-3, F.A.C.) to be constructed within the Geneva lens. To amend 40C-3 to include special construction criteria for maximum depth using data collected for preparation of the analytical model.	Approved 7:2 Approved 7:2 Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
8	Research Needs • Data collection • Further delineation of 250 mg/l isoclor • Cumulative impact assessment	N/A	• Utilize data from individual residential and CUP metered wells for cumulative impact to determine the 3-D boundary/extent of lens (District) • Determine salinity levels using Electromagnetic (TDEM) geophysical methods. (District through contractors) • Modify (update and refine) computer model. (District) - improve monitoring well network with 2-3 well clusters - 5 TDEM sites - cost-share modelling with District/County/Legislative	To adopt a draft proposal for additional hydrogeologic investigations including data collection, ground water model development and investigation of the relationship between land use and rates of recharge for the Geneva lens area, northeast Seminole County; and that well drilling and testing be carried out by the St. Johns River Water Management District. Also, the District should investigate the feasibility of voluntary and involuntary installation of metering devices. That the District staff develop a plan and budget to conduct research projects necessary for implementation of protective measures and that the legislature allocate funds to accelerate the collection and analyses of data.	Approved 8:1 Approved 8:1

Water Quality Management Issues:

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1	Water Quality		Prohibit travel by vehicles carrying hazardous materials (i.e. chemicals, waste products) throughout lens (County/DOT)	Seminole County should evaluate, organize, train, and equip a Geneva hazardous materials emergency response team and/or appoint designee to represent Geneva on the Seminole County haz-mat team. To encourage 'Geneva residents and community organizations, such as "Save Our Bubble" to create a hazardous materials advisory group for the purposes of educating existing and new businesses and to make formal recommendations to Seminole County and state agencies regarding hazardous materials programs. Recommend that the Legislature direct FDOT to investigate the feasibility of National Transportation Safety Board (NTSB) study for the Geneva Freshwater Lens area.	Approved 7:2 Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		- Prohibit travel by vehicles carrying hazardous materials (i.e. chemicals, waste products) throughout lens (County/DOT) - Increase the required setback of wells from potential contaminant sources through the wellhead protection program (District/HRS/DEP)	Recommend that FDOT/Seminole County investigate the feasibility of protecting Heath Springs and the Snowhill Road Sinkhole Lake, from existing non-point source pollution. Recommend requiring fuel and other petroleum storage tank owners to register with Seminole County/DEP within 2 years for tanks unregulated or exempted by 17-761 and 17-762, F.A.C., and this registration program shall attempt to identify size, use and approximate age of tanks.	Approved Unanimous
		17-555, 17-761 17-762, F.A.C. 40C-3	- Require double-walled tanks throughout lens or above ground tanks w/ containment area (DEP) - require increased frequency of tank inspections (DEP) - require inspection of non-commercial tanks	Recommends that Seminole County/DEP provide an incentive program for early registration. This applies to tanks that are unregulated or exempted by chapter 17-761 and 17-762, F.A.C. Recommend that the most stringent requirements in chapter 17-761 be implemented throughout the Geneva lens area.	Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality			To amend the previous motion to read; at least the most stringent requirements of 17-761 and 17-762 be implemented in the Geneva lens area and that any exceptions afforded in these rules that are less protective be considered for deletion.	Approved 8:2
	Water Quality Protection	DACS 40C-3, F.A.C.	- Require BMPs for mixing and storage of chemicals (herbicides, pesticides, fertilizers). - Plug abandoned wells (District/County Cost-share)	Recommend to require DACS/DEP/Seminole County/District to develop and implement outreach programs for BMPs for mixing, loading and storage of chemicals within the Geneva lens area.	Approved 9:1

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality Protection	17-761	Require borrow pits to maintain special hazardous waste material handling areas.	The golf courses, nurseries, animal feeding and breeding lots, and mining operations develop site-specific BMPs for handling their waste streams. Facilities choosing not to develop BMPs should be required to operate under an industrial waste permit from FDEP. Recommend that the Seminole County Natural Lands Advisory Committee investigate the possibility of placing Heath Springs on the acquisition list for purposes of water quality protection. St. Johns River Water Management District staff should develop special stormwater rules that will maximize recharge and water quality protection in the Geneva Lens.	Approved Unanimous Approved Unanimous Approved 8:2

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality	County Ordinance 40C-4 (MSSW) HRS and County	• Limit location/size of borrow pits adjacent to wetlands, sinkholes, and lakes. • Septic tank and drainfields. - increase tank and drainfield capacity - inspections and retrofits of existing systems	To direct the St. Johns River Water Management District to develop special excavation permitting criteria to be included in the 40C-4 rule to include limitations on size and location to prevent a direct connection to the Floridan aquifer in the Geneva lens area and to direct staff to work with Seminole County to amend their ordinances to include these recommendations. To recommend to the Legislature that they specifically fund DEP Central District to add more staff for MSSW review and compliance of land application systems. That the DEP Central District/Seminole County/St. Johns River Water Management District initiate a coordination effort to evaluate existing permits in the Geneva lens area and field evaluation for compliance with the existing and applicable regulations by November 1994.	Approved Unanimous Fails Approved 7:2

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		• Septic tank and drainfields. (Con't) - increase tank and drainfield capacity - inspections and retrofits of existing systems	Land application of treated domestic or individual waste (including sludge) for the purpose of disposal should be prohibited unless the ground water quality criteria (primary and secondary drinking water standards and minimum criteria "free forms") are met at the site boundary without benefit of a zone of discharge (ZOD). The only practical way of compliance with this requirement is to meet the criteria at "the end of the pipe". New domestic sewage lines should be constructed to minimize leakage to no more than 50 gallons per inch of pipe diameter per mile per day. Recommend that HRS issue annual operating permits to all non-single family residential on-site disposal and treatment systems, and evaluate the feasibility of the inspection of residential systems on a periodic basis. That Seminole County make a formal written request of FDEP that they be copied on all FDEP permit applications in Seminole County.	Approved 5:4 Approved Unanimous Approved 8:2 Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		• Septic tank and drainfields.(Con't) - increase tank and drainfield capacity - inspections and retrofits of existing systems	Prohibit the disposal of seepage on the Geneva lens, unless it meets the same quality as Grade 1 wastewater residuals. Encourage HRS to develop performance standards in 10D-6 for the use of innovative designs and/or alternative disposal systems (i.e. composting toilets and drip irrigation systems), and encourage Seminole County to investigate incentive programs for the use of such systems. HRS should develop specific performance standards for on-site sewage disposal systems, if necessary, for additional water quality protection in the Geneva Lens area.	Approved Unanimous Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		• Septic tank and drainfields.(Con't) - increase tank and drainfield capacity - inspections and retrofits of existing systems • Additional Contamination Handling Restrictions.	That reuse of treated effluent through rapid rate information should be prohibited unless the reclaimed water is treated to meet the drinking water standards. That reuse is allowed only in slow rate infiltration systems using public access quality effluent as specified in chapter 17-600, F.A.C. All new sanitary landfills and expansions of existing landfills should be constructed with synthetic and composite liners according to the most stringent requirements of chapter 17-701, F.A.C., and that no zone of discharge be allowed for such facilities. Zones of discharge for all existing facilities discharging to groundwater should be reviewed for ground water quality standards violations. If violations are found, the ZOD should be modified, or eliminated, according to new monitoring plans designed for these facilities.	Approved 8:2 Approved 8:2 Approved Unanimous Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		Additional Contamination Handling Restrictions. (Con't)	New industrial waste pipe lines should be constructed to minimize the leakage to no more than 25 gallons per inch of pipe diameter per mile per day. New underground pipelines transporting pollutants (as defined in section 403.031(1), F.S.) should be constructed to prohibit leakage into the soil or the ground water. Direct Semionle County staff to ensure that hazardous materials program, adequate to protect the Geneva Freshwater Lens, is in existence in the County Comprehensive Plan.	Approved Unanimous Approved Unanimous Approved 5:4

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
1 (Con't)	Water Quality		• Additional Contamination Handling Restrictions. (Con't)	That Seminole County staff in cooperation with FDEP, evaluate existing programs for their strengths and deficiencies. This evaluation should investigate the feasibility of conducting a public outreach program to inform the public of existing facilities related to hazardous waste collection and transfer, promoting the establishment of a Hazardous Waste Generators Co-Op and establishing a waste exchange/milk-run pilot project in the Geneva Freshwater Lens area. Encourage Seminole County staff to draft a County-wide hazardous materials ordinance. Seminole County and FDEP should investigate grants and funding sources for these hazardous materials programs, as part of the overall effort. Institute a Hazardous Materials Merit Aware program for local businesses.	Approved Unanimous

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
2	Research Needs		• Improve water quality monitoring network - require submittal of water quality test results for each new domestic well to District - summary of water quality test results obtained for HRS permits	That the St. Johns River Water Management District/DEP design and implement a monitoring network to evaluate and monitor the freshwater/saltwater interface. That the District and FDEP should cooperate in conducting a study to evaluate the effectiveness of the Zone of Discharge (ZOD) concept in protecting the ground water against contamination from facilities discharging directly into the ground water (such as wells, sinkholes, and excavations dug into the surficial aquifers) with special emphasis on pesticides, hydrocarbons, and other organic chemicals.	Approved Unanimous Approved 8:2

Item #	Item Description	Regulatory/ Statutes	Task Force Discussion	Task Force Approved Action	Vote
2 (Con't)	Research Needs		Continue to evaluate septic tank nitrate removal efficiency in well draining soils.	FDEP, HRS, and Seminole County investigate the feasibility of monitoring ground water quality associated with sludge and septage disposal. That the Executive Summary reflects that the Task Force acknowledges that the additional programs contained within the report cannot be done without funding support. And additional funding would need to be looked at, and that the economic impacts would be considered during future rule change proceedings as an acknowledgement for those two issues.	Approved 9:1 Fails

Appendix E

(SJRWMD Preliminary Plan and Budget for)

(Further Hydrogeologic Investigations of the Geneva Freshwater Lens)

GENEVA FRESHWATER LENS TASK FORCE -- 10/21/93

DRAFT PROPOSAL FOR AN ADDITIONAL HYDROGEOLOGIC INVESTIGATION INCLUDING DATA COLLECTION, GROUND WATER MODEL DEVELOPMENT AND INVESTIGATION OF THE RELATIONSHIP BETWEEN LAND USE AND RATES OF RECHARGE FOR THE GENEVA LENS AREA, NORTHEAST SEMINOLE COUNTY

The Geneva Freshwater Lens Task Force has identified the need for additional investigations in order to better delineate the three-dimensional extent of the lens, to develop management tools capable of estimating future potential harmful impacts to the freshwater resources of the lens area, and to better understand the relationship between land use and rates of recharge. In this draft proposal, SJRWMD staff have outlined the key tasks that should be included in additional study efforts. The proposal is separated into three elements, Data Collection, Additional Ground Water Model Development, and Investigation of the Relationship Between Land Use and Rates of Recharge. Two alternatives are given for the Time Schedule and Cost sections of the first two elements, based upon whether certain key tasks are carried out by SJRWMD staff in-house or by SJRWMD contractors. Identification of tasks and cost estimates have not been completed for the third element (recharge and land use). Similar project work is presently being discussed by the Recharge Protection Committee which is composed of a member from each water management district, the Department of Environmental Protection, the Department of Community Affairs, and the U.S. Geological Survey.

ELEMENT I. ADDITIONAL DATA COLLECTION

A. Key Tasks:

1. Lens Delineation
 - a. conduct borehole geophysical surveys of existing public supply, domestic supply, and irrigation wells
 - b. conduct TDEM surface geophysical surveys at 5 locations within the lens area
 - c. construct observation well clusters and perform hydrologic testing at 3 locations within and adjacent to the lens (each well cluster to consist of a water-table well, 1 well open to the lower part of the surficial aquifer, and 1 or 2 Floridan aquifer wells at varying depths.
2. Water-level and water-quality monitoring
 - a. quarterly monitoring at 8 existing observation well sites*
 - b. quarterly monitoring at approximately 5 additional private well sites identified during completion of A.1.a. above.
 - c. continuous water-level monitoring and quarterly water quality monitoring at the observation well clusters constructed as part of A.1.c. above

GENEVA FRESHWATER LENS TASK FORCE -- 10/21/93 - DRAFT PROPOSAL

I. B. Schedule:

Alternative 1. (drilling and testing in A.1.c. carried out by SJRWMD contractor):

<u>Task</u>	<u>Begin</u>	<u>End</u>
1.a.: second qtr FY 93/94		third qtr FY 93/94
1.b.: third qtr FY 93/94		third qtr FY 93/94
1.c.: third qtr FY 93/94		fourth qtr FY 93/94
2.a.: first qtr FY 93/94		on-going*
2.b.: first qtr FY 94/95		on-going
2.c.: first qtr FY 94/95		on-going

Alternative 2. (drilling and testing in A.1.c. carried out by SJRWMD staff):

<u>Task</u>	<u>Begin</u>	<u>End</u>
1.a.: second qtr FY 93/94		third qtr FY 93/94
1.b.: third qtr FY 93/94		third qtr FY 93/94
1.c.: fourth qtr FY 93/94		second qtr FY 94/95
2.a.: first qtr FY 93/94		on-going*
2.b.: first qtr FY 94/95		on-going
2.c.: third qtr FY 94/95		on-going

C. Approximate Cost

Alternative 1. (drilling and testing in A.1.c. carried out by SJRWMD contractor):

<u>Task</u>	
1.a.: \$ 3,000.00	
1.b.: \$ 10,000.00	
1.c.: \$150,000.00	
2.a.: \$ 1,800.00 (per year)*	
2.b.: \$ 1,000.00 (per year)	
2.c.: \$ 32,600.00 **	<u>Total: \$198,400.00</u>

Alternative 2. (drilling and testing in A.1.c. carried out by SJRWMD staff):

<u>Task</u>	
1.a.: \$ 3,000.00	
1.b.: \$ 10,000.00	
1.c.: \$ 50,000.00	
2.a.: \$ 1,800.00 (per year)*	
2.b.: \$ 1,000.00 (per year)	
2.c.: \$ 32,600.00 **	<u>Total: \$ 98,400.00</u>

*: Funds for monitoring at the 8 existing observation well sites have already been budgeted as part of the Needs and Sources Project.

** : Includes \$30,000 for telemetry/recorder installation and \$2600 per year for monitoring

GENEVA FRESHWATER LENS TASK FORCE -- 10/21/93 - DRAFT PROPOSAL

ELEMENT II. ADDITIONAL GROUND-WATER MODEL DEVELOPMENT

A. KEY TASKS:

1. incorporate new data collected since 1990
2. refine boundary conditions
3. activate water-table aquifer
4. conduct steady-state and transient calibrations
5. perform sensitivity analyses and predictive simulations

B. SCHEDULE

Alternative 1 (does not incorporate data collected as part of A.2.b. and A.2.c. above):

<u>Begin</u>	<u>End</u>
Tasks 1. through 5.: First qtr <u>FY 94/95</u>	4th qtr FY <u>94/95</u>

Alternative 2 (incorporates data collected as part of A.2.b. and A.2.c. above):

<u>Begin</u>	<u>End</u>
Tasks 1. through 5.: First qtr <u>FY 95/96</u>	4th qtr FY <u>95/96</u>

C. APPROXIMATE COST

Tasks 1 through 5: \$60,000 (Alternatives 1 and 2)

ELEMENT III. INVESTIGATION OF THE RELATIONSHIPS BETWEEN LAND USES AND RATES OF RECHARGE

Task identification and cost estimates for this element are incomplete. It is anticipated that the work will take two to three years to complete. A legislative contribution of \$100,000 to support this work effort would allow the work to be expedited to help address the interests of the Geneva Freshwater Lens Task Force in a timely manner.

Appendix F

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