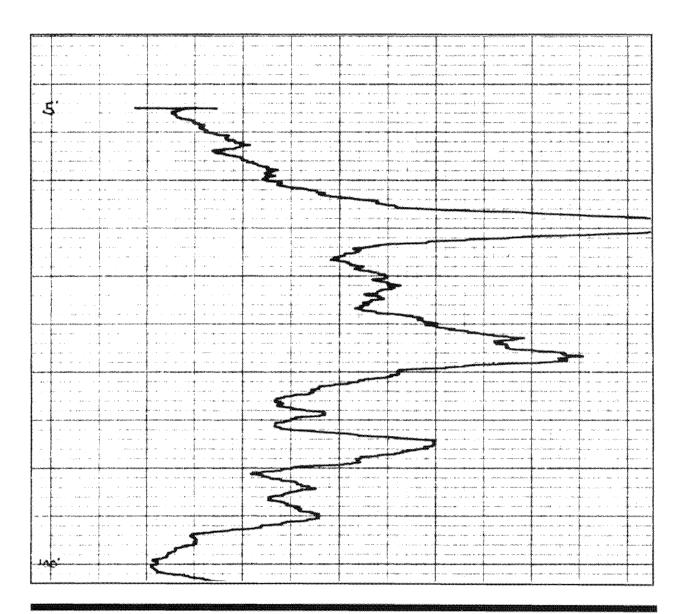
Hydrogeologic and Lithologic Characteristics of the Surficial Sediments in Volusia County, Florida



St. Johns River Water Management District

Technical Publication SJ 89-7

HYDROGEOLOGIC AND LITHOLOGIC CHARACTERISTICS OF THE SURFICIAL SEDIMENTS IN VOLUSIA COUNTY, FLORIDA

by

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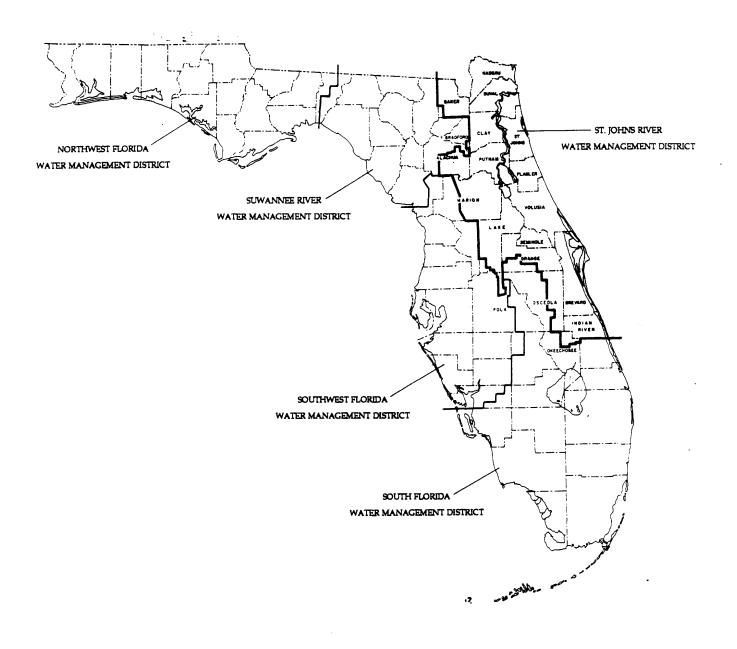
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THE ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

The St. Johns River Water Management District (SJRWMD) was created by the Florida Legislature in 1972 to be one of five water management districts in Florida. It includes all or parts of nineteen counties in northeast Florida. The mission of SJRWMD is to manage water resources to insure their continued availability while maximizing environmental and economic benefits. It accomplishes its mission through regulation; applied research; assistance to federal, state, and local governments; operation and maintenance of water control works; and land acquisition and management. Technical reports are published to disseminate information collected by SJRWMD in pursuit of its mission.

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ABSTRACT

Rapid growth and urban development in Volusia County has placed increasing demands on ground water supply from the Floridan aquifer. Because the surficial sediments act as a source of recharge to the Floridan aquifer, there is concern over the ability of the surficial sediments to transmit polluted ground water. The purpose of this study is to collect, evaluate, and present data on the lithologic and hydrostratigraphic nature of the surficial sediments overlying the Floridan aquifer in Volusia County.

A regionally correlatable confining unit, which overlies the Floridan aquifer throughout most of northeastern Florida, is present in only the northwestern and southeastern portions of the county. This unit consists of sand, silt, clay, and carbonate sediments, primarily from the Miocene age Hawthorn Group. The surficial aquifer system, which consists of interbedded sand, shell, and clay, overlies the regional confining unit where it is present, and directly overlies the Floridan aquifer over most of the county where the confining unit is absent. Sediments of the surficial aquifer system have been grouped lithologically into two units: an upper sand and clayey sand unit and a basal sand, shell, and clay unit.

Confining layers of variable thicknesses are revealed by most geologic logs of wells in the surficial aquifer system. However, these layers are limited in thickness and areal extent. Low permeability layers of limited thickness can significantly reduce the vertical hydraulic conductivity of the surficial aquifer system and divert ground water flow horizontally through adjacent, more permeable beds. However, due to the difficulty in predicting the location of confining layers, areas of special concern should be where the greatest vertical gradient exists between the water table and the potentiometric surface of the Floridan aquifer, such as the Crescent City and Deland ridges. The greatest potential for pollutant exchange within these areas occurs where the surficial aquifer system is thinnest and/or consists of only coarse-grained material, or where the original confining layers have been breached by sandy sinkhole fill.

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INTRODUCTION

BACKGROUND

Volusia County is located in east-central Florida and has an area of approximately 1200 square miles. It is bounded on the north by Flagler and Putnam counties, on the east by the Atlantic Ocean, and on the south by Brevard County. To the west and southwest, the St. Johns River separates Volusia County from Lake and Seminole counties. The county has experienced rapid growth in recent years, especially in the Deltona area southeast of Deland and along the coast where tourism is an important industry. The county's population is expected to increase by 35.6 percent between 1990 and 2000 (Volusia County Planning and Zoning Department 1988).

Most of the domestic, municipal, agricultural, and industrial water supply in the county is derived from the Floridan aquifer (Marella 1988). In 1987, the United States Environmental Protection Agency (EPA) designated the Floridan aquifer in Volusia County as a "sole source aquifer" (U.S. EPA 1987). The Floridan aquifer in Volusia County is recharged solely by water derived from local rainfall that infiltrates through overlying sediments. Therefore, in order to protect the quality of ground water supplies from point and non-point pollution sources, the nature of ground water flow through these surficial sediments must be understood.

PURPOSE

Lithology, stratigraphy, and hydraulic conductivity are major controls on the nature of ground water flow through the surficial sediments. The purpose of this study is to collect, evaluate, and present data concerning the lithologic and hydrostratigraphic character of the sediments overlying the Floridan aquifer. This information can be useful in predicting the fate of contaminants in the subsurface.

This report completes the requirements of Contract Number WM 117 between the Department of Environmental Regulation (DER) and the St. Johns River Water Management District (SJRWMD). SJRWMD and the Florida Geological Survey (FGS) cooperated in performing the project. Specific duties of the SJRWMD and the FGS are discussed in the methodology section of this report.

PREVIOUS INVESTIGATIONS

Numerous reports have been published that discuss the geology and ground water resources of Volusia County. Most of these reports have dealt primarily with the Floridan aquifer and have presented limited information on the surficial sediments. Wyrick (1960, 1961) assessed the ground water resources of Volusia County and concentrated on the Floridan aquifer. Knochenmus and Beard (1971) evaluated quantity and quality of ground water and surface water resources in Volusia County. Rutledge (1985a) evaluated the movement of brackish water within the Floridan aquifer. Local studies have been written by Gomberg (1980, 1981) on ground water availability of the Floridan and surficial aquifer systems in the northeast portion of the county. Rutledge (1985b) evaluated pump test data from the Floridan aquifer at a site in north-central Volusia County. Munch (1979) completed a test drilling project in the northeastern portion of the county in support of a United States Geological Survey (USGS) study (Rutledge 1982) assessing the hydrologic impact of large withdrawals of ground water from the Floridan aquifer. Johnson (1981) utilized geophysical well logs and cores to investigate the evidence of faults in western Volusia County and their impact on water quality. Numerical computer modeling studies of ground water flow in the Floridan aquifer were described by Bush (1978), Tibbals (1981), and Mercer et al. (1984).

Goodell and Yon (1960), in a report on the stratigraphy of post-Eocene age deposits throughout Florida, briefly discussed the nature of the surficial sediments in the Volusia County area. Some of the well data reviewed for this report were from adjacent counties. Studies that presented some information on surficial sediments in adjacent counties include Munch, et al. (1979) and Navoy and Bradner (1987) on Flagler County; Barraclough (1962) and Phelps and Rohrer (1987) on Seminole County; and Toth (1988) on Brevard County. Strom and Stewart (1985) conducted an analytical study on 60 core samples collected by DER from the surficial sediments at seven core hole sites in Volusia County. This study was conducted under DER contract number WM 112.

Finally, USGS is currently conducting a study on the nature of ground water flow in the surficial sediments of Volusia County (G.G. Phelps pers. com. 1989).

METHODOLOGY

Methods of data collection consisted of compiling an inventory of existing information, test drilling and core sampling, core sample description and analysis, monitoring well construction, geophysical logging, and single well response (slug) testing.

COMPILATION OF EXISTING INFORMATION

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Specific data from many of the wells in the SJRWMD and FGS data bases were examined as part of this project. Information on wells drilled in Volusia County can be found from four sources on file at the SJRWMD. The first is a computerized scientific data-base which includes general information on wells. The listing includes information on location, total depth, casing depth and diameter, aquifer type, water level, water quality, and pertinent data on ground water tests. The source of these data include the USGS, county agencies, and field personnel of the SJRWMD.

The second source, the geophysical data-base, includes information on all wells geophysically logged by the SJRWMD. Useful data from this data base include: total depth, casing depth and diameter, geologic formations encountered, and lithologic determination (stratigraphic picks determined from the geophysical well logs).

A third source of well data on file at the SJRWMD is copies of Volusia County (Permits and Inspections Division) well completion reports. These reports are accessed by section, township, and range and contain well construction information and, occasionally, driller's logs.

The fourth source is the Volusia County Ground Water Data Base (VOLDATA), maintained by Volusia County. It lists the location of most wells permitted by the county since 1976.

In addition, the FGS maintains an extensive library of well cuttings and core descriptions. Core descriptions from some of these wells can be found in Johnson (1986). Geologic descriptions of cuttings and cores are also available in a computerized lithologic data base (Geologic Information Systems 1988).

Wells are listed in the SJRWMD data bases by station name (a six character code designated by county and latitude-longitude). Appendices A and B are, respectively, summaries of all wells located in Volusia County in the scientific data base and all Volusia County wells geophysically logged by the SJRWMD (from the geophysical data base). Appendix C lists the location, source of data, and type of available data for all well logs reviewed. Some of the well logs from the site-specific studies conducted by Gomberg (1980, 1981) and Rutledge (1985b) were included in Appendix C. All of the logs from the study by Strom and Stewart (1985) have been included.

Each separate latitude-longitude location listed in Appendix C has been assigned a site number. The location of these sites and source for the information are shown on Figure 1. Appendix D is a summary listing of all Volusia County wells with lithologic descriptions in the FGS well log data system.

DRILLING AND SAMPLING

The SJRWMD drilled 21 core holes at 20 sites distributed throughout the county using hollow stem augers. Cores (1-1/4 by 18 in) were taken at a minimum of 5-ft increments with a split spoon sampler. Core recovery was fair, with poor recovery in some zones with unconsolidated, water-saturated sand. All cores were collected in polyurethane tubes and sealed with end caps at the time of extraction from the split spoon. Figure 2 shows the location of the 20 project sites (Site numbers 1-20 on Figure 1 and in Appendix C).

LABORATORY TESTS AND SAMPLE DESCRIPTIONS

Core samples from 20 core holes at 19 of the sites (there were two core holes at Site 13 and no core description is available from Site 11) were stored and examined by FGS personnel. Core tubes were kept in an upright position during storage to prevent flowage of unconsolidated sediments. The least disturbed section of each core sample was located and a 2 1/2-in long subsample was removed for laboratory analysis. The remainder of each cored interval was then cut lengthwise and the sediment described. Appendix E contains the core descriptions from each core hole. These descriptions are also available in the FGS Well Log Data System.

Subsamples were tested for vertical hydraulic conductivity, total porosity, clay mineralogy, and bulk mineralogy. Summaries of the procedures used to conduct these tests are contained in Appendix F.

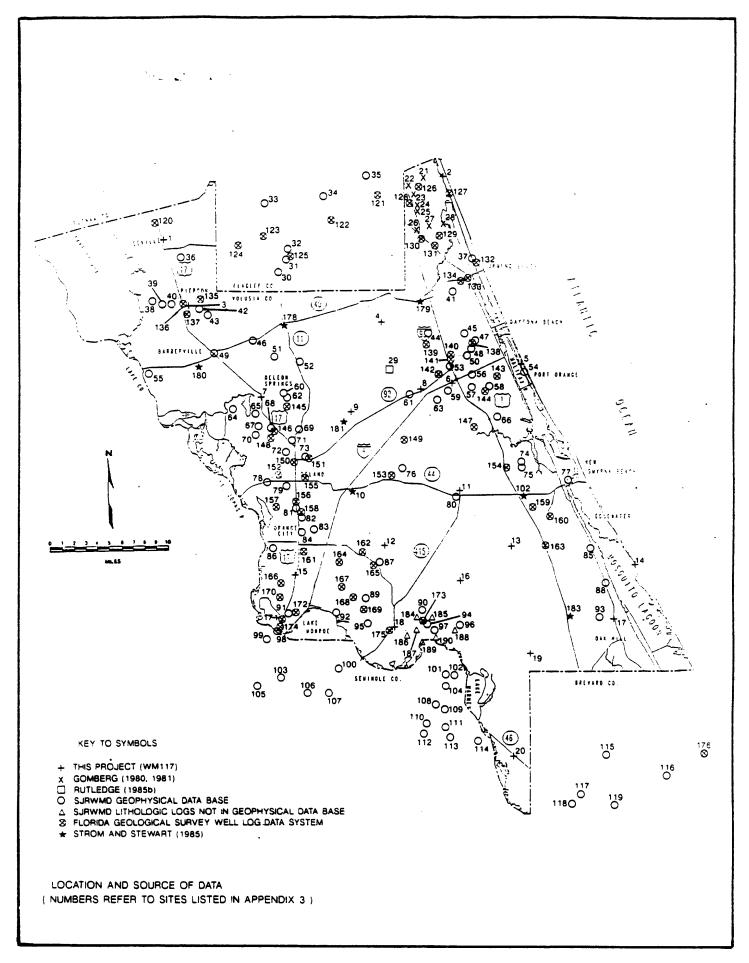


Figure 1. Location and source of data for well logs reviewed (Numbers refer to sites listed in Appendix C)

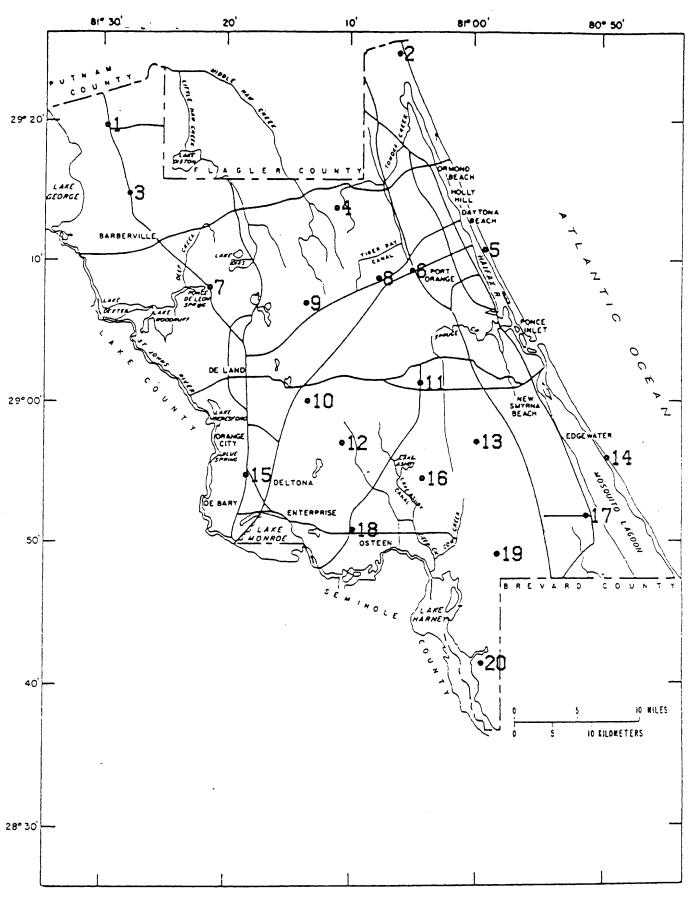


Figure 2. Location of Project WM117 core sampling and monitoring well sites (Site numbers 1-20 on Figure 1 and in Appendix C)

MONITORING WELL CONSTRUCTION

A monitoring well was constructed 5 to 10 ft from the core hole location at 14 of the sites using mud rotary methods. The wells were drilled with a 7 7/8-in drag bit and 4-in schedule 40 PVC casing was set and grouted in place. After 24 hours, the wells were drilled deeper with a 3 1/2-in roller cone bit. Schedule 40 PVC 2-in screen and extension was then set to the surface. The annular spaces between the 2-in and 4-in casings were backfilled with pea gravel and sealed with bentonite and grout. The wells were developed by air surging for a minimum of 1 hour. Table 1 lists construction information for each of these wells. Monitoring wells, 2 in. in diameter, were already in existence at four sites. These wells, along with three others drilled by the USGS at Site 7, were used to obtain slug test data. Monitoring wells were not constructed at Sites 10 and 17.

GEOPHYSICAL WELL LOGS

Geophysical logs were run at 11 of the project sites (see Appendix C). Because the monitoring wells were cased, only a natural gamma-ray probe was used. The primary use for natural gamma logs is lithologic identification and stratigraphic correlation. These logs may be run in open or cased, air, or liquid-filled boreholes (Keys and MacCary 1983). Almost all sediments contain radioisotopes which emit gamma rays. Generally, gamma activity is much higher in clays then in the carbonates and clean sands. The gamma-log trace is used to determine the vertical location of relatively impermeable confining clay horizons between water bearing zones within cased boreholes.

AQUIFER TESTS

Single well piezometer response (slug) tests were conducted in monitoring wells at 18 of the project sites. The purpose of these tests was to determine the horizontal hydraulic conductivities of surficial sediments. Both slug (addition of known volume to the water column) and bail (removal of a known volume from the water column) tests were performed. Water level response was observed using an Ametek Model 57 pressure transducer and a Campbell 21X Micrologger. Analysis of the data derived from the slug tests was completed using the method of Bouwer and Rice (1976).

Table 1. Monitoring well location and construction data

Site	Latitude/ Longitude	SJRWMD Well No.	Approx. Elev. (msl)	Total Depth (ft)	Screened Interval (ft)	Lithology of Screened Interval
1	29-19-41 81-29-42	V-0185 ^(a)	42 .94 ^(b)	45	30-45	Clay, and clayey sand & shell
2	29-24-32 81-05-56	V-0371	6	20	0-20	Sand
3	29-14-48 81-27-49	V-0354	63.00 ^(b)	75	55-75	Clay & sand ?
4	29-13-37 81-11-01	V-0356	46	65	45-65	Sand & shell
5	29-10-31 80-59-04	V-0373	17	40	20-40	Sand & shell
.6	29-09-05 81-04-55	V-0357	28	58	48-58	Sand & shell
7	29-08-02 81-21-11	V-0372 (c) V-0360 (c) V-0374 (c) V-0359	62 60 60 60	72 42 22 80	62-72 32-42 ? 60-80	Clay, clayey sand sand shell
8	29-08-34 81-07-38	V-0193 (a) V-0192 (a)	4 4 4 4	40 80	16-40 60-80	sand clayey sand & shell
9	29-06-52 81-13-29	V-0361	41	73	53-73	Sand & shell
11	29-01-06 81-04-17	V-0363	32	69	50-69	Clayey sand & Shell
12	28-56-56 81-10-37	V-0365	41	73	53-73	Sand & shell
13	28-56-53 80-59-47	V-0364	25	50	40-50	Sand

⁽a) Previously existing well drilled by SJRWMD

⁽b) Surveyed elevation

⁽c) Previously existing well drilled by USGS

Site	Latitude/ Longitude	SJRWMD Well No.	Approx. Elev. (msl)	Total Depth (ft)	Screened Interval (ft)	Lithology of Screened Interval
14	28-55-35 80-49-24		11	30	10-30	Sh e 11
15	28-54-42 81-18-14	V-0197 ^(a)	80.44 (b)	30	20-30	Sand & clay
16	28-54-19 81-04-10	V-0199 (a)	29.40 ^(b)	86	?	?
18	28-50-45 81-09-48	V-0368	46	60	40-60	Coquina
19	28-48-53 80-58-12	V-0369	27	70	57-70	Sand & shell?
20	28-41-10 80-59-32	V-0370	11	60	50-60	Clay & shell

⁽a) Previously existing well drilled by SJRWMD

⁽b) Surveyed elevation

⁽c) Previously existing well drilled by USGS

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HYDROGEOLOGIC SETTING

STRATIGRAPHY

The Floridan aquifer in Volusia County is made up of two limestone and dolomite units of Eocene age. The oldest, the Avon Park Formation, consists predominantly of brown limestones and dolomites and includes the rocks formerly placed within the Lake City Limestone (Miller 1986). It is overlain by the Ocala Limestone in much of the county; however, in some areas it represents the top of the Floridan aquifer (Johnson 1981).

In portions of the county the Ocala Limestone is overlain by Miocene age sediments of the Hawthorn Group (Scott 1988). Hawthorn sediments consist of interbedded clay, silt, sand, and carbonate beds, all containing varying amounts of phosphatic material. Figure 3 is a thickness map of the Hawthorn Group sediments in Volusia County. It was constructed using the logs of wells listed in Appendix C. This map indicates that Hawthorn Group sediments occur only in the northwestern and southeastern areas of the county.

Eocene and Miocene age sediments are overlain by interbedded and interfingering deposits of unconsolidated or poorly consolidated sand, sandy clay, shell, and calcareous silty clay. Cooke (1945) assigned these deposits to the Caloosahatchee Marl of Pliocene age. Vernon (1951) indicated that these beds were of late Miocene age. Some deposits, however, are probably part of the Pliocene age Nashua Formation (Scott pers. com. 1988, Huddlestun 1988).

Pleistocene to Recent sediments cover the older strata throughout the county. These sediments consist mostly of fine- to coarse-grained quartz sand, locally containing shells, often with a clay matrix or thin clay layers. There is often a "hardpan" layer of sand cemented with iron oxide in the zone of water table fluctuation. In the coastal area of the county, the Anastasia Formation is often present near or at land surface. This formation consists of coquina with varying amounts of quartz sand, silt, and organic material (Toth 1988, Gomberg 1981).

Figure 4 is a map of the total thickness of sediments overlying the Eocene age limestone (Floridan aquifer). This map was constructed from the logs of wells listed in Appendix C. Where the Hawthorn Group is present, the thickness of post-Hawthorn deposits can be determined by subtracting the Hawthorn Group thickness (Figure 3) from the value at a given point on Figure 4. The Upper Miocene

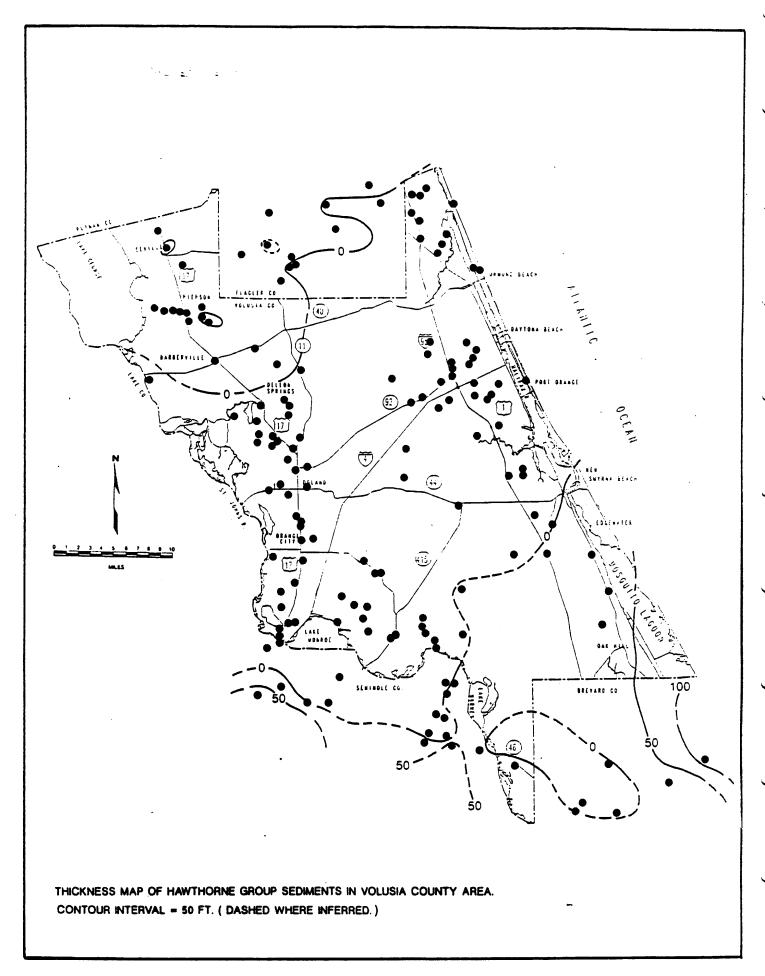


Figure 3. Thickness map of Hawthorn Group sediments in the Volusia County area, contour interval = 50 ft (dashed where inferred)

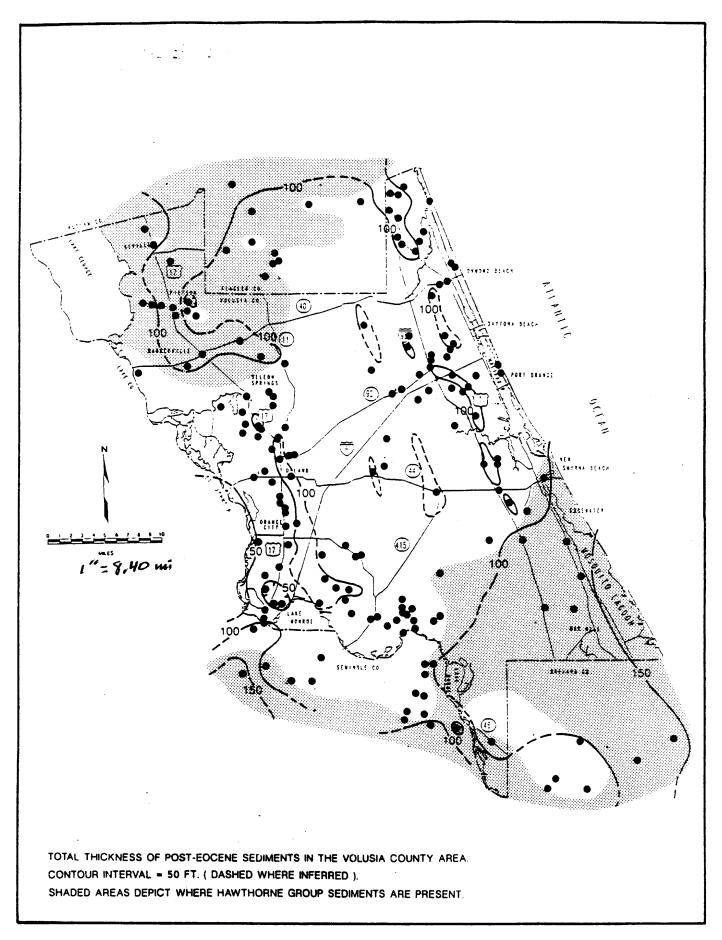


Figure 4. Total thickness of post-Eocene sediments in the Volusia County area, contour interval = 50 ft (dashed where inferred). Shaded areas depict presence of Hawthorn Group sediments

(Vernon 1951) to Recent age deposits are generally between 50 and 110 ft thick. The greatest thicknesses occur along the Crescent City, Deland, and Atlantic Coastal ridges. There is also a gradual increase in thickness of these deposits toward the east. Their thickness at most of the well sites in the eastern third of the county exceeds 80 ft.

HYDROGEOLOGIC UNITS

Three hydrogeologic units exist within the subsurface in Volusia County. These are the surficial aquifer system, the regional confining unit, and the Floridan aquifer.

The surficial aquifer system consists of interbedded sand, shell, and clay sediments (Figure 5). It includes Pleistocene to Recent sand, clayey sand, or Anastasia Formation coquina. Late Miocene (Vernon 1951) and Pliocene (Huddleston 1988) sand, shell, and clay layers are also part of the surficial aquifer system.

Depending on the presence of clayey layers, the surficial aquifer system can consist of one or more water-bearing zones with depth. The uppermost contains the water table and commonly consists of sand or clayey sand. This zone is often separated from deeper, semi-confined, or confined sand or shell aquifers by layers of clay or sandy clay. Where clayey layers are absent, the surficial aquifer system is composed of a single, unconfined aquifer.

A regional confining unit, which separates the surficial aquifer system from the Floridan aquifer, occurs where there are laterally extensive and vertically persistent beds of much lower permeability than the surficial aquifer system (Southeastern Geological Society 1986). This unit contains the fine-grained sediments of the Hawthorn Group. Clay-rich layers directly overlying the Hawthorn Group can also be considered part of the regional confining unit (hence the dashed line in the right-hand column of Figure 5). Note that because the regional confining unit is not present in the central area of the county, the surficial aquifer system directly overlies the Floridan aquifer throughout this area (see Figure 4).

GEOMORPHOLOGY

The geomorphology of Volusia County is dominated by landforms created by fluctuation of sea level during the Pleistocene Epoch. Karst topography, developed by dissolution of the underlying carbonate rocks, is dominant in the vicinity of the Crescent City and Deland ridges (Figure 6). Karst features are typified by an irregular, pitted topography, numerous sinkhole lakes and ponds, and subsurface

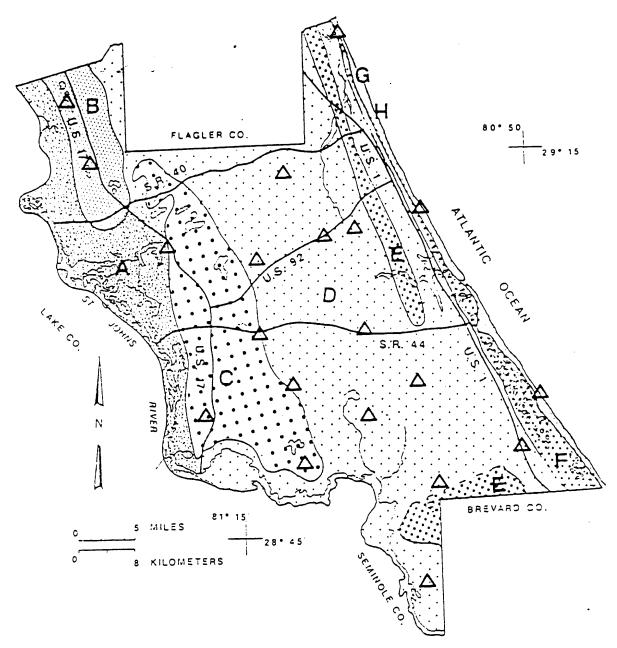
AGE	GEOLOGIC UNIT	LITHOLOGY	HYDROSTRATIGRAPHIC UNIT
RECENT AND PLEISTOCENE	UN- DIFFERENTIATED/ DEPOSITS ANASTASIA FORMATION (1)	SAND, CLAYEY SAND, CLAY, AND MINOR SHELL SILT. COQUINA (1)	SURFICIAL AQUIFER
PLIOCENE (Huddlestun, 1988) AND / OR LATE MIOCENE	UNDIFFERENTIATED DEPOSITS AND / OR NASHUA FORMATION	MIXTURE OF SAND AND SHELL. CLAY AND SHELL, SHELL BEDS, AND CLAY BEDS	
(Vernon, 1951) 1951)	HAWTHORN GROUP (2)	PHOSPHATIC SAND, SILT, CLAY, AND DOLOSTONE (2)	REGIONAL CONFINING UNIT (2)
	OCALA LIMESTONE (3)	LIMESTONE AND DOLOMITIC LIMESTONE (3)	FLORIDAN
	AVON PARK FORMATION	LIMESTONE AND DOLOSTONE	AQUIFER

(1) The Anastasia Formation is present at or near the surface in coastal areas of the county.

Hydrostratigraphic Unit column indicates that, where present, clay layers directly overlying the Hawthorn Group can also be considered (2) The Hawthorn Group forms a confining unit of regional extent, but its presence is limited in Volusia County. The dashed line in the as part of the regional confining unit.

(3) The Ocala Limestone is not present in parts of Volusia County. Where it is absent, the Avon Park Formation forms the top of the Floridan Aquifer System. (Note that the Hawthorn Group is not known to directly overlie the Avon Park Formation anywhere in Volusia County.)

Relation between geologic units, lithology, and hydrostratigraphic units in Volusia County figure 5.



△ Project WM117 data collection site (see Figure 2 for identification)

Figure 6. Geomorphology of Volusia County generalized from White (1970) Features mapped include: A) St. Johns River Offset

- B) Crescent City Ridge C) Deland Ridge D) Eastern Valley
- E) Atlantic Coastal Ridge F) Atlantic Coastal Lagoon
- G) Atlantic Barrier Chain H) Atlantic Beach Ridges (Figure adapted from Mehan and Bond 1988)

drainage. Wyrick (1960) notes that almost all precipitation in the vicinity of the ridges drains downward in sinks or is lost in evapotranspiration.

In western Volusia County, the Crescent City Ridge and the Deland Ridge are considered by Knochenmus and Beard (1971) to be karst ridges. This nomenclature refers to the extensive development of karst features (high local relief, sinkhole lakes and ponds, dry depressions, and subsurface drainage) on the Crescent City and Deland ridges. White (1970) considers the Crescent City and Deland ridges to be relict Atlantic shoreline features which have been altered by karst development.

Most of central and eastern Volusia County are part of the Eastern Valley (Figure 6). The Eastern Valley originated as a regressional or progradational beach ridge plain (White 1970). This designation is based on the occurrence of relict beach ridges throughout much of the Eastern Valley.

GROUND WATER FLOW AND WATER USE

Volusia County is unique in Florida in that all of the fresh water in the Floridan aquifer is derived from rain falling on the recharge areas within the county. The principal recharge area coincides with the karstic Crescent City and Deland ridges (Figure 6). Here the water table elevation is generally much higher than the potentiometric surface of the Floridan aquifer. This causes a downward hydraulic gradient, allowing ground water to move through the surficial sediments, including sand and shell filled sinkholes, to the limestone aquifer. Recharge also occurs as leakage through the interbedded surficial sediments in the Eastern Valley, Atlantic Coastal Ridge, or Atlantic Beach Ridge. There is probably much less recharge in these areas than in the karstic ridge areas because the downward gradient is less (Phelps 1984). A more detailed description of ground water flow in the surficial and Floridan aquifers can be found in Knochenmus and Beard (1971) and Rutledge (1985a).

The surficial aquifer system was the source of less than seven percent of the total amount of ground water used in Volusia County in 1985 (Marella 1986). However, in some areas the quality and quantity of water in the surficial sediments is important for water supply. There are a large number of small diameter, small capacity wells used for lawn irrigation or domestic water supply (Rutledge 1985a). Figure 7 is a water use map of the surficial aquifer system in Volusia County. It was constructed by totalling the number of surficial wells in a two-minute-square quadrangle using the Volusia County Ground Water Data Base (VOLDATA). This map serves as an update of two similar maps by Rutledge (1985a). It shows that most pumpage from the surficial aquifer system is along the east coast in the Atlantic Coastal Ridge and Atlantic Beach Ridge areas.

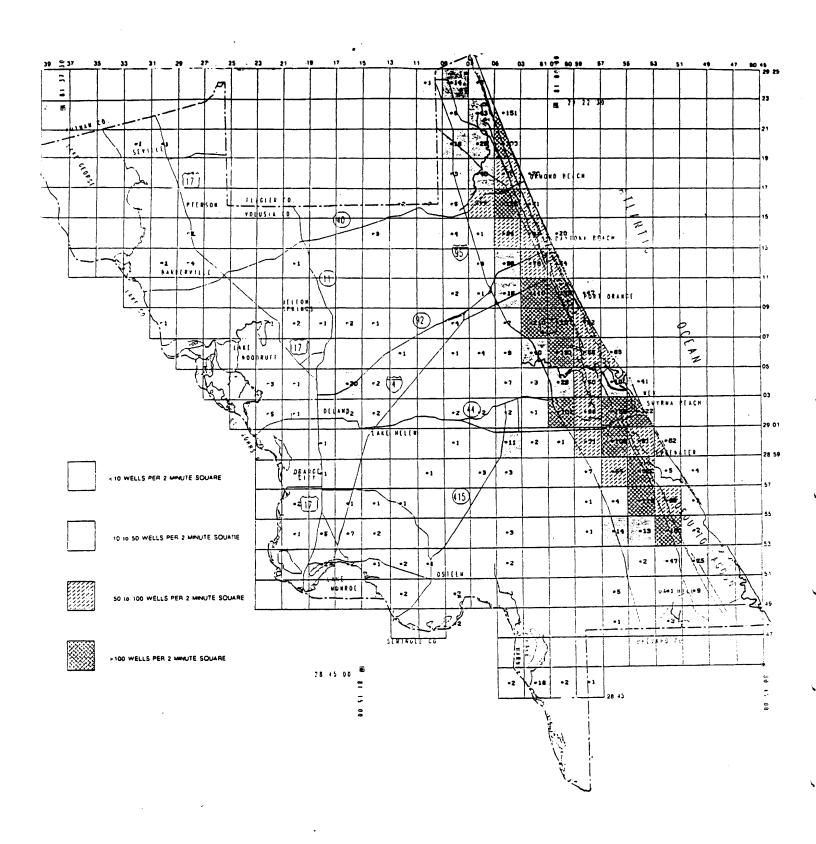


Figure 7. Water use from the surficial aquifer system in Volusia County,
•3 = number of wells completed in the unconfined and secondary
confined aquifer per two-minute square (from Voldata file)

RESULTS

SUMMARY OF CORE DESCRIPTIONS

The original target depth for all core holes was the top of the Eocene age limestone. This was reached at most sites. However, obtaining a core of the limestone was possible at only four sites. This was because the rock was too hard for a core to be driven inside the split spoon sampler.

The Avon Park Formation was identified in a core from Site 18 (FGS well W-16113) on the basis of the occurrence of Dictyoconus cookei. Lithologically, the Avon Park Formation in W-16113 is described as a white to very light grey calcilutite containing 10 percent to 20 percent allochemical constituents. The Ocala Limestone was penetrated in three wells: Site 1 (FGS Well No. W-16100), Site 7 (FGS Well No. W-16105), and Site 13 (FGS Well No. W-16109). The Ocala Limestone in the basal core of W-16100 is described as a very light orange to yellowish grey limestone. It consists of 80 percent allochemical constituents (fossil fragments, mollusks, and pellets). The sediment ranges in size from cryptocrystalline to gravel with a calcareous matrix. The Ocala Limestone in W-16105 (85-92 ft) is described as a yellowish grey to very light orange to very light grey limestone. The percentage of allochemical constituents varies from 80 percent to 60 percent (mainly fossil fragments and benthic foraminifera) in a calcilutite matrix. At the base (85 ft) of W-16109 the Ocala Limestone is a very light grey to moderate light grey calcarenite with 98 percent allochemical constituents.

Only one well drilled in conjunction with the current study penetrated Hawthorn Group sediments. This was at the bottom of the core hole at Site 20 (FGS Well Number W-16115) between 95 and 96 ft. In that interval the lithology is described as a very light grey to yellowish grey dolomite which is well indurated and microcrystalline. It is estimated to contain 15 percent phosphatic gravel and also contains fossil fragments.

The sediments stratigraphically above the Hawthorn Group were completely penetrated by core drilling at 12 project sites. Total thicknesses ranged from 70 ft at Site 1 to greater than 102 ft at Site 14. These sediments were separated on the basis of lithology into two units: a lower unit composed of undifferentiated sand, clay, and shell, and an upper unit composed of undifferentiated sand, clayey or

silty sand, and clay. Table 2 lists the thicknesses of these units for each of the 20 project sites. Table 3 summarizes the characteristics of the two units and identifies the formal geologic units. The upper unit corresponds to the Pleistocene to Recent undifferentiated sand and clay deposits. The lower unit is primarily composed of the late Miocene undifferentiated deposits (Vernon 1951) and the Nashua Formation of Pliocene age (Huddleston 1988). The Anastasia Formation, which was not encountered at any of the project sites, may be considered as part of the lower unit in some coastal areas of the county. The assignment of ages to the upper and lower units should be considered preliminary because fossil age-dating was not conducted on surficial sediment core samples.

The thickness of the lower unit is known at 16 project sites (thickness obtained at four sites from gamma ray logs at adjacent deep wells; see Table 2). The average thickness of the lower unit at the 16 sites is 56 ft and it ranges in thickness from 30 to greater than 86 ft. In most core holes quartz sand is the dominant lithology. Sands range in color from very light grey to dark greenish grey. These sands are generally unconsolidated to poorly indurated. Induration is apparently a function of the presence of a clay and calcilutite matrix. Most sands may be described as angular to subangular with low sphericity. Sand layers are generally fine-grained to medium-grained. Heavy minerals, phosphatic sand, and clay are common accessory minerals and most sand layers contain at least a minor amount of shell.

Proportionately, in most core holes, clay is secondary to sand. Clay layers range in color from light olive grey to greenish black to black. Black clays presumably take their color from finely divided organic matter. Clays are frequently calcareous and contain mollusk fragments. Quartz sand, silt, and organic material are common accessories. Clay layers generally occur interbedded with sand layers. Illite and kaolinite are common clay minerals in the lower interval, while palygorskite and montmorillonite are fairly rare (Appendix G).

Shell beds occur generally mixed with quartz sand which may comprise 10 to 70 percent of a given shell bed. They range in color from greenish grey to very light grey to moderate bluish grey and are usually unconsolidated to poorly indurated. Clay is a common accessory which may cause poor induration in shell beds. In one instance calcilutite apparently causes moderate induration in a sandy shell bed.

The upper unit of the unconsolidated surficial sediments is described as undifferentiated sands and clays because shell is not a primary constituent in these sediments. This interval ranges in thickness from 7 to 60 ft in project cores with an average of 32 ft. Quartz sands predominate in the upper interval and are generally fine-grained with rare coarse-grained intervals ranging in color from pinkish grey to yellowish grey to light olive grey to dark brown. These sands are usually unconsolidated or poorly indurated with a clay matrix. Clay contents up to 35 percent were reported.

Table 2. Thickness of Upper Miocene to Recent sediments: Core Hole sites

<u>Site</u>	<u>Name</u>	Upper Unit* Thickness (ft)	Lower Unit* Thickness (ft)	Total <u>Thickness(ft)</u>
1	Seville Tower	25	45	70
2	Highbridge Road	11	76	87 ^(a)
3	Pierson Airport	60	32	92 (b) (c)
4	Rima Ridge	41	56	97 ^(a)
5	Daytona Beach	20	81	101 ^{(b) (c)}
6	Kirton	46	>40	>87 ^(b)
7	Deleon Springs Tower	37	48	85
8	Tomoka Tower	45 (d)	48	93 (a)
9	Georgia Pacific	46	30	76 ^(a)
10	Vol. Cty. Ag. Center	21	66	87 ^(a)
11	Canal Road	24? ^(e)	78? ^(e)	102
12	Deltona	45	47	92 ^(a)
13	Opossum Camp	7	75	82
14	Apollo St. Park	15	>86	>102 ^(b)
15	Orange City Tower	35	62	97 (a)
16	Lake Ashby Tower	46	36	82 ^{(b) (c)}
17	Oakhill	35	>27	>62 ^(b)
18	Osteen	35	42	77
19	Maytown	47	>30	>77 ^(b)
20	Seminole Ranch	10	85	95

^{*}See text for description of units

⁽a) Reached Eocene Limestone, unable to core rock

⁽b) Coring stopped by caving sand or clay

⁽c) Total thickness determined from gamma ray log at adjacent deep well

⁽d) Determined from lithologic log of adjacent well (FGS Well Number W-183)

⁽e) Thickness determined from gamma ray log of shallow monitoring well (no core description available

Table 3. Generalized description of lithologic units from core samples of the surficial aquifer system in Volusia County

·	Upper <u>Unit</u>	Lower <u>Unit</u>
Stratigraphic Units	Undifferentiated Pleistocene to Recent sediments	Undifferentiated Late Miocene sediments (Vernon 1951); and/or Nashua Formation (Huddleston 1988); may include Anastasia Formation
Lithologic Description	Yellow-gray to dark brown fine-grained quartz sand; unconsolidated or poorly consolidated; clay present as matrix material or as thin beds; sand contains organic material and hardpan layers near surface	Interbedded layers of sand, sand and shell, clay, and clay with shell; mollusk fragments common in clay beds, layers are unconsolidated to moderately indurated
Thickness	7 feet to 60 feet in project core holes	30 feet to >80 feet in project core holes
Areal Extent	Present throughout county except in areas along coast where Anastasia Formation exists at surface	Present throughout county

Characteristically, the sands are angular to sub-angular with low sphericity. Common accessory minerals include heavy minerals and phosphatic sand. Minor organic material is also present as an accessory.

Clay in the upper unit of the unconsolidated surficial sediments frequently occurs as a matrix or cementing agent in poorly indurated sands. It also occurs as thin beds within clayey sand layers. Clay minerals present include illite, kaolinite, palygorskite, and montmorillonite. The clays vary in color from light olive grey to dark greenish grey. They are unconsolidated or poorly indurated.

HYDRAULIC CONDUCTIVITY AND LABORATORY ANALYSIS

Results of permeameter tests for vertical hydraulic conductivity (Kz) and total porosity are listed in Appendix H. Kz values range from 3.8 X 10 $^{-8}$ cm/s to 1.2 X 10 $^{-2}$ cm/s. Most values, however, fall between 1.0 X 10 $^{-6}$ cm/s and 1.0 X 10 $^{-4}$ Horizontal hydraulic conductivity (Kh) values from slug tests conducted at the well sites listed on Table 1 ranged from 1.0 X 10 $^{-5}$ to 4.5 X 10 $^{-3}$ cm/s. Table 4 lists the major lithology represented over the screened interval for each well as estimated from the core descriptions and gamma ray logs (where available). It also lists Kz values of core samples taken from depths corresponding to the screened intervals.

Total porosity values range from 14 to 85 percent. The total porosity of most clay samples is greater than 60 percent. It is usually less than 50 percent in sand samples.

Table 4. Horizontal hydraulic conductivity values (Kh) and vertical hydraulic conductivity values (Kz) for screened intervals at project monitoring wells-

Site	Screened Interval (ft)	Lithology	Kh ^(a) (cm/s)	Depth of Core (ft)	Kz ^(b) (cm/s)
1	20-30	Clay & Clayey Sand with Shell	2.5 X 10 ⁻⁵	22 ' 27 '	N .F . N .F .
2	0-20	Sand & Shell	4.5×10^{-3}	12'	3.4×10^{-3}
3	55-75	Clay?	2.1×10^{-4}	62 '	N.F.
4	45-65	Sand & Shell	2.7×10^{-3}		
5	20-40	Sand & Shell	1.8×10^{-4}		
6	48-58	Sand & Shell	1.1×10^{-3}	52'	1.2×10^{-7}
7 A	60-80 ^{(c})	Shelly, Silty Clay	2.1 X 10 ⁻³	62 ' 67 ' 72 '	7.3 X 10-7 9.7 X 10-6 1.7 X 10-5 1.7 X 10-5
7B 7C	32-42 (d) 62-72 (e)	? Shelly, Silty Clay	5.2 X 10 ⁻⁵ 1.0 X 10 ⁻⁵	77'	1.7 X 10 3
8	16-40	Sand	6.8×10^{-5}		
9	53-73	Interbedded Sand & Shell	3.7×10^{-4}		
11	50-69	?	6.0×10^{-5}		
12	53-73	Interbedded Sand & Shell	1.0 X 10 ⁻⁴	57'	9.6 X 10 ⁻⁸
13	40-50	Sand	1.2 X 10 ⁻⁴	42 ' 42 '	1.3 X 10 ⁻⁴ (f) 3.1 X 10 ⁻⁶ (g)
14	10-30	Sand & Shell	1.9 X 10 ^{-5 (h}	1)	
15	20-30	Clay?	7.8×10^{-5}	22 '	6.5×10^{-5}
18	40-60	Shell & Sand	1.4×10^{-4}	42 ' 47 '	1.1 X 10 ⁻⁶ N.S.
19	57-70	Sand & Shell	6.1×10^{-4}	58 '	6.7×10^{-5}
20	50-60	Clayey Shell	1.7×10^{-3}	52 ' 57 '	N.F. 6.1 X 10 ⁻⁵

⁽a) Horizontal hydraulic conductivity from slug tests(b) Vertical hydraulic conductivity from permeameter tests of core samples from screened interval (N.F. = no flow after 24 hours; N.S. = sample not saturated after 24 hours)

⁽c) SJRWMD well number V-0359 (d) SJRWMD well number V-0360

⁽e) SJRWMD well number V-0372

⁽f) Corehole number 16108(g) Corehole number 16109(h) Poorly developed well

DISCUSSION

RELATION OF HYDRAULIC CONDUCTIVITY TO LITHOLOGY

No. 2 2 1

The results of permeameter testing indicate that the vertical hydraulic conductivity (Kz) of sand and shell is greater than that of finer textured sediments. Of a total of 46 fine-grained (silt, silty clay, calcilutite, mudstone, clay, or sand with clay matrix) samples tested by permeameter, 36 had no flow (NF in Table 4 and Appendix H) or would not become saturated (NS in Table 4 and Appendix H) after 24 hours. Kz values for the 10 successful tests on these core samples range from 9.4 x 10 $^{-8}$ cm/s to 4.7 x 10 $^{-4}$ with a median of 2.8 x 10 $^{-6}$ cm/s. Kz values for sand and shell permeameter samples range from 3.8 x 10 $^{-8}$ cm/s to 1.2 x 10 $^{-2}$ cm/s, with a median of 1.7 x 10 $^{-5}$ cm/s. The latter values are approximately 10 times greater than those for fine-grained samples.

Strom and Stewart (1985) reported a greater difference in permeameter-derived Kz values between coarse-grained and fine-grained samples from cores collected at Sites 10, 178, 179, 180, 181, 182, and 183. The Kz of 15 fine-grained (>25 percent silt or clay) samples ranged from 6.5 x 10 $^{-9}$ cm/s to 3.5 x 10 $^{-5}$, with a median value of 1.4 x 10 $^{-7}$ cm/s. The Kz of 45 coarse-grained (\leq 25 percent silt or clay) samples ranged from 1.2 x 10 $^{-9}$ cm/s to 9.9 x 10 $^{-2}$ cm/s with a median value of 1.7 x 10 $^{-4}$ cm/s. This is more than one thousand times greater than the median value for fine-grained samples.

The greater difference between Kz values for coarse-grained and fine-grained sediment values may be due to different laboratory methodologies between the two studies. Strom and Stewart (1985) performed a grain-size analysis on permeameter samples after Kz measurements were completed. Therefore, a grain-size distribution is available for comparison with each Kz value. The texture and lithology of permeameter samples in this SJRWMD study was described by visual inspection only. Thus, it is possible that some of the samples described as sand in Appendix H could consist of greater than 25 percent silt or clay.

There is no apparent difference in Kz values between the upper sand/clay unit and the lower sand/shell/clay unit. Of a total of 38 permeameter tests run on samples from the upper unit, 14 were on fine-grained (clay, silt, or sand with a clay matrix) samples. Either no flow or no saturation after 24 hours was reported for all 14 samples.

The median Kz value for the remaining 24 sand samples is 1.8 x 10^{-5} cm/s. Permeameter tests run on the 46 sand, shell, or limestone samples collected from the lower unit resulted in a similar median value of 1.1 x 10^{-5} cm/s. Sixteen of the 26 fine-grained (clay, silt, mudstone, or calcilutite) samples from the lower zone had no flow or no saturation reported after 24 hours.

It is more difficult to relate the horizontal hydraulic conductivity (Kh) values to lithology because only 18-in cores were taken from, at best, 5- to 7-ft depth intervals. Complete lithologic descriptions, therefore, do not exist for the screened intervals of the monitoring wells. In addition, some of the wells were screened across more than one lithologic interval, so that the Kh calculated from the slug test data is some function of the hydraulic conductivities of the lithologies in that interval. The median Kh value for those wells screened in clay, shelly silty clay, or clayey shell is 7.8×10^{-5} cm/s. The median Kh for wells screened in sand or sand and shell is 1.8×10^{-4} cm/s, which is only 2.3 times higher than that for the finer grained sediments.

There is not enough slug test data to compare the horizontal hydraulic conductivities in the upper sand/clay unit with those in the lower shell-bearing unit. Only two wells were completed entirely within the upper unit (at Site 8 and at Site 15) and five others were screened in both units (at Sites 1,2,3,7, and 14). Kh values from the two wells in the upper unit are nearly identical (see Table 4) even though one was screened in sand and the other at least partially in clay.

Using data from both units, the ratio Kh/Kz (based on median values) is approximately 10 for sand and shell and is approximately 48 for fine-grained sed ents. This comparison may be misleading, however, because in all study Kh is a large-scale, field-determined parameter and Kz is small-scale, lab-determined parameter. Permeameter-derived Kz values represent the vertical hydraulic conductivity of discrete sedimentary layers whose thickness is measured in inches. Slug-test Kh values represent the horizontal hydraulic conductivities of at least several minor beds summed over 10 to 20 ft.

Regional anisotropy (Kh/Kz) of layered heterogeneous sediments can actually approach 100 or greater (Freeze and Cherry 1979). On a county-wide scale, both the upper sand/clay unit and the lower shell-bearing unit are probably anisotropic. The lower unit is probably more anisotropic (and thus more confining) than the upper unit throughout most of the county due to its more interbedded nature. However, in some areas the upper unit is more anisotropic than the lower unit, because interbeds of sand and clayey sand overlie a zone of permeable sand and shell. See, for example, the log of well W-183 at Site 8 (Appendix E).

NATURE AND EXTENT OF CONFINING LAYERS

The regional confining unit is composed of fine-grained sediments that retard the vertical flow of ground water between the surficial aquifer system and the Floridan aquifer. In Volusia County it is made up of the phosphatic clay, silt, sand, and carbonate beds of the Miocene age Hawthorn Group. Although present only in the northwestern and southeastern portions of the county, it is considered areally extensive and correlatable between wells throughout most of those areas.

Late Miocene (Vernon 1951) or Pliocene (Huddleston 1988) calcareous silty or sandy clay beds can be correlated between well logs in several areas of the county. Several of the gamma ray logs that were examined from the Deland Ridge area (Sites 7, 15, 60, 65, 67, 68, 69, 70, 71, 73, 84, and 86) exhibit traces that suggest a similar vertical sequence of sediments. The top of this sequence consists of a zone with a relatively low gamma signal (usually less than 40 counts per second) of up to 48 ft in thickness. At Site 15, the uppermost low-gamma zone corresponds to approximately 25 ft of fine-grained sand. At Site 7 (monitoring well V-0372) the uppermost low-gamma zone corresponds to approximately 24 ft of very fine-grained to coarse-grained sand. Below this is a layer of relatively high gamma signals varying from 40 to 100 counts per second with thicknesses ranging from 28 to 52 ft. At Site 15 the high-gamma zone corresponds to a layer of clay and clayey shell from approximately 25 ft to approximately 65 ft deep. At Site 7 it corresponds to silty, clayey sand, and shelly sand and clay from 24 ft to approximately 52 ft deep. The vertical sequence described above is present in 10 of the 25 gamma ray logs reviewed from the Deland Ridge area. Therefore, the high gamma/clay layer may be areally persistent over parts of the Deland Ridge, but is not apparent as a single confining unit throughout the area.

A review of lithologic and geophysical well logs from the Eastern Valley and Atlantic Coastal Ridge physiographic regions shows no single, areally persistent confining layer. Zones of low permeability do, however, extend beneath parts of these areas. A layer of poorly sorted, fine-grained calcareous, silty or clayey sand immediately overlying the Eocene age limestone can be recognized in most of the wells between I-95 and the Halifax River from Ormond Beach to Port Orange. This layer ranges from 20 to 60 ft in thickness and is often split by coarser sand/shell layers. A similar fine-grained layer (but without a central sand/shell split) can be recognized directly overlying the Hawthorn Group in wells in the southeastern part of the county (Sites 14, 85, 88, 93, 163, and 183). Gomberg (1980, 1981) documented the presence of a continuous clay layer directly overlying the Floridan aquifer beneath the Atlantic Coastal Ridge in northeastern Volusia County.

EFFECT OF CONFINING LAYERS ON GROUND WATER FLOW

The interbedded nature of the surficial aquifer system sediments suggests that some fine-grained material is likely to exist at depth at most locations throughout Volusia County. The extent to which this material confines or restricts downward or upward ground water flow depends on the thickness and vertical hydraulic conductivity of the individual fine-grained beds. Freeze and Cherry (1979) demonstrate that the equivalent vertical hydraulic conductivity of a layered system can be estimated by the following equation (eqn. 2.31, p.34):

$$Kz = \sum_{i=1}^{\frac{d}{n}} d_i/K_i$$

where:

d = thickness of the entire layered system (L)

d; = thickness of each individual layer (L)

K_i = vertical hydraulic conductivity of each individual
layer (L/T)

n = total number of layers

Kz = equivalent vertical hydraulic conductivity of entire layered system (L/T)

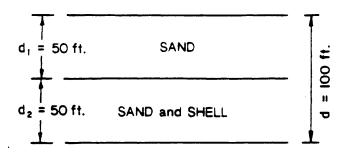
A thin layer of low hydraulic conductivity can reduce the equivalent vertical hydraulic conductivity of a layered system similar to the surficial aquifer system in Volusia County several orders of magnitude. This is shown in Figure 8, which uses the Freeze and Cherry (1979) equation and Kz values typical of those determined in this study. In Figure 8b, a 4-ft thick clay layer reduces the equivalent Kz to nearly one-thousandth of that in 8a. In 8c, the equivalent Kz, also one-thousandth of that in 8a, is controlled by both the thick clayey sand layer and the 4-ft clay layer. The entire surficial aquifer system can thus be considered to be an anisotropic confining layer wherever a significant thickness of fine-grained material exists within it.

Where sand or shell overlies a confining bed, most downward ground water flow will be diverted horizontally through the more permeable zone. This process is important in areas of downward ground water flow gradients, where a pollutant plume may not infiltrate as deeply as it would if a confining layer were not present. The extent to which this occurs depends on the physical nature of a particular pollutant, as well as the magnitude of the ground water pressure gradient.

Equivalent vertical hydraulic conductivity

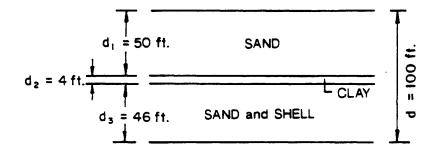
$$(K_z) = \frac{d}{\sum_{i=1}^{n} d_{ij} K_i}$$

Ba. NO CONFINING LAYER



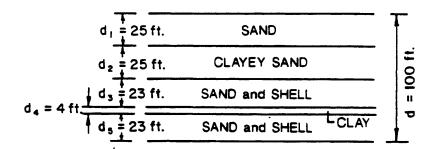
$$K_1 = 10^{-4} \text{ ft./s}$$
 $K_2 = 10^{-5} \text{ ft./s}$
 $K_Z = 1.8 \times 10^{-5} \text{ ft./s}$

8b. ONE THIN CONFINING LAYER



$$K_1 = 10^{-4} \text{ ft./s}$$
 $K_2 = 10^{-9} \text{ ft./s}$
 $K_3 = 10^{-5} \text{ ft./s}$
 $K_Z = 2.5 \times 10^{-8} \text{ ft./s}$

8c. TWO CONFINING LAYERS



 $K_1 = 10^{-4} \text{ ft./s}$ $K_2 = 10^{-6} \text{ ft./s}$ $K_3 = 10^{-5} \text{ ft./s}$ $K_4 = 10^{-9} \text{ ft./s}$ $K_5 = 10^{-5} \text{ ft./s}$ $K_7 = 1.5 \times 10^{-6} \text{ ft./s}$

Figure 8. Effect of low permeability layers on the equivalent vertical hydraulic conductivity of a layered system (Freeze and Cherry 1979)

Confining layers in the surficial aquifer system should not, however, be considered impermeable barriers to the flow of ground water pollutants. Helton and Hill (1987) documented the presence of numerous microfractures in clay cores from the Louisiana coastal plain. Formed diagenetically around shell material imbedded with the clays as well as by structural fracturing, these microfractures can enhance the vertical permeability of the clay beds. Helton and Hill (1987) concluded that seemingly "impermeable" clays can transmit relatively small quantities of water which are still significant in terms of contaminant migration.

CONCLUSIONS

The purpose of this study is to provide specific information concerning the lithologic and hydrostratigraphic nature of the surficial sediments overlying the Floridan aquifer in Volusia County. The total thickness of the post-Eocene age sediments was penetrated in 12 of the core holes throughout the central part of the county. The Hawthorn Group is present in the subsurface only in the northwestern and southeastern portions of the county and ranges in thickness from 6 to greater than 48 ft in the wells examined in Volusia County. Post-Hawthorn surficial sediments, which cover the entire county, range in thickness from 20 ft to 134 ft. The greatest thicknesses occur beneath the Crescent City, Deland, and Atlantic Coastal ridges, and in the southeastern corner of the county.

The surficial aquifer system is in direct contact with the Floridan aquifer throughout most of Volusia County. Confining beds of local extent occur within the surficial aquifer system as clayey sand, sandy clay, clay, or shell-rich clay anywhere from a few feet below the surface to a few feet above the Floridan aquifer. Particular confining beds at or near the base of the surficial aquifer (in the lower sand/clay/shell unit) can be correlated between wells in certain areas of the county, but not across the entire county.

Because of the effect of low-Kz beds on the equivalent vertical hydraulic conductivity of the entire surficial aquifer system, it can be considered as a confining layer (relative to the Floridan aquifer) wherever a significant thickness of fine-grained material exists within it. This fine-grained material can be expected to divert ground water flow horizontally through adjacent, more permeable layers. However, depending upon the local potentiometric gradient, confining layers can transmit small amounts of water which may be significant in terms of contaminant migration. Due to the extreme difficulty in predicting where fine-grained layers may or may not exist at depth, the potential for transfer of pollutants to the Floridan aquifer must be assessed on a site-specific basis. An examination of the depositional environments which produced these sediments may be a useful method for predicting the location of confining layers.

Sediments of the surficial aquifer system have been divided into two layers: an upper unit consisting of sand, clayey sand, and clay and a lower unit of interbedded sand, clay, and shell layers. The median Kh value for clayey sediments is 7.8×10^{-5} cm/s, while the median Kh for coarser sand and shell layers is 1.8×10^{-4} cm/s. Median Kz values for clayey samples and sand or shell samples are, respectively, 1.6×10^{-6} cm/s and 1.7×10^{-5} cm/s. The available

data do not show a significant difference in Kh or Kz values between the upper and lower units. The lower unit may, as a whole, be more anisotropic than the upper unit throughout most of the county due to its more interbedded nature.

A regional confining unit exists in the subsurface of Volusia County only where Hawthorn Group sediments are present. In these areas it consists of the Hawthorn Group plus any clay-rich sediments directly overlying it.

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APPENDIX A

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT SCIENTIFIC DATA BASE:
SUMMARY OF ALL WELLS IN VOLUSIA COUNTY

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ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

SJRWMD SCIENTIFIC DATA BASE - SUMMARY OF WELLS IN VOLUSIA COUNTY

	`·· <u>-</u>		•										
COUNTY	WELL OWNER	WELL	IAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELE\	* ELEV	AQUIFER *	WELL TYPE
COONTT	WELL OWINER	ID	- / .				DEP.		DIA.	LSC			
		15											
VOLUSIA	UNDETERMINED	840058	284036	805853	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
VOCOSTA	SJRWMD		284110			00000000	60	60	2.00	10.00	11.00	SECONDARY	TEST
	CLARK BROWN		284736		1	00203500	0	200	4.00	888.00	6.00	CONFINED	IRRIGATION
	UNDETERMINED	847051	284743	8052 1	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	847100	284753	81 030	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	CHARLEY CLARK	V-0004	284819	805733	1	3019344K	120	143	2.00	888.00	888.00	CONFINED	DOMESTIC
	UNDETERMINED	848107	284821	81 755	1	00000000	0	О	0.00	888.00	888.00	CONFINED	UNDETERMINED
	C H CLARK	V-0473	284822	805735	1	30193400	120	140	2.00	888.00	888.00	CONFINED	DOMESTIC
	UNDETERMINED	848059	284825	81 0 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	KENNETH FOGG	V-0479	284829	805219	1	00193400	0	450	0.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	848111	284832	8112 5	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	vcs33	284839	805735	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	KENNETH FOGG	V-0475	284842	805023	1	00193400	0	300	0.00	0.00	0.00	CONFINED	IRRIGATION
	UNDETERMINED	848111	284846	811114	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	848111	284846	811140	2	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD	V-0369	284853	805812	1	00000000	70	70	2.00	1.00	27.00	SECONDARY	TEST
	UNDETERMINED	848108	284857	81 812	1	000000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	849111	2849 2	811120	1	00000000	0	0	0.00	888.00		CONFINED	UNDETERMINED
	O.E. STACEY GROVES		2849 9			00193400	0	0	0.00	0.00		CONFINED	UNDETERMINED
	O.E. STACEY		284915			00193400	0	108		888.00		CONFINED	IRRIGATION
	SJRWMD		284958			15193244	0	67	4.00	0.00		SECONDARY	TEST
	UNDETERMINED		285011			00000000	0	0				UNDETERMINED	UNDETERMINED
	USGS		285016			1619333H	102	107	4.00	2.70		CONFINED	OBSERVATION ·
	UNDETERMINED		285023			00000000	0	0				UNDETERMINED	
	FP&L		285028			00000000	124	150	4.00	16.00		UNDETERMINED	
	SJRWMD		285031		_	1519322D	25	35	4.00	0.63		UNCONFINED	OBSERVATION
	SJRWMD		285031			1519322D	20	40	2.00	1.30		UNCONFINED	OBSERVATION
	SJRWMD		285031			1519322D	58	255	4.00	1.25		CONFINED	OBSERVATION
	SJRWMD		285032			15193223	57	262	4.00	18.00		CONFINED	TEST
	UNDETERMINED		285032 285037			00000000	0	0				UNDETERMINED	
	UNDETERMINED		285038			00000000	0	0				UNDETERMINED	
	UNDETERMINED		285040			00000000	0	0				UNCONFINED CONFINED	UNDETERMINED
	UNDETERMINED UNDETERMINED		285040			00000000	0	0				UNDETERMINED	UNDETERMINED
	UNDETERMINED					00000000	103					UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED		285045			00000000	0	0				CONFINED	
	UNDETERMINED					00000000	0	0				CONFINED	UNDETERMINED UNDETERMINED
	SJRWMD		285045			00000000	60	60	2.00			SECONDARY	TEST
	UNDETERMINED		285046			00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	o	0				CONFINED	UNDETERMINED
	FBOG		285051			00000000	72	183	4.00			UNDETERMINED	
	TYRE FARM		285052			00000000	99	375	8.00			UNDETERMINED	
	MURRAY'S FRUIT PCKNG						0	104	2.00	0.00		CONFINED	UNDETERMINED
	WESTON					00000000	71	205		25.00		UNDETERMINED	
	UNDETERMINED	83111	2851 3	81.19 8	1	00000000	0	0				CONFINED	UNDETERMINED

*NOTE: 888.0 = UNKNOWN

CONFINED = FLORIDAN AQUIFER SYSTEM

SECONDARY = REGIONAL CONFINING UNIT OR SURFICIAL AQUIFER SYSTEM

UNCONFINED = SURFICIAL AQUIFER SYSTEM

COUNTY	WELL OWNER	WELL	LÀT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
VOLUSIA	UNDETERMINED		2851 5		1	00000000	0	0				CONFINED	UNDETERMINED
	PANDOLF FARMS		2851 5			00000000	88	258	10.00			UNDETERMINED	
	UNDETERMINED	001110	2851 5			000000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED ARTHUR TURNER	V-0007	285111	8119 8		00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		285114		1	1019323A 00000000	90	375				CONFINED	IRRIGATION
	UNDETERMINED		285122			00000000	0	0				UNDETERMINED	
	UNDETERMINED		285126			00000000	0	0				UNDETERMINED	
	ENTERPRISE RD		285126			00000000	62	103				UNDETERMINED	
	UNDETERMINED		285131			00000000	0	0	4.00			UNDETERMINED UNDETERMINED	
	WILL BURBAGE		285136		1		888		888.00	0.00		CONFINED	
	BURBAGE FARMS		285137			12193300	108	221	4.00	0.00		CONFINED	IRRIGATION
	UNDETERMINED		285137		1		0	0				UNDETERMINED	IRRIGATION
	OAK HILL CITRUS GROV					07193500	141	141	4.00	0.00		CONFINED	COMMERCIAL
	ARTHUR TURNER		285138			0319323K	65	342	8.00			CONFINED	IRRIGATION
	STATE OF FLORIDA		285140		1	00000000	85	95	4.00	0.00		SECONDARY	OBSERVATION
	LOOMIS NURSERY		285143			00193400	0	120		888.00		CONFINED	UNDETERMINED
	UNDETERMINED		285143			00000000	o	0				UNDETERMINED	
	GRAY		285146			02193000	22	340	6.00	3.00		CONFINED	UNUSED
	UNDETERMINED		285149		1	00000000	0	0				CONFINED	UNDETERMINED
	C W MCGEE		285152			0519353P	o	120				CONFINED	IRRIGATION
	FORTNER		285153		1		197	243	6.00			UNDETERMINED	
	LOPEZ		285155			05193500	0	0		888.00		CONFINED	DOMESTIC
	UNDETERMINED		285156			00000000	. 0	0				CONFINED	UNDETERMINED
	UNDETERMINED		2852 1			00000000	0	0				UNDETERMINED	
	PANDOLF FARMS		2852 6		1	04193220	67	222		888.00		CONFINED	IRRIGATION
	PANDOLF FARMS		2852 6		2	04193220	64	221		888.00		CONFINED	IRRIGATION
	PANDOLF FARMS	v-0178	2852 6	81 722	3	04193220	65	145	4.00	888.00	24.00	CONFINED	IRRIGATION
	UNDETERMINED	v-0073	285213	811655	1	0219302N	0	0	0.00	2.50		CONFINED	UNUSED
	USGS	V-0102	285221	81 950	2	06193200	74	92	4.00	3.00		CONFINED	OBSERVATION
	UNDETERMINED	852115	285226	8116 6	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	v-0328	285245	812143	1	3118303C	0	0	3.00	0.00	12.00	CONFINED	UNUSED
	DANIEL	v-0378	285248	805035	1	32183500	0	116	0.00	888.00	3.00	CONFINED	DOMESTIC
	UNDETERMINED	852114	285253	811413	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	DELTONA UTILITIES	v-0033	285257	811212	1	00000000	115	258	4.00	888.00	55.00	UNDETERMINED	TEST
	UNDETERMINED	852113	285259	811321	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	TISSOT	V-0241	2853 2	811817	1	00000000	105	135	4.00	40.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	853118	2853 7	811830	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	853121	285325	8121 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	853051	285330	805137	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	853114	285340	8114 8	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	BROWN & COPELAND	V-0415	285341	805324	1	00183400	115	225	4.00	888.00	9.20	CONFINED	IRRIGATION
•	CRAWFORD	V-0416	285346	805450	1	00183400	0	162	4.00	888.00	888.00	UNDETERMINED	IRRIGATION
	DELTONA, CITY	v-0025	285348	8114 8	1	29183114	140	252	10.00	888.00	888.00	CONFINED	PUBLIC
	UNDETERMINED	853053	285349	805318	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	COPELAND BROWN	V-0417	285352	805331	1	00183400	0	175	4.00	888.00	7.00	UNDETERMINED	IRRIGATION

COUNTY	WELL OWNER	WELL ID	LAT	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	EL L S		ELEV M S L	AQUIFER	WELL TYPE
VOLUSIA	UNDETERMINED	853114	285352	811410	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	COPELAND BROWN	v-0418	285357	805335	1	00183400	0	280	4.00	888.	00	8.70	UNDETERMINED	IRRIGATION
	UNDETERMINED	853116	285359	811617	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	854051	2854 3	805143	90	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	VOLUSIA COUNTY	V-0419	2854 3	805143	9	30183500	0	150	0.00	0.	00	10.00	CONFINED	DOMESTIC
	CRAWFORD	v-0420	2854 3	805454	1	00182400	0	106	3.00	888.	00	9.30	UNDETERMINED	IRRIGATION
	UNDETERMINED	854115	2854 6	811523	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	854115	285410	811523	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	N INDIAN HARBOR ESTS	v-0242	285411	805148	1	00000000	179	219	6.00	11.	00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	854115	285412	811540	1	00000000	0	0	0.00	888.	00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	854055	285413	805520	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	854115	285416	811544	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	854104	285418	81 4 8	1	00000000	0	0	0.00	888.	00	888.00	CONFINED	UNDETERMINED
	SJRWMD	v-0198	285419	81 410	1	3018331A	88	122	4.00	0.	55	29.59	CONFINED	OBSERVATION
	SJRWMD	v-0199	285419	81 410	2	3018331A	86	86	2.00	0.	10	29.40	UNCONFINED	OBSERVATION
	SJRWMD	v-0367	285419	81 410	3	000000000	888	80	888.00	888.	00	27.00	SECONDARY	TEST
	UNDETERMINED	854115	285419	811539	1	000000000	0	0	0.00	8 88 .	00	888.00	UNDETERMINED	UNDETERMINED .
	GEORGE BECK		285420		1	00183400	0	0		888.			UNDETERMINED	
	UNDETERMINED		285422		1		0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	GEORGE BECK		285425		1	00183400	0	109	3.00	888.	00	13.10	UNDETERMINED	IRRIGATION
	GEORGE BECK		285430		1		0	0		888.		10.50	UNDETERMINED	IRRIGATION
	HIGHLANDS ESTATES		285438		1		81	201	8.00	35 .			UNDETERMINED	UNDETERMINED
	SJRWMD		285442			000000000	888					888.00	SECONDARY	TEST
	SJRWMD		285442		1		95	230		888.			CONFINED	OBSERVATION
	SJRWMD		285442			2218304B	20	30		888.			UNCONFINED	OBSERVATION
	L ASHBY FARMS #3WELL				1		80	300					CONFINED	IRRIGATION
	UNDETERMINED		285447		1		0	0					UNDETERMINED	
	ELIZA CLINTON		285450			00183400	0	0		888.			UNDETERMINED	
	UNDETERMINED		285452		1		0	0					CONFINED	UNDETERMINED
	ELIZA CLINTON		285458			00183400	0	0		888.			CONFINED	UNDETERMINED
	JONES FISH CAMP		2855 2			00183500	0	126		888.			CONFINED	DOMESTIC
	HARVEY JONES DELTONA CORP		2855 2			00183500	0	0		888.			CONFINED	UNDETERMINED
			2855 2 2855 3			21183100 00183500	0	0					UNDETERMINED	
	HARVEY JONES UNDETERMINED		2855 3			00000000	0	0		888.			CONFINED	UNDETERMINED
	TOM STEWART		285512				_	_		888 .			UNDETERMINED	
	USGS		285512			00183400 17183000	0 106	100 200	4.00				UNDETERMINED	
	UNDETERMINED		285512			00000000	0	200					CONFINED UNDETERMINED	OBSERVATION
	UNDETERMINED		285523			00000000	0	0					UNDETERMINED	
	UNDETERMINED		285525			00000000	0	0					CONFINED	UNDETERMINED
	DELTONA GOLF & C C		285525			00000000	104	220	8.00				CONFINED	IRRIGATION
	UNDETERMINED		285525			00000000	0	0					UNDETERMINED	
	DELTONA GOLF CLUB		285530			00000000	888	164	0.00		00		CONFINED	UNUSED
	SJRWMD		285535			16183500	0	96		888.			UNDETERMINED	
	DELTONA DEVELOPMENT		285537			00000000	87	210	10.00				UNDETERMINED	
•	LANDRETH					1018324P	0	0		888.			CONFINED	IRRIGATION
				•.•	•									

COUNTY	WELL OWNER	WELL	LÄT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
VOLUSIA	GOLDFREY FISH CAMP	V-0430	285612	8052.7	1	00183500	0	0	2 00	888.00	/ nn	UNDETERMINED	UNDETERMINED
	HAMBSCH		285625			00183400	0	115		888.00		UNDETERMINED	
	UNDETERMINED		285631			00000000	o	0				UNDETERMINED	
	UNDETERMINED		285634			00000000	0	0				UNDETERMINED	
	ORANGE CITY		285635			00000000	83	172	4.00	49.00		UNDETERMINED	
	ORANGE CITY		285635			00000000	59	99	4.00	45.00		UNDETERMINED	
	DELTONA UTILITIES		285636			00000000	169	253	10.00	60.00		UNDETERMINED	
	CITY OF DELTONA		285636			00000000	165	246	10.00	60.00		UNDETERMINED	
	UNDETERMINED		285636			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		285636			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		285637			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		285638			00000000	0	0					UNDETERMINED
	USGS		285638			08133000		432	6.00	0.00			
	DELTA AAA HIGH SCHOO					08183100	84 96					CONFINED	TEST
			285641			00000000		219		888.00		CONFINED	PUBLIC
	UNDETERMINED					00000000	0	0					UNDETERMINED
	UNDETERMINED	856117						0				UNDETERMINED	•
	STATE OF FLORIDA		285641			000000000	87 404	0 344	4.00	50.00		UNDETERMINED	
	DELAND C C		285641			00000000	106		10.00	70.00		UNDETERMINED	
	UNDETERMINED		285643			00000000	0	0				UNCONFINED	UNDETERMINED
	UNDETERMINED		285643			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		285643			00000000	0	0				CONFINED	UNDETERMINED
	A. RICH		285645			12183400	0	125		888.00		CONFINED	DESTROYED
	VOL CO SCHOOL BOARD		285645			00000000	164	272	6.00	0.00			UNDETERMINED
	G RICH		285647			00183400	0	145		888.00		CONFINED	UNDETERMINED
	BELMONT HOMES		285649			00000000	134	148	2.00	22.00		UNDETERMINED	
	BELMONT HOMES		285649			00000000	43	43	4.00	22.00		UNDETERMINED	
	SJRWMD		285653			11183300	50	50		888.00		SECONDARY	TEST
	USGS		285655			0118303K	152	171	4.00	5.00		CONFINED	OBSERVATION
	USGS		285655			0118303K	21	32	4.00	3.00		UNCONFINED	OBSERVATION
	USGS		285655			0118303K	60	70	4.00	3.00		CONFINED	OBSERVATION
	SJRWMD		285656			01183100	73	73	2.00	1.00		SECONDARY	TEST
	USGS		2857 0			04183300	90	261	3.00	5.00		CONFINED	TEST
	UNDETERMINED		2857 4			00000000	0	0				UNDETERMINED	
	USGS		2857 5			0218323L	113	121	6.00	3.10		CONFINED	OBSERVATION
	JIM JONES		2857 7			03183400	0	30				UNCONFINED	IRRIGATION
	GEORGE BECK		285710			00183400	0	0				UNDETERMINED	
	UNDETERMINED		285715			00000000	0	0				UNDETERMINED	
	UNDETERMINED		285716			00000000	0	0				CONFINED	UNDETERMINED
	GEORGE BECK		285728			00183400	0	0				CONFINED	IRRIGATION
	UNDETERMINED		285742			00000000	0	0				UNDETERMINED	
	DOT		285745			18321100	113	121	6.00			CONFINED	OBSERVATION
	DAVIS		285756			02183010	137	223				CONFINED	IRRIGATION
	T G LEE		2858 5			00000000	141	279		70.00		UNDETERMINED	
	UNDETERMINED	858113	285811	8113 9	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED		285825			00000000	0	0				UNDETERMINED	
	UNDETERMINED	V-0435	285833	805717	1	06183400	0	0	10.00	888.00	29.60	CONFINED	UNDETERMINED

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
000		ID					DEP.	DEP.	DIA.	LSD	MSL		
	·												
VOLUSIA	UNDETERMINED	858104	285834	81 443	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
, , , , , , , , , , , , , , , , , , , ,	UNDETERMINED	858113	285840	811356	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	858112	285843	811251	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	EDGEWATER	v-0436	285846	805632	1	00173400	90	200	8.00	0.00	8.00	CONFINED	PUBLIC
	EDGEWATER	V-0437	285850	805622	1	00173400	90	200	8.00	0.00	8.00	CONFINED	PUBLIC
	EDGEWATER	v-0438	285852	805614	1	00173400	0	180	0.00	888.00	10.00	CONFINED	PUBLIC
	EDGEWATER	v-0439	285858	805557	1	00173400	0	180	0.00	888.00	10.00	CONFINED	PUBLIC
	UNDETERMINED	858119	285859	811910	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859055	2859 2	805511	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	DELAND C C	v-0253	2859 3	811747	1	00000000	210	372	6.00	35.00	0.00	UNDETERMINED	UNDETERMINED
	EDGEWATER, CITY OF	v-0399	2859 4	805546	1	31173400	0	158	8.00	888.00	10.00	CONFINED	PUBLIC
	UNDETERMINED	859115	2859 4	811526	2	00000000	0	0	0.00	888.00	888.00	UNCONFINED	UNDETERMINED
	UNDETERMINED	v-0460	2859 4	811526	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	859115	2859 4	811529	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859117	2859 4	811711	3	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859115	2859 6	811520	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859115	2859 6	811520	2	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	EDGEWATER, CITY OF	V-0056	2859 7	805535	1	3217342M	0	0	0.00	888.00	888.00	CONFINED	PUBLIC
	MARVIN OWENS	v-0006	285912	805443	1	3217342M	0	30	0.00	888.00	888.00	UNCONFINED	IRRIGATION
	SHEPARD	V-0398	285915	805638	1	00173400	0	110	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	N SMYR	285915	805747	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED.
	UNDETERMINED	859052	285916	8052 3	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859120	285920	812118	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	MORSE LILIAN	V-0400	285921	805410	1	00173400	0	0	0.00	1.50	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	859120	285923	812116	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	USGS	V-0110	285934	81 418	1	2617323D	105	442	3.00	0.50	35.50	CONFINED	TEST
	USGS	V-0111	285934	81 418	2	2617323D	0	105	4.00	3.00	38.00	CONFINED	TEST
	HOUGHOUT	V-0401	285938	805421	1	00173400	0	360	0.00	888.00	888.00	UNDETERMINED	IRRIGATION
	UNDETERMINED	859057	285940	805756	1	00000000	0	0	0.00	888.00		UNDETERMINED	-
	CADILLAC AGENCY	v-0255	285943	81181	0	00000000	80	150	4.00	45.00	0.00	UNDETERMINED	UNDETERMINED
	NEW SMYRNA BCH.	v-0402	285945	8058 0	1	26173300	0	183	0.00	1.50	888.00	UNDETERMINED	PUBLIC
	NEW SMYRNA B		285945		2	26173300	40	117	0.00	3.00	103.50	UNDETERMINED	OBSERVATION
	CITY OF NEW SMYRNA B					00000000	111	190	4.00			UNDETERMINED	
	NEW SMYRNA BCH		285949			26173300	60					UNDETERMINED	
	NEW SMYRNA BCH		285949			26173300	0		0.00			UNDETERMINED	
	NEW SMYRNA BEACH					00000000	0					CONFINED	PUBLIC
	UNDETERMINED			805747		00000000	0					UNDETERMINED	
	UNDETERMINED		285950			00000000	0					UNDETERMINED	
	NEW SMYRNA BEACH		285950			26173300	0		4.00			CONFINED	OBSERVATION
	CITY OF NEW SMYRNA		285951			26173300	78					CONFINED	PUBLIC
	NEW SMYRNA BEACH		285951			26173300	0		6.00			CONFINED	PUBLIC
	NEW SMYRNA BEACH		285951			26173300	0		12.00			CONFINED	PUBLIC
	NEW SMYRNA BEACH		285952			26173300	0		6.00			CONFINED	UNDETERMINED
	NEW SMYRNA BCH			-		00000000	0					CONFINED	UNDETERMINED
	NEW SMYRNA BCH, CITY					2617332K	112					CONFINED	PUBLIC
	NEW SMYRNA BEACH	v-0412	285954	めいころろ	1	26173300	0	237	0.00	0.00	24.95	CONFINED	PUBLIC

COUNTY	WELL OWNER	WELL ID	LAT	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	ELEV L S D		AQUIFER	WELL TYPE
VOLUSIA	UNDETERMINED		285954		1	26173300	0	210	4.00			CONFINED	UNDETERMINED
	UNDETERMINED	V-0414	29 0 1	805634	1	44173400	0	0	4.00	888.00	888.00	CONFINED	IRRIGATION
	LONNIE K CLIFTON		29 0 1			2417293I	84	90	2.00	0.00		CONFINED	UNDETERMINED
	UNDETERMINED		29 0 6			000000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	BLANKEN		29 010			51173400	100	143				UNDETERMINED	
	SORRELL		29 023			09173400	0	103				UNDETERMINED	
	COWLES		29 024			00000000	103	107	2.00	0.00		UNDETERMINED	
	P ALLISON		29 025			00173400	93	123				UNDETERMINED	
	UNDETERMINED		29 026			00000000	0	0				UNDETERMINED	
	UNDETERMINED		29 027			000000000	0	0				UNDETERMINED	
	UNDETERMINED		29 029			000000000 1/4720/P	0	0				UNDETERMINED	
	UNDETERMINED		29 030			1417294B	0	0	4.00	0.00		CONFINED	UNUSED
	UNDETERMINED		29 033			00000000	0	0				UNDETERMINED	
	SJRWMD		29 034				16	25				UNCONFINED	OBSERVATION
	SJRWMD		29 034			00000000	130	160		34.00		CONFINED	DESTROYED
	CITY OF NEW SMYRNA B					000000000	107	241	4.00			UNDETERMINED	
	CITY OF NEW SMYRNA B		29 038			00000000 22173200	110 106	215 220	8.00 4.00	34.00 0.00		UNDETERMINED	TEST
	NEW SMYRNA BEACH CITY OF NEW SMYRNA B					00000000	107	221	4.00	41.00		UNDETERMINED	
	UNDETERMINED		29 039			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		29 039			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		29 040			00000000	o	o				UNDETERMINED	
	MRS. E E ROGERS		29 044			43173300	100	135				UNDETERMINED	
	B JONES		29 045			43173300	82	125		888.00		CONFINED	DOMESTIC
	T WALKER		29 046			43173300	84	108		888.00		CONFINED	DEWATERING
	RAY WEIR		29 046			15172940	115	124	2.00	0.60		CONFINED	UNDETERMINED
	UNDETERMINED		29 047			22173300	107	130		888.00		CONFINED	PUBL IC
	UNDETERMINED		29 047			00000000	0	0				UNDETERMINED	UNDETERMINED
	STATE OF FLORIDA		29 048			22173323	90	100	4.00	0.00	0.00	SECONDARY	OBSERVATION
	NEW SMYRNA	v-0382	29 056	805555	1	19173400	0	100	4.00	888.00	9.00	CONFINED	TEST
	UNDETERMINED	900121	29 056	8121 8	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UN	V-0514	29 058	812144	1	14172900	66	204	4.00	888.00	10.00	CONFINED	IRRIGATION
	STATE OF FLORIDA	v-0505	29 1 0	811322	1	17173131	72	82	4.00	0.00	0.00	SECONDARY	OBSERVATION
	NEW SMYRNA BEACH	V-0164	29 1 2	805642	1	24173300	888	220	4.00	1.70	7.70	CONFINED	TEST
	SJRWMD	v-0508	29 1 3	805519	2	20173400	170	210	3.00	8.00	9.58	CONFINED	OBSERVATION
	CITY OF NEW SMYRNA B	v-0508	29 1 3	805519	1	2017341D	130	998	12.00	0.00	8.00	CONFINED	INDUSTRIAL
	NEW SMYRNA	v-0383	29 1 6	805525	1	41173400	134	992	12.00	888.00	9.00	CONFINED	UNDETERMINED
	SJRWMD	v-0363	29 1 6	81 417	1	14173200	69	69	2.00	888.00	31.00	SECONDARY	TEST
	UNDETERMINED	901113	29 1 6	811321	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	901113	29 1 6	811321	2	00000000	0	. 0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	V-0461	29 1 6	811321	3	00000000	0	0	0.00	888.00	888.00	UNCONFINED	UNDETERMINED
	USGS	v-0106	29 1 7	81 620	1	1617323G	105	111	4.00	3.00	43.42	CONFINED	OBSERVATION
	USGS	v-0109	29 1 7	81 620	2	1617323G	21	21	4.00	3.00	43.33	UNCONFINED	OBSERVATION
	USGS	V-0160	29 1 7	81 620	3	16173200	273	282	4.00	3.00	43.42	CONFINED	OBSERVATION
	CHRISTINE WILSON	v-0384	29 1 8	805759	1	00000000	0	0	2.00	888.00	10.00	CONFINED	DOMESTIC
	UNDETERMINED	901117	29 113	811732	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED

COUNTY	WELL OWNER	WELL	L A	LON		SSTTRRQQ	CASE		WELL	ELEV		AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
VOLUSIA	UNDETERMINED	901122	29 114	812236	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
VOLUSTA	D SCOFIELD			805823		14173300	100	160		888.00		CONFINED	DOMESTIC
	GLENCOE VET HOSPITAL					14173300	0	120		888.00		CONFINED	UNDETERMINED
	CITY OF DELAND			811858		1717301N	185	401	16.00	0.00		CONFINED	UNDETERMINED
	UNDETERMINED			805752		00000000	0	0				UNDETERMINED	
	NEW SMYRNA BEACH			805511		41173400	0	100		888.00		CONFINED	IRRIGATION
	NEW SMYRNA BEACH			805511		41173400	0	100		888.00		CONFINED	IRRIGATION
	USGS			81 729	1	17173231	97	241	3.00.	1.00	43.13	CONFINED	TEST
	RAYMOND RHEIL	v-0389	29 130	805752	1	23173300	0	180	4.00	0.00	8.00	CONFINED	IRRIGATION
	UNDETERMINED	v-0462	29 13	811126	1	00000000	0	0	0.00	0.00	0.00	UNCONFINED	UNDETERMINED
	UNDETERMINED	901055	29 13	805542	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	VOLUSIA COUNTY	V-0182	29 13	805727	1	13173300	0	0	2.00	1.00	5.00	CONFINED	UNUSED
	USGS	V-0114	29 138	812032	1	1317292F	50	64	3.00	50.00	888.00	SECONDARY	OBSERVATION
	USGS	V-0115	29 138	812032	2	1317292F	252	500	4.00	3.00	44.83	CONFINED	OBSERVATION
	UNDETERMINED	901117	29 139	811824	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	K.W. MUSSON	v-0390	29 14	8054 5	1	16173400	90	130	2.00	888.00	4.00	CONFINED	UNDETERMINED
	USGS	V-0116	29 14	811059	1	1517311E	84	91	4.00	3.74	43.74	CONFINED	OBSERVATION
	UNDETERMINED	901053	29 14	805347	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	JOHN FERRELL	V-0201	29 14	805728	1	1417334G	0	0	6.00	1.00	6.00	CONFINED	UNUSED
	CITY OF NEW SMYRNA B	v-0262	29 15	8055 3	1	00000000	742	906	6.00	3.00		UNDETERMINED	UNDETERMINED
	JOHN CLISOM			805534		41173400	110	115				CONFINED	IRRIGATION
	UNDETERMINED			8056 3		00000000	0	0				UNDETERMINED	
	DELAND, CIT WATWKS			811834		0817304H	. 0	275				CONFINED	PUBLIC
	UNDETERMINED			811835		00000000	0	0				UNDETERMINED	
	UNDETERMINED			811927		00000000	0	0				UNDETERMINED	
	PAUL MILLER			7 8059 4		15173300	0	112				UNDETERMINED	
	UNDETERMINED			7 811927		00000000	0	0				CONFINED	UNDETERMINED
	NEW SMYRNA BCH GOLF			805636		38173300	0	101		888.00		CONFINED	IRRIGATION
	UNDETERMINED			8 811724 4 81 051		00000000	0	0				UNDETERMINED CONFINED	
	UNDETERMINED UNDETERMINED			811536		00000000	0	0				UNDETERMINED	UNDETERMINED
	UNDETERMINED			9 8119 6		00000000	0	0				UNDETERMINED	
	UNDETERMINED			1 812133		00000000	0	0				UNDETERMINED	
	USGS			5 81 4 3		1117324M	97	241	3.00			CONFINED	TEST
	WILLIAM D LENZ			5 805947		09173300	0	120				CONFINED	DOMESTIC
	NORDMAN BILL					07173000	888					CONFINED	IRRIGATION
	UNDETERMINED					00000000	0	_				CONFINED	UNDETERMINED
	USGS					0817312F	72		3.00			CONFINED	TEST
	F. WILLIAMS					11173300	0					CONFINED	DOMESTIC
	W VOLUSIA HOSPITAL					00000000	90			75.00		UNDETERMINED	
	MALLONEE G					12173300	0	95	0.00	2.00		UNDETERMINED	
	USGS	v-0119	29 25	1 81 014	1	0917331E	315		4.00			CONFINED	OBSERVATION
	SUGAR MILL GOLF COUR	V-0264	29 25	2 8059 1	1	00000000	102	242	12.00	22.00	0.00	UNDETERMINED	UNDETERMINED
	SUGAR MILL GOLF COUR	V-0265	29 3	8 8059 1	1	00000000	104	161	12.00	21.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	903118	29 3	8 811823	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	903054	29 31	0 805421	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED

COUNTY	WELL OWNER	WELL	L	АТ	LON		SSTTRRQQ	CASE	WELL	WELL	ELE	/ ELEV	AQUIFER	WELL TYPE
		ID						DEP.	DEP.	DIA.	LSI	MSL		
VOLUSIA	SUGAR MILL GOLF COUR	V-0266	20	711	8050 2	1	00000000	87	183	10.00	21.0		UNDETERMINED	UNDETERMINED
102001A	DELTONA TRANSFORMER						00000000	140	337	6.00	76.00		UNDETERMINED	
	HENDRICKS GOLDIE	V-0397					LG173300	0	110				UNDETERMINED	
	L. WOODRUFF WILDLIFE						47162900	0	0	3.00	1.50		CONFINED	DESTROYED
	N SMY BCH AIRPORT	V-0294					00000000	0	600		888.00		CONFINED	UNDETERMINED
	UNDETERMINED	903117					00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED	903103					00000000	0	0				CONFINED	UNDETERMINED
	TALTON	V-0300				1	173300	0	0				UNDETERMINED	
	UNDETERMINED	903121				1	00000000	0	0				CONFINED	UNDETERMINED
	P. SMITH	V-0341					39163300	0	120	2.00	0.0		UNDETERMINED	
	BRADDOCK	V-0268	29	354	811957	1	00000000	104	191	4.00	82.00		UNDETERMINED	
	CAMP	v-0269	29	354	812138	1	00000000	115	245	8.00	60.00		UNDETERMINED	
	UNDETERMINED	904118	29	413	811822	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	V-0463	29	414	811056	1	00000000	0	0	0.00	0.00	0.00	UNCONFINED	UNDETERMINED
	NORDMAN	V-0344	29	420	8057 5	1	36163300	100	145	4.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	USGS	V-0031	29	432	811449	2	2516314J	0	310	0.00	888.00	888.00	CONFINED	OBSERVATION
	USGS	v-0029	29	432	811449	4	2516314J	4	7	0.00	888.00	888.00	UNCONFINED	OBSERVATION .
	USGS	V-0030	29	432	811449	1	2516314J	0	84	0.00	888.00	888.00	CONFINED	OBSERVATION
	UNDETERMINED	V-0464	29	432	811449	3	00000000	. 0	0	0.00	888.00	888:00	UNCONFINED	UNDETERMINED
	CIRCLE-ELEVEN MOBILE	v-0270	29	441	811829	1	00000000	110	269	4.00	94.00	0.00	UNDETERMINED	UNDETERMINED
	USGS	v-0120	29	447	811023	1	2616313F	92	241	3.00	3.20	46.18	CONFINED	OBSERVATION
	USGS	V-0121	29	447	811023	5	2616313B	18	20	4.00	1.80	41.80	UNCONFINED	OBSERVATION
	USGS	V-0123	29	456	81 444	1	2716324F	90	261	3.00	9.5	36.54	CONFINED	TEST
	A B CHRISTIE	v-0345	29	457	8058 1	1	163300	0	195	4.00	888.00	888.00	UNDETERMINED	IRRIGATION
	B WILLIAMSON	v-0351	29	5 1	805555	1	30163400	99	100	2.00	888.00	888.00	UNDETERMINED	IRRIGATION
	HUDSON PULP & PAPER	v-0013	29	5 2	811418	1	3016311G	73	84	2.00	0.50	43.15	CONFINED	DOMESTIC
	VINCE PAULK	V-0441	29	5 5	8121 5	1	40162900	0	0	0.00	0.00	0.00	CONFINED	IRRIGATION
	UNDETERMINED	905055					00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	BOOKER	v-0271					00000000	107	261	8.00	75.00		UNDETERMINED	
	SJRWMD	v-0156					43162900	85	265	4.00	1.0		CONFINED	TEST -
	SJRWMD	V-0157				_	43162900	85	115	2.00	0.89		CONFINED	TEST
	UNDETERMINED	905121					00000000	0	0				UNDETERMINED	
	UNDETERMINED	V-0498					2516322M	0	0	3.00	0.00		CONFINED	UNUSED
	BOOKER	V-0186					44162900	94	333		888.00		CONFINED	UNUSED
	BOOKER #2				812147		000000000	94	333		46.00		UNDETERMINED	-
	UNDETERMINED						00000000	0					UNDETERMINED	
	UNDETERMINED						00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED						00000000	0	0					
	UNDETERMINED						00000000	0	0				UNDETERMINED	
	UNDETERMINED						00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED						00000000	0	0				UNDETERMINED	
	UNDETERMINED						00000000		0				UNDETERMINED	
	UNDETERMINED						00000000	0	0				UNDETERMINED	
	UNDETERMINED		_	_			38163000	85	114				CONFINED	OBSERVATION
•	USGS USGS						38163000		259				CONFINED	OBSERVATION
	0303	4 -0020	_,	JJ4	311170	-	30.03000	>	,	→.55	٠٠. د			

COUNTY	WELL OWNER	WELL	L	A T	LON		SSTTRRQQ	CASE	WELL	WELL	ELE	V E	LEV	AQUIFER	WELL TYPE
		ID		•				DEP.	DEP.	DIA.	LS	D M	SL		
		V-0036	20	57/	811750	7	38163000	0	11	0.00	3.0	n 66	02	UNCONF INED	TEST
VOLUSIA	USGS UNDETERMINED	905121					00000000	0	0					UNDETERMINED	
		V-0273					00000000	153	287		100.0			UNDETERMINED	
	LOADHOLTZ	905120					00000000	0	20,					UNDETERMINED	
	UNDETERMINED	V-0051					00162900	0	0					CONFINED	IRRIGATION
	C FLORAL GREENS LOADHOLTZ	V-0274					00000000	114	401	8.00				UNDETERMINED	
	UNDETERMINED	905121					00000000	0	0					UNDETERMINED	
	CONTINENTAL FLOR GRN						43162900	187	187		888.0			CONFINED	IRRIGATION
	UNDETERMINED	905113					00000000	0	0					CONFINED	UNDETERMINED
	USGS	V-0012					2016311c		1200	4.00	3.2			CONFINED	TEST
	USGS	V-0100					2016311C		1290	1.25	3.2			CONFINED	OBSERVATION
	USGS				811329		2016311C	94	575	6.00	3.2			CONFINED	OBSERVATION
	UNDETERMINED				812139		00000000	o	0					UNDETERMINED	
	UNDETERMINED				812057		00000000	ō	0					UNDETERMINED	
	CONTINENTAL FLORAL G						00000000	121	446	8.00				UNDETERMINED	
	UNDETERMINED				8121 2		00000000	0	0					UNDETERMINED	
	PONCE INLET, CITY OF						1916333F	60	84			-		CONFINED	PUBLIC .
	UNDETERMINED				81 222		00000000	0	0					UNDETERMINED	
	UNDETERMINED				811626		00000000	0	0					CONFINED	UNDETERMINED
	UNDETERMINED	905118					00000000	0	0					CONFINED	UNDETERMINED
	UNDETERMINED	905116	29	552	811610		00000000	0	0	0.00	888.0	0 888	.00	CONFINED	UNDETERMINED
	LAWRENCE JIM				8116 6		2316301P	888	888					CONFINED	IRRIGATION
	DUVAL HOME RETARD CH						00000000	146	307	6.00	71.0			UNDETERMINED	
	UNDETERMINED				812035		00000000	0	0					UNDETERMINED	
	UNDETERMINED	905121					00000000	. 0	0					UNDETERMINED	
	UNDETERMINED	905121	29	557	8121 2	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	DUDBELL				812152	1	00000000	53	221	8.00				UNDETERMINED	
	DOM CSEINOSA	v-0493	29	6 6	805819	1	40163300	96	125	0.00	888.0	0 888	.00	CONFINED	COMMERCIAL
	CANTRELL CHARLIE	V-0151	29	66	811916	1	17163030	888	888	888.00	888.0	0 888	.00	CONFINED	IRRIGATION
	HAGSTROMS DIESEL	v-0050	29	612	812141	1	00162900	0	0	0.00	888.0	0 888	.00	CONFINED	IRRIGATION
	UNDETERMINED	906121	29	613	812130	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	906056	29	621	805643	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	906122	29	622	812215	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	906100	29	625	81 0 3	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	HARPSES	V-0049	29	625	812018	1	39163000	0	0	0.00	888.0	0 888	.00	CONFINED	IRRIGATION
	DICK FORNELL	V-0492	29	626	81 137	1	17163300	0	0	4.00	888.0	0 28	.00	CONFINED	UNDETERMINED
	BENNETT DARWIN	v-0139	29	627	812124	1	43162900	888	888	888.00	888.0	0 888	.00	CONFINED	IRRIGATION
	UNDETERMINED	906121	29	629	812140	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	VOLUSIA COUNTY	V-0278	29	635	81 1 2	1	00000000	104	128	8.00	33.0	0 0	.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	906120	29	635	812021	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	RICHARDSON	v-0039	29	635	812025	1	00163000	0	0	0.00	888.0	0 888	.00	CONFINED	IRRIGATION
	UNDETERMINED	906120	29	635	812027	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	906121	29	642	812140	1	00000000	0	0	0.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED
	WARD	v-0279	29	646	812137	1	00000000	92	353	8.00	75.0	0 888	.00	UNDETERMINED	UNDETERMINED
	HARBOUR OAKS IMP	v-0085	29	651	805828	2	14163300	104	146	4.00	6.0	8 9	. 80	CONFINED	UNDETERMINED
	HARBOUR OAKS	v-0355	29	651	805828	3	14163300	98	148	4.00	888.0	0 888	.00	UNDETERMINED	UNDETERMINED

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
V01.110.1.4						.=							
VOLUSIA	SJRWMD			811329		17163100	73	73	2.00			SECONDARY	TEST
	USGS		29 653			00000000	45	48				UNCONFINED	OBSERVATION
	UNDETERMINED			811112		000000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED			811112		00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED UNDETERMINED		29 656	811112		00000000	0	0				UNCONFINED	UNDETERMINED
	MARINA ROGERS		29 658			00000000 14163300	0	126				UNDETERMINED	
	UNDETERMINED		29 658			00000000	0	0				UNDETERMINED UNDETERMINED	
	UNDETERMINED			811550		00000000	0	0	•			UNDETERMINED	
	UNDETERMINED		29 7 3			00000000	0	0	_			UNDETERMINED	
	HAGSTROM			811553		1116304L	0	0				CONFINED	IRRIGATION
	UNDETERMINED		29 7 5			00000000	0	0				UNDETERMINED	
	UNDETERMINED		29 7 7			00000000	0	0				CONFINED	UNDETERMINED
	USGS		29 7 8			45162900	100	165	4.00			UNDETERMINED	
	FEDERAL		29 7 8			00000000	96	156	4.00	6.00		UNDETERMINED	
	UNDETERMINED			812030		00000000	0	0				UNDETERMINED	
	UNDETERMINED		29 712			00000000	0	0				UNDETERMINED	
	UNDETERMINED		29 718		1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	907121	29 718	812120	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	907121	29 723	8121 6	1	000000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	907057	29 731	805720	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	J T ELUM	V-0489	29 734	805718	1	12163300	112	117	2.00	888.00	888.00	UNDETERMINED	IRRIGATION
	UNDETERMINED	907101	29 734	81 148	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	907122	29 737	8122 3	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	CITY OF PORT ORANGE	v-0021	29 742	81 139	1	06163300	110	142	8.00	888.00	888.00	CONFINED	PUBLIC
	UNDETERMINED	907122	29 743	812211	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	907122	29 745	812211	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	LAWERENCE FARMS, INC	V-0053	29 746	8121 9	1	37162900	0	0	8.00	2.00	2.00	CONFINED	DESTROYED
	UNDETERMINED	907118	29 748	811842	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	LAWERENCE FARMS, INC	v-0052	29 748	8121 9	1	37162900	0	0	8.00	2.00	2.00	CONFINED	DESTROYED
	VOLUSIA COUNTY LANDF	V-0281	29 750	81 612		00000000	0	205	4.00	27.00	0.00	UNDETERMINED	UNDETERMINED
	LAWERENCE FARMS, INC	v-0058	29 752	8121 9	1	37162900	0	0	8.00	2.00	1.00	CONFINED	DESTROYED
	UNDETERMINED			8122 9		00000000	28	79	8.00			CONFINED	UNDETERMINED
	UNDETERMINED			811850		00000000	0	0				UNDETERMINED	
	UNDETERMINED	907120	29 756	812044	1	00000000	0	0				UNDETERMINED	
	USGS			812111		00000000	70	70	2.00	0.00		UNDETERMINED	
	UNDETERMINED			81 017		00000000	0	0				UNDETERMINED	
	UNDETERMINED			8122 5		00000000	0	0				UNDETERMINED	
	BLACKWELDER			811856		00000000	123	335		75.00		UNDETERMINED	
	USGS	v-0360	29 8 2	812111	1	39162900	42	42	2.00			UNDETERMINED	
	USGS			812111		39162900	22	22				SECONDARY	TEST
	SJRWMD					39162900	80	80				SECONDARY	TEST
	PORT ORANGE					08163300	108	300				UNDETERMINED	
	UNDETERMINED					00000000	0	169				CONFINED	UNDETERMINED
	MURRY SAMS			812153		38162900	0		12.00	2.10		CONFINED	UNUSED
	MURRY SAMS	v-0057	29 8 5	812156	1	38162900	0	0	8.00	1.50	4.00	CONFINED	UNUSED

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
VOLUSIA	PORT ORANGE	V-0162	29 8 6	81 139	1	0716332F	103	224				CONFINED	TEST
	PORT ORANGE	V-0487	29 8 7	81 139		08163300	108	180				UNDETERMINED	
	UNDETERMINED	908120	29 8 7	812052	1	00000000	0	0				UNDETERMINED	UNDETERMINED
	HERRING LENUEL	v-0134	29 8 8	811748	1	41163000	888					CONFINED	IRRIGATION
	UNDETERMINED			81 139		00000000	0	0				UNDETERMINED	
	PORT ORANGE	v-0485				06163300	0	205	10.00	0.00		UNDETERMINED	
	UNDETERMINED	?		82 230		000000000	0	0				CONFINED	UNDETERMINED
		v-0285				000000000	98	269	14.00	46.00		UNDETERMINED	
	CITY OF DAYTONA BCH	V-0286				00000000	94	219	4.00	46.00		UNDETERMINED	
	DAYTONA	V-0484				06163200	98	340				UNDETERMINED	
	UNDETERMINED	908101				00000000	0	0				UNDETERMINED	
	PORT ORANGE	V-0362				06163300	0	160				UNDETERMINED	• •
	CITY OF DAYTONA BCH					0616321K	96	217				CONFINED	OBSERVATION
	UNDETERMINED	908119				00000000	0	0				UNDETERMINED	
	UNDETERMINED	908119				00000000	0	0				UNDETERMINED	
	DON O MEMBRY	V-0079				02163300	118	130				CONFINED	IRRIGATION .
		v-0287				00000000	95	161	4.00			UNDETERMINED	
	CITY OF DAYTONA BCH					00000000	103	251	14.00			UNDETERMINED	
	UNDETERMINED			811952		00000000	0	0				UNDETERMINED	
	PORT ORANGE	V-0092				05163300	0	160				UNDETERMINED	
	UNDETERMINED	908119				00000000	0	0				UNDETERMINED	
	CITY OF DAYTONA BCH					00000000	100	260		41.00		UNDETERMINED	
	UNDETERMINED			81 814		00000000	0	0				UNDETERMINED	
		V-0289				00000000	94	146	4.00			UNDETERMINED	
		V-0290				000000000	101	262	14.00			UNDETERMINED	
	UNDETERMINED			81 8 4		000000000	0					UNDETERMINED	
	CITY OF DAYTONA BCH					00000000 0316324F	95 91	132 130	14.00			UNDETERMINED	
	M.S. KIRTON DAIRY CITY OF DAYTONA BCH			81 439		00000000	100			46.00		UNDETERMINED	DOMESTIC
	UNDETERMINED			81 133		00000000	0					UNDETERMINED	
	VOLUSIA CO LANDFILL					00000000	91	189		26.00		UNDETERMINED	
	UNDETERMINED			81 744		00000000	0	0				UNDETERMINED	
	UNDETERMINED			812051		00000000	0	0				UNDETERMINED	
	ROLF'S SOD FARM			81 212		06163300	103					UNDETERMINED	
	UNDETERMINED					02163300	104	135				UNDETERMINED	
	UNDETERMINED					00000000	0					CONFINED	UNDETERMINED
	SJRWMD					00000000	0					SECONDARY	TEST
	SJRWMD					0516321K	60		2.00			SECONDARY	OBSERVATION
	SJRWMD					0516321K	92		4.00			CONFINED	OBSERVATION
	SJRWMD			81 738		0516321K	16		2.00			UNCONFINED	OBSERVATION
	SJRWMD					0616322P	445		4.00			CONFINED	OBSERVATION
	PORT ORANGE					06163300	0					UNDETERMINED	
	UNDETERMINED			811428		00000000	0					CONFINED	UNDETERMINED
	CITY OF DAYTONA BEAC			_			95			44.00		UNDETERMINED	
	PORT ORANGE					06163300	0					UNDETERMINED	PUBLIC
	RADIO STATION					0116312H	0		3.00			CONFINED	UNUSED

COUNTY	WELL OWNER	WELL				CETTROO	CASE							
333711	WELL OWNER	ID	١ ټ ١	LON		SSTTRRQQ	CASE		WELL		_EV	ELEV	AQUIFER	WELL TYPE
							DEP.	DEP.	DIA.	L:	S D	MSL		
VOLUSIA	UNDETERMINED	908108	29 842	81 846	1	00000000	0	0	0.00	888	00	999 M	CONFINED	UNDETERMINED
	UNDETERMINED			811033		00000000	0	0			.00		UNCONFINED	UNDETERMINED UNDETERMINED
	PORT ORANGE	V-0204	29 845	81 138		06163300	0	200		_			UNDETERMINED	
	PORT ORANGE	v-0205	29 846	81 144		06163300	0	200					UNDETERMINED	
	PORT ORANGE			81 149		06163300	126	200					UNDETERMINED	
	PORT ORANGE			81 155		06163300	122	200					UNDETERMINED	
	PORT ORANGE			81 2 1		06163300	124	210					UNDETERMINED	
	PORT ORANGE	V-0210	29 846	81 2 7		06163300	118	200					UNDETERMINED	
	UNDETERMINED	908121	29 846	812133		00000000	0	0					UNDETERMINED	
	CITY PORT ORANGE	V-0296	29 847	81 149	1	00000000	123	182	10.00				UNDETERMINED	
	CITY PORT ORANGE	V-0297	29 847	81 154	1	00000000	121	185	10.00				UNDETERMINED	
	CITY PORT ORANGE	v-0298	29 847	81 2 0	1	00000000	121	198	10.00	31.	00		UNDETERMINED	
	PELICAN BAY	V-0299	29 847	81 312	1	00000000	96	177	6.00				UNDETERMINED	
	UNDETERMINED	908120	29 849	812026	1	00000000	0	0	0.00	888.	00		UNDETERMINED	
	UNDETERMINED	908120	29 849	812031	1	00000000	0	0					CONFINED	UNDETERMINED
	UNDETERMINED	908120	29 849	812032	1	00000000	0	0					UNDETERMINED	UNDETERMINED
	UNDETERMINED	908119	29 850	8119 1	1	00000000	0	0					UNDETERMINED	
	UNDETERMINED	908120	29 850	812021	1	00000000	0	0					UNDETERMINED	
	MS FRANCIS ROBERTSON	V-0211	29 854	805814	1	02163300	0	174	2.00	888.	00	888.00	UNDETERMINED	IRRIGATION
	EARL SLEIGHT	V-0212	29 854	805928	1	03163300	140	140	8.00	888.	00	888.00	UNDETERMINED	IRRIGATION
	PELICAN BAY	V-0477	29 857	81 250	1	00000000	99	174	6.00	0.	00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	909102	29 9 0	81 210	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD	V-0357	29 9 5	81 455	1	34153200	58	58	2.00	26.	00	28.00	SECONDARY	TEST
	UNDETERMINED	909121	29 9 6	812148	1	00000000	, 0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	909130	29 9 8	813048	1	00000000	0	0	0.00	888.	00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	909120	29 910	812028	1	00000000	0	0	0.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	JACK RAFOOL	v-0254			1	35163300	105	163	3.00	888.	00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED			812222		3515291P	0	0	4.00	888.	00	10.00	CONFINED	STOCK
	UNDETERMINED			812032		00000000	0	0					UNDETERMINED	UNDETERMINED
	USGS			81 612		3315323F	102	220	6.00		90		CONFINED	TEST
	USGS	V-0080				33153200	102	235	6.00		80		CONFINED	OBSERVATION
	UNDETERMINED			812233		00000000	0	0					UNDETERMINED	
	USGS			81 6 9		3315324A	18	18	1.25	27.			CONFINED	OBSERVATION
	USGS			81 612		33153232	480	496	2.00		80		CONFINED	OBSERVATION
	UNDETERMINED			811743		00000000	0	0					CONFINED	UNDETERMINED
	UNDETERMINED			81 0 2		00000000	0	0					UNDETERMINED	
	UNDETERMINED			81 6 2		00000000	0	0					CONFINED	UNDETERMINED
	UNDETERMINED			81 6 2		00000000	0	0					CONFINED	UNDETERMINED
	MIRTA OKONSKI			805826		35153300	104	114					UNDETERMINED	
	UNDETERMINED	V-0457				00000000	0	0	2.00				UNDETERMINED	
	WILLIAM MOWERY			8122 6		3015292F	888		888.00		00		CONFINED	UNUSED
	UNDETERMINED					00000000	0	0					UNDETERMINED	
	UNDETERMINED					00000000	0	0					CONFINED	UNDETERMINED
						3415291F	143	145	2.00				CONFINED	UNUSED
	THOFEHRN GEORGE					26\$12900	0	0	0.00				CONFINED	UNDETERMINED
	UNDETERMINED	707121	47 73 3	812122	1	000000000	0	0	υ.ω	555.	w	000.UU	UNDETERMINED	ONDETERMINED

COUNTY	UELL OIMER	WELL		LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
COUNTY	WELL OWNER	ID		_ 0 14		0017111144	DEP.		DIA.	LSD		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
		10											
VOLUSIA	UNDETERMINED	909122	29 936	8123 4	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	DAVE SEAVEY	v-0258	29 937	805827	1	35153300	110	137	2.00	888.00	888.00	UNDETERMINED	IRRIGATION
	UNDETERMINED	909117	29 937	811745	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	PERRY MILLS	v-0272	29 940	805944	1	33153300	85	121	4.00	888.00	888.00	UNDETERMINED	IRRIGATION
	B. W. LEWIS	V-0282	29 943	805845	1	34153300	0	0	35.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	PELICAN BAY	v-0301	29 944	81 313	1	00000000	102	159	6.00	29.00	0.00	UNDETERMINED	UNDETERMINED
	UNDERHILL	V-0302	29 945	813048	1	00000000	89	277	10.00	14.00		UNDETERMINED	
	UNDETERMINED		29 948			00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		29 955			00000000	0	0				UNDETERMINED	
	VOLUSIA COUNTY		29 956			00000000	99	154	4.00	9.00		UNDETERMINED	
	UNDETERMINED		29 959			00000000	0	0				UNDETERMINED	
	UNDETERMINED		29 959			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		29 959			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2910 1			00000000	0	0	0.00	0.00		UNCONFINED	UNDETERMINED
	UNDETERMINED		2910 2			00000000	0	0	0.00	0.00		UNCONFINED	UNDETERMINED
	UNDETERMINED		2910 2			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2910 3			00000000	0 95	0 98				UNDETERMINED	
	USGS		2910 3				9)	220				CONFINED	OBSERVATION
	USGS		2910 4 2910 4			2615313E 00000000	0	0	4.00	0.00		CONFINED	TEST UNDETERMINED
	UNDETERMINED UNDETERMINED		2910 4			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		2910 4			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2910 4			00000000	0	0				UNDETERMINED	
	USGS		2910 6			2615314H	122	222	4.00	2.10		CONFINED	OBSERVATION
	USGS					2615313F	0	39	2.00	0.90		UNCONFINED	TEST
	USGS		2910 6			26153100	0	0	0.00	0.00		CONFINED	UNDETERMINED
	UNDETERMINED		2910 7			00000000	0	0				UNDETERMINED	
	USGS	v-0087	2910 7	811016	13	2615311G	18	20	4.00	2.40		UNCONFINED	OBSERVATION
	UNDETERMINED	910120	2910 8	812048	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	909130	2910 8	813048	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	BLACKWELDER MARHALEE	V-0215	2910 9	812058	1	25152921	200	450	10.00	1.20	39.40	CONFINED	UNDETERMINED
	UNDETERMINED	910130	2910 9	813054	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	USGS	v-0138	2910 9	813054	2	00000000	3	888	2.00	888.00	888.00	UNCONFINED	TEST
	UNDETERMINED	910110	291010	811022	5	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	v-0469	291010	811022	14	00000000	0	0	0.00	888.00	888.00	UNCONFINED	UNDETERMINED
	UNDETERMINED					00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	W.L. TOMPKINS-LEASEE						0	0	4.00	0.50	22.00	CONFINED	STOCK
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	USGS					00000000	154	232		27.00		UNDETERMINED	
	USGS					27153232	152		6.00			CONFINED	OBSERVATION
	ELDRIDGE					24152800	80 0	90 0	4.00			SECONDARY	OBSERVATION
	UNDETERMINED	¥10103	271028	01 343	1		U	U	0.00	000.00	ooo.uu	UNDETERMINED	CHARLEMEN

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	HELL TYPE
		ID	2 // ·	2011		oo i iiiii aa	DEP.		DIA.	LSD		AGOIFER	WELL TYPE
VOLUSIA	UNDETERMINED	910103	291030	81 342	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD	V-0373	291031	8059 4	2	00000000	40	40	2.00	888.00	17.00	UNDETERMINED	TEST
	SJRWMD	v-0200	291031	8059 4	1	27153321	98	160	4.00	888.00	16.10	CONFINED	OBSERVATION
	UNDETERMINED	910106	291031	81 656	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	V-0456	291032	81 652	1	00000000	96	210		888.00		CONFINED	UNDETERMINED
	UNDETERMINED		291035		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	HENDRIX		291035			00000000	96	179	4.00	45.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291036			00000000	95	180				CONFINED	UNDETERMINED
	W. WARRENSFORD		291042			00000000	84	84	2.00			UNDETERMINED	
	UNDETERMINED		291043			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291047		1		0	0				UNDETERMINED	
	UNDETERMINED		291050			000000000	0	0	0.00	0.00		UNCONFINED	UNDETERMINED
	UNDETERMINED		291052		1		0	0				UNDETERMINED	
	UNDETERMINED CITY OF DAYTONA BCH		291056			2015291L 00000000	888	888	2.00	0.85		CONFINED	STOCK
	UNDETERMINED		2911 0 2911 1			00000000	97 0	211	16.00	25.00		UNDETERMINED	
	CAMP WINONA		2911 1			00000000	97	140	2.00	70.00		CONFINED	UNDETERMINED
	UNDETERMINED		2911 3			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2911 4			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2911 5			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		2911 7			00000000	0	0				CONFINED	UNDETERMINED
	SJRWMD		2911 7		1		97	700		888.00		CONFINED	OBSERVATION
	UNDETERMINED		2911 8			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2911 9			00000000	. 0	0				CONFINED	UNDETERMINED
	MCCOLLOUGH	V-0216	291111	812914	1	2215281E	888	600	8.00	0.00		CONFINED	IRRIGATION
	UNDETERMINED	911128	291112	812826	1	00000000	0	0	0.00	888.00			UNDETERMINED
	v-0308	v-0308	291113	81 5 1	1	00000000	101	172	16.00	27.00	0.00	UNDETERMINED	UNDETERMINED
	DAYTONA BEACH CITY O	v-0097	291113	81 5 6	1	2215323J	111	211	16.00	1.50	31.89	CONFINED	PUBLIC
	UNDETERMINED	911104	291116	81 455	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	HENDERSON	v-0309	291117	812513	1	00000000	103	122	4.00	44.00	0.00	UNDETERMINED	UNDETERMINED
	CLARK NORWOOD	V-0077	291118	812754	1	1415284L	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	HARPER ROBERT	V-0206	291118	812859	1	1515283P	102	366	8.00	2.50	45.70	CONFINED	UNUSED
	LONG FRED	v-0233	291118	812915	1	1515283M	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	911104	291120	81 427	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	911104	291120	81 445	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	CITY OF DAYTONA BCH	v-0310	291121	81 427	1	00000000	105	173	12.00	26.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911104	291121	81 445	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911104	291124	81 434	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	911059	291126	805925	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911104	291126	81 417	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	REIMS	v-0037	291128	812915	1	1515283G	0	0	0.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	911104	291130	81 4 6	1	00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED			81 417		00000000	0	0				CONFINED	UNDETERMINED
•	UNDETERMINED		291133			00000000	0	0				UNDETERMINED	
	USGS					2315324E	483	500	2.00			CONFINED	OBSERVATION
	USGS	v-0098	291133	81 4 6	1	2315324E	115	235	6.00	3.00	30.55	CONFINED	OBSERVATION

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE	WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
		011107	291137	01 7/0	1	00000000	0	0	0.00	888 00	888 M	UNDETERMINED	LINDETERMINED
VOLUSIA	UNDETERMINED UNDETERMINED		291137			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		291139			00000000	135	280		888.00		CONFINED	UNDETERMINED
	CITY OF DAYTONA BCH		291140			00000000	137	273	10.00	31.00		UNDETERMINED	
	UNDETERMINED		291140			00000000	0	0				UNDETERMINED	
	DEBARTHOLO ENTERPRIS					00000000	139	139	8.00	29.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291142			00000000	0	0	0.00	0.00	0.00	UNCONFINED	UNDETERMINED
	UNDETERMINED		291149		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911128	291150	8128 6	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911128	291150	812825	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	CITY OF DAYTONA BCH	v-0313	291152	81 237	1	00000000	105	171	8.00	18.00	888.00	CONFINED	UNDETERMINED
	PRIGEON LARRY	v-0227	291154	812924	1	1515281D	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	v-0453	291155	81 229	1	00000000	96	160	8.00	888.00	8.25	CONFINED	UNDETERMINED
	UNDETERMINED	912102	291156	81 2 3	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291156	81 2 7	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	911129	291157	812922	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291158	81 158	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291158	81 2 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291158	81 253	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	DAYTONA BEACH, CITY	v-0018	291159	81 2 2	1	39153300	118	187	6.00	0.00	7.66	CONFINED	UNDETERMINED
	UNDETERMINED	912102	291159	81 2 4	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED ·
	PRIGEON LARRY	V-0226	291159	812924	1	15152818	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	912102	2912 2	81 2 1	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	2912 2	81 2 5	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	2912 2	81 223	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	911125	2912 3	8126 7	1	000000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		2912 4			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2912 5			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2912 5			000000000	0	0				CONFINED	UNDETERMINED
	STATE OF FLORIDA		2912 6			00000000	105	218	6.00	-		UNDETERMINED	
	UNDETERMINED		2912 7			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2912 7			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2912 7			00000000	0	710				UNDETERMINED	
	STATE OF FLORIDA		2912 7			00000000	248	310	6.00			UNDETERMINED	
	UNDETERMINED		2912 8				120	706				UNDETERMINED	
	STATE OF FLORIDA					00000000	120			27.00		UNDETERMINED	
	STATE OF FLORIDA STATE OF FLORIDA					00000000	127 108		8.00	28.00 29.00		UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	STATE OF FLORIDA					00000000	237			27.00		UNDETERMINED	
	STATE OF FLORIDA					00000000	119			29.00		UNDETERMINED	
	UNDETERMINED					00000000	0					UNDETERMINED	
	UNDETERMINED					00000000	0					UNDETERMINED	
	UNDETERMINED					00000000	0					UNDETERMINED	
	UNDETERMINED					00000000	0					UNDETERMINED	
	STATE OF FLORIDA					00000000	122			30.00		UNDETERMINED	
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COUNTY	WELL OWNER	WELL ID	LAT	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	ELEV L S D	ELEV M S L	AQUIFER	WELL TYPE
VOLUSIA	UNDETERMINED	912102	291212	81 211	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291213	81 2 7		00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291215	81 2 8	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291215	81 225	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912129	291215	812922	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	v-0322	291216	812155	1	00000000	154	154	131.00	4.00	0.00	UNDETERMINED	UNDETERMINED
	SJRWMD	v-0063	291216	812156	2	00000000	10	25	2.00	0.00	25.73	UNCONFINED	UNUSED
	SJRWMD	V-0062	291216	812156	1	00000000	131	200	4.00		28.08	CONFINED	OBSERVATION
	UNDETERMINED	912127	291218	812712	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912102	291219	81 228	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912126	291219	812637	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912129	291220	812917	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	912101	291221	81 1 0	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDÉTERMINED
	RICHARDSON CURTIS	V-0217	291221	812351	1	0915294M	888	100	4.00	2.00	38.00	CONFINED	UNUSED
•	UNDETERMINED	912124	291222	812438	1	000000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	912102	291224	81 230	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED .
	UNDETERMINED	912100	291226	81 0 8	1	000000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291228			00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED		291229		1	00000000	100	160	4.00	888.00	9.77	CONFINED	UNDETERMINED
	UNDETERMINED		291229		1	00000000	0	0				UNDETERMINED	UNDETERMINED
	DAYTONA BEACH, CITY		291230		1	00153300	0	0	0.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED		291233			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291237			00000000	0	0				UNDETERMINED	
	STATE OF FLORIDA		291237			00000000	106	181	6.00	6.00		UNDETERMINED	
	VOLUSIA COUNTY		291240			00000000	93	118	6.00	5.00		UNDETERMINED	
	UNDETERMINED		291242			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291242		1	00000000	0	0				UNDETERMINED	
	VOL CO COUNCIL GOVTS					00000000	109	172	4.00	31.00		UNDETERMINED	
	TODD LES		291247			1215282H	888					CONFINED	IRRIGATION
	HOLLY HILL CITY OF		291248			08153240	101	248		888.00		CONFINED	PUBLIC
	TURNER H		291248			1115281C	888	888	3.00	0.00		CONFINED	UNDETERMINED
	UNDETERMINED		291250			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291257 291257			00000000	105	117		17.00		UNDETERMINED	
	TOMOKA LAND DEVELOP					00000000	105 6	113	3.00			UNCONFINED	TEST
	USGS		291258		_		80	90				CONFINED	DOMESTIC
	EZELS		291258			0615284P 00000000	0	0				UNDETERMINED	
	UNDETERMINED		2913 2			0915322K	84		3.00			CONFINED	TEST
	USGS		2913 2				0	240 0				CONFINED	UNDETERMINED
	UNDETERMINED		2913 9			00000000	888					CONFINED	IRRIGATION
	BYRD DENNIS		2913 9			0215284H						CONFINED	IRRIGATION
	BYRD DENNIS		291311			0215284H	888					CONFINED	UNUSED
	RICHARDSON CURTIS		291314			01152800	888					UNDETERMINED	
	UNDETERMINED		291314			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		291315			00000000	60	70	4.00			SECONDARY	OBSERVATION
	STATE OF FLORIDA		291323		_		0	0				CONFINED	UNDETERMINED
	UNDETERMINED	713119	291323	011720	د	000000000	J	U	9.00	300.00	500.00	COM 114ED	

COUNTY	WELL OWNER	WELL	LĄT	LON		SSTTRRQQ	CASE		WELL	ELEV		AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSU	MSL		
VOLUSIA	UNDETERMINED	913128	291324	812836	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
VOLUSIA	UNDETERMINED		291325			00000000	o	0				UNDETERMINED	
	UNDETERMINED		291328			00000000	0	0				UNDETERMINED	
	USGS		291330			00000000	888	93				UNDETERMINED	
	UNDETERMINED		291332		1		0	0				CONFINED	UNDETERMINED
	UNDETERMINED		291335			00000000	0	0				UNDETERMINED	
	SJRWMD		291337			03153100	65	65	2.00	888.00	46.00	SECONDARY	TEST
	UNDETERMINED		291338			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291339			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED	913119	291340	811925	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	USGS	V-0141	291343	812546	2	00000000	6	8	2.00	888.00	888.00	UNCONFINED	TEST
	JONES FERNEY	v-0089	291343	812546	1	0615294F	112	414	6.00	3.80	55.68	CONFINED	OBSERVATION
	UNION CAMP	v-0090	291344	811557	1	0215302J	74	151	6.00	2.50	35.38	CONFINED	OBSERVATION
	UNDETERMINED	913128	291347	812847	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	913129	291347	812915	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	913129	291347	812958	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	913130	291347	8130 5	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNION CAMP	v-0088	291353	8116 4	1	02153000	20	20	2.00	2.60	36.93	UNCONFINED	OBSERVATION
	GAY MILTON	V-0229	291353	812540	1	3614283P	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	GAY MILTON	v-0230	291357	812531	1	3614283N	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	914127	2914 0	812748	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	914103	2914 1	81 337	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED '
	UNDETERMINED	914104	2914 3	81 415	1	000000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		2914 4			00000000	, 0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		2914 5			00000000	0	0				UNDETERMINED	
	BRADDOCK		2914 9			36142830	105	436				CONFINED	IRRIGATION
	BRADDOCK		2914 9			00000000	110	450				CONFINED	IRRIGATION
	UNDETERMINED		291413			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291414			000000000	0	0				UNDETERMINED	
	UNDETERMINED		291415			000000000	0	0				UNDETERMINED	
	UNDETERMINED		291418			00000000	110	108	_			CONFINED	UNDETERMINED
	RICHARDSON CURTIS		291418 291421			3414281P	110 0	198	4.00			CONFINED	UNDETERMINED
	UNDETERMINED UNDETERMINED		291421			00000000	92	0 170				UNDETERMINED CONFINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	UNDETERMINED
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	ō	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED	914102	291425	81 245	2	00000000	Ö	0				UNDETERMINED	
	UNDETERMINED	914102	291426	81 223	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	914122	291426	812240	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED

COUNTY	WELL OWNER	WELL ID	LAT	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	ELEV L S D		AQUIFER	WELL TYPE
									•		• -		
VOLUSIA	USGS -	v-0153	291427	812734	2	00000000	7	9	2.00	888.00	888.00	UNCONFINED	TEST
	ZIEBARTH	V-0149	291427	812734	3	00000000	13	888	2.00	888.00	888.00	UNCONFINED	IRRIGATION
	UNDETERMINED	914102	291429	81 247	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	914102	291429	81 247	2	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	CITY OF HOLLY HILL	v-0327	291431	81 310	1	00000000	105	229	10.00	10.00	888.00	UNDETERMINED	UNDETERMINED
	USGS	V-0126	291431	812630	1	3514282C	85	125	4.00	1.50	62.50	CONFINED	OBSERVATION
	SJRWMD	V-0144	291431	812631	1	00000000	85	125	4.00	888.00	888.00	CONFINED	OBSERVATION
	J T S PARKING SHED		291431		1	3414282D	0	0	0.00	888.00	888.00	CONFINED	IRRIGATION
	GREENLUND FREEMAN		291431		1	3314282D	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED		291432			00000000	0	0		888.00	888.00	UNDETERMINED	UNDETERMINED
	CITY OF HOLLY HILL		291433			00000000	85	195	8.00	6.00		UNDETERMINED	
	UNDETERMINED		291433			00000000	0	0				UNDETERMINED	
	USGS		291433			00000000	7	9				UNCONFINED	OBSERVATION
	SJRWMD		291433			00000000	48	56				UNDETERMINED	
	UNDETERMINED		291433			00000000	0	0		888.00		CONFINED	UNDETERMINED
	SJRWMD		291433			00000000	250	365		_		CONFINED	OBSERVATION
	UNDETERMINED		291434			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291435			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291435			00000000	0	0				UNDETERMINED CONFINED	
	UNDETERMINED		291436			00000000	0	_					UNDETERMINED
	CITY OF HOLLY HILL		291436			00000000	96 79	190	8.00	11.39		UNDETERMINED	
	CITY OF HOLLY HILL USGS		291437 291437			00000000	78 4	163 8	6.00	9.00		UNCONFINED	TEST
	PIERSON ELEMENTARY		291437			34142800	113	150	3.00			CONFINED	UNDETERMINED
	UNDETERMINED		291438			00000000	0	0				UNDETERMINED	
	CITY OF HOLLY HILL		291440			00000000	105	233	8.00	8.00		UNDETERMINED	
	HANSON		291440			00000000	118	479	10.00	72.00		UNDETERMINED	
	UNDETERMINED		291440			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291440			00000000	0	0				UNDETERMINED	
	CITY OF HOLLY HILL		291441			00000000	99	211		14.00		UNDETERMINED	
	UNDETERMINED		291441			00000000	0	0				UNDETERMINED	•
	UNDETERMINED		291442			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291442		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	914128	291442	812824	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	JONES FRANK	v-0091	291443	812832	1	2814284K	888	888	888.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	914102	291444	81 221	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	HOLLY HILL, CITY	V-0023	291444	81 222	1	00153200	0	220	0.00	888.00	888.00	CONFINED	PUBLIC
	UNDETERMINED	914103	291444	81 313	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	914126	291446	812610	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	TAYLOR JAMES	V-0218	291447	8127 3	1	26142900	92	302	4.00	2.60	68.62	CONFINED	UNUSED
	UNDETERMINED	914126	291448	812613	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD	V-0354	291448	812749	2	00000000	80	80	2.00	0.00	63.00	SECONDARY	TEST
	SJRWMD	V-0225	291448	812749	1	2714281D	140	1100	12.00	888.00	66.20	CONFINED	OBSERVATION
	UNDETERMINED	914126	291450	812630	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	914102	291452	81 243	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	914126	291452	812617	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED

COUNTY	WELL OWNER	WELL	L A, T	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	ELEV L S D		AQUIFER	WELL TYPE
VOLUSIA	UNDETERMINED	914127	291452	8127 5	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	USGS	V-0145	291453	812654	1	00000000	9	11	2.00	888.00	888.00	UNCONFINED	TEST
	USGS	V-0146	291453	812654	2	00000000	19	22	2.00	888.00	888.00	UNCONFINED	TEST
	UNDETERMINED	914126	291453	812654	3	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291454			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291454			00000000	0	0	0.00			UNDETERMINED	UNDETERMINED
	USGS		291457			2714284H	10	10	2.00	3.68		UNCONFINED	OBSERVATION
	USGS		291457			00000000	128	140		888.00		CONFINED	OBSERVATION
	UNDETERMINED		291457			00000000	0	0				UNCONFINED	UNDETERMINED
	F. JONES		291457			00000000	105	394	10.00	58.00		UNDETERMINED	UNDETERMINED
	SJRWMD		291458			00000000	63	125		888.00		CONFINED	OBSERVATION
	BRADDOCK		2915 1			00000000	120	361	8.00	65.00		UNDETERMINED	
	UNDETERMINED		2915 3			3614312B	0	0	4.00	3.50		CONFINED	UNUSED
	UNDETERMINED		2915 4			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2915 4			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2915 6			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		2915 7			00000000	0	0				UNDETERMINED	
	BRADDOCK		2915 7			00000000	120	408				CONFINED	IRRIGATION
	UNDETERMINED		2915 8			00000000	0	0				UNDETERMINED	•
	JONES		2915 8			00000000	150	400				CONFINED	IRRIGATION
	SJRWMD		2915 8			3014283J	97	180	4.00		,	CONFINED	OBSERVATION .
	UNDETERMINED		2915 9			00000000	0	0				UNDETERMINED	
	UNDETERMINED		2915 9			00000000	0	0				UNDETERMINED	
	STATE OF FLORIDA		291510			25143134	<u>7</u> 5	85 0	4.00	0.00		SECONDARY	OBSERVATION
	UNDETERMINED		291511 291511			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291518			00000000	0	0				CONFINED UNDETERMINED	UNDETERMINED
	UNDETERMINED UNDETERMINED		291518			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291519			00000000	0	0				UNDETERMINED	
	PARKER		291520			00000000	137	416	8.00			UNDETERMINED	
	UNDETERMINED		291521			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291522			00000000	0	0				UNDETERMINED	
	USGS		291523			2714313B	82	242	3.00	2.50		CONFINED	TEST
	L. JONES		291523			00000000	127	345	8.00	35.00		UNDETERMINED	
	UNDETERMINED		291523			00000000	0	0				UNDETERMINED	
	UNDETERMINED					30142900	108	135	2.00			CONFINED	UNDETERMINED
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	ORMOND BEACH					3014324C	87	199	4.00			CONFINED	OBSERVATION
	BURNSED RALPH					2614282G	888	350	4.00			CONFINED	DOMESTIC
	BRADDOCK					00000000	107	349		57.00		UNDETERMINED	
	UNDETERMINED					00000000	0	0				UNDETERMINED	
	UNDETERMINED			•		00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED	915102	291530	81 232	1	00000000	0	0				UNDETERMINED	

COUNTY	WELL OWNER	WELL ID	LAT	LON		SSTTRRQQ	CASE DEP.	WELL	WELL DIA.	ELEV L S D	ELEV M S L	AQUIFER	WELL TYPE
							DCF.	OLF.	DIA.	L 3 D	пзс		
VOLUSIA	FLIPPO	V-0440	291530	81 638	1	00000000	94	120	4.00	25.00	0.00	CONFINED	DOMESTIC
	UNDETERMINED	915128	291531	812851	1	00000000	0	0	0.00			UNDETERMINED	
	UNDETERMINED	915125	291537	812550	1	00000000	0	0				UNDETERMINED	
	UNION BAG	V-0154	291543	8132 6	1	2314274G	90	116	2.00	1.20	7.20	CONFINED	DESTROYED
	UNATIN	V-0024	291555	81 458	1	00000000	105	198	6.00	0.00	0.00	CONFINED	UNDETERMINED
	UNDETERMINED	915104	291558	81 443	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916106	2916 1	81 6 8	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916103	2916 5	81 357	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	V-0450	2916 7	81 423	1	00000000	0	. 0	0.00	888.00	6.88	CONFINED	UNDETERMINED
	UNDETERMINED	916104	2916 8	81 421	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291610	81 418	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291611	81 432	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291614	81 4 6	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291614	81 4 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291616	81 4 3	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291618	81 4 4	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916104	291618	81 422	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916130	291621	813049	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291623		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	916128	291626	812836		00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	USGS		291626		2	00000000	7	9				UNCONFINED	TEST
	UNDETERMINED	916104	291628	81 4 1	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	916102	291641	81 218	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	916103	291641	81 345	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED		291643			00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291643			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291644			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291645			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291646			00000000	0	0				CONFINED	UNDETERMINED
	UNDETERMINED		291710			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291712			00000000	92	121		888.00		CONFINED	UNDETERMINED
	UNDETERMINED		291714			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291718			000000000	0	0				UNDETERMINED	
	UNDETERMINED		291724			00000000	0	0				UNDETERMINED	
	MEW, J.C.		291726			09142833	888	180	4.00	1.20		CONFINED	STOCK
	UNDETERMINED		291727			000000000	0	0				UNDETERMINED	
	UNDETERMINED		291728			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291734			00000000	0	0				UNDETERMINED	
	UNDETERMINED					000000000	0	0				UNDETERMINED	
	UNDETERMINED		291737			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291738			000000000	0	0				UNDETERMINED	
	UNDETERMINED		291739			000000000	121	0 171				UNDETERMINED	
	OCEANSIDE COUNTRY CL					00000000	121	171		13.00		UNDETERMINED	
	SJRWMD			8129 3		09142800	85	130				CONFINED	OBSERVATION
•	UNDETERMINED					000000000	0	0				UNDETERMINED	
	UNDETERMINED	917703	291753	51 3 8	7	00000000	0	0	0.00	555.UÜ	000.UU	UNDETERMINED	OUDE LEVELINED

COUNTY	WELL OWNER	WELL	LAT	LON		SSTTRRQQ	CASE DEP.		WELL DIA.	ELEV L S D		AQUIFER	WELL TYPE
VOLUSIA	UNDETERMINED	918128	2918 1	812852	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
102031 A	UNDETERMINED		2918 2		1	00000000	95	192	6.00	888.00	15.00	CONFINED	UNDETERMINED
	UNDETERMINED		2918 2			00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	NOLAND ROBERT		2918 4			0914281G	888	888				CONFINED	IRRIGATION
	UNDETERMINED		291813			00000000	0	0				UNDETERMINED	
	UNDETERMINED		291819			00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291820			00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	FINK		291821		1	00000000	91	164	6.00	15.00	0.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		291823		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD		291823		1	00000000	113	166	4.00	888.00	53.44	CONFINED	OBSERVATION
	UNDETERMINED		291823			00000000	0	0	0.00	888.00		UNDETERMINED	UNDETERMINED
	UNDETERMINED		291834		1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	USCE	v-0155	291835	813242	1	02142740	120	155	6.00	1.30	4.30	CONFINED	UNDETERMINED
	W COLMAN		291838		1	0314283A	0	0	0.00	888.00	888.00	CONFINED	IRRIGATION
	UNDETERMINED	918127	291840	812724	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918103	291841	81 331	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918106	291842	81 6 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918103	291846	81 313	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918130	291851	813041	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919129	2919 3	812946	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	V-0447	2919 4	81 555	1	00000000	0	140	2.00	888.00	9.05	CONFINED	UNDETERMINED -
	UNDETERMINED	919130	2919 4	813019	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	919103	2919 5	81 334	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	NOLAN, R.	v-0096	2919 5	812510	1	36132844	888	138	6.00	1.21	24.51	CONFINED	STOCK
	UNDETERMINED	919103	2919 6	81 320	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919103	2919 6	81 332	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919103	2919 7	81 318	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918128	2919 7	812819	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	919103	2919 8	81 325	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	918127	2919 8	8128 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919103	291910	81 330	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919131	291910	813124	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919128	291917	8128 8	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED	919127	291922	812749	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919103	291929	81 326	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	919103	291936	81 354	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD					32132800	80	105	4.00			CONFINED	OBSERVATION
	SJRWMD	V-0185	291941	812942	2	32132800	30	45				UNCONFINED	TEST
	UNDETERMINED	919129	291945	8129 9	1	00000000	0	0				UNDETERMINED	
	UNDETERMINED			81 358		000000000	0	0				UNDETERMINED	UNDETERMINED
	PAPPAS PETER			8131 3		3613272H	888					CONFINED	IRRIGATION
	UNDETERMINED		291949			00000000	104	130				CONFINED	UNDETERMINED
	UNDETERMINED		291952			00000000	0					UNDETERMINED	
	UNDETERMINED		291952			000000000	0					CONFINED	UNDETERMINED
	UNDETERMINED		291955			000000000	0					CONFINED	UNDETERMINED
	UNDETERMINED	920107	291959	81 743	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION

SJRWMD SCIENTIFIC DATA BASE - SUMMARY OF WELLS IN VOLUSIA COUNTY

COUNTY	UELL OUNES					*******							
COUNTY	WELL OWNER	WELL	LAI	LON		SSTTRRQQ		WELL	WELL	ELEV	ELEV	AQUIFER	WELL TYPE
		ID					DEP.	DEP.	DIA.	LSD	MSL		
VOLUSIA	UNDETERMINED	920128	2920 2	812855	1	00000000	О	0	0.00	888.00	888 00	UNDETERMINED	UNDETERMINED
	UNDETERMINED		2920 3			00000000	0					CONFINED	UNDETERMINED
	UNDETERMINED		2920 4			00000000	0					UNDETERMINED	
	MARTIN		292012			00000000	82	323		25.00		UNDETERMINED	
	UNDETERMINED	920106	292014	81 626	1	00000000	0	0	0.00	888.00		CONFINED	UNDETERMINED
	UNDETERMINED	920108	292015	81 8 5	1	00000000	0	0				UNDETERMINED	UNDETERMINED
	UNDETERMINED	920130	292016	813054	1	00000000	0	0				CONFINED	UNDETERMINED
	BELLMEAD CORP.	V-0044	292027	81 8 3	1	2513313J	110	120	4.00	888.00	888.00	CONFINED	TEST
	BELLMEAD CORP.	V-0045	292027	81 8 3	2	2513313J	29	49				SECONDARY	TEST
	BELLMEAD CORP.	V-0047	292053	81 546	1	40133200	94	100	4.00	888.00	888.00	CONFINED	TEST
	BELLMEAD CORP.	v-0048	292053	81 546	2	40133200	15	20	4.00	888.00	888.00	UNCONFINED	TEST
	UNDETERMINED	V-0445	292053	81 847	1	00000000	0	0	6.00	888.00	35.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	920104	292059	81 414	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	NATL GARDENS TRUST	V-0444	292059	81 550	1	40133200	94	100	4.00	888.00	2.00	CONFINED	UNDETERMINED
	UNDETERMINED	921109	2921 0	81 9 4	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	921128	2921 5	812812	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	BELLMEAD CORP.	v-0046	292116	81 8 9	1	2413313K	12	15	2.00	888.00	888.00	UNCONFINED	TEST
	UNDETERMINED	921104	292121	81 419	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	921129	292128	812954	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	921129	292138	8129 9	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	921104	292147	81 444	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED.
	BELLMEAD CORP.	v-0042	292156	81 759	1	2413311D	110	160	4.00	888.00	888.00	CONFINED	TEST
	BELLMEAD CORP.	V-0043	292156	81 759	2	2413311D	50	65	4.00	888.00	888.00	SECONDARY	TEST
	UNDETERMINED	922104	2922 7	81 456	1	00000000	. 0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	V-0443	292245	81 748	1	00000000	100	176	4.00	888.00	26.40	CONFINED	UNDETERMINED
	UNDETERMINED	923107	292354	81 728	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	924106	2924 5	81 650	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	UNDETERMINED	924108	292418	81 8 5	1	00000000	0	0	0.00	888.00	888.00	CONFINED	UNDETERMINED
	UNDETERMINED	V-0442	292421	81 723	1	00000000	93	103	4.00	888.00	7.10	CONFINED	UNDETERMINED
	UNDETERMINED	924106	292424	81 612	1	00000000	0	0	0.00	888.00	888.00	UNDETERMINED	UNDETERMINED
	SJRWMD	v-0371	292432	81 556	1	00000000	20	20	2.00	1.00	6.00	UNDETERMINED	TEST
	USGS	v-0143	293530	8116 4	1	00000000	20	20	4.00	888.00	888.00	UNCONFINED	OBSERVATION
	SJRWMD	V-0175	294937	81 7 6	1	2119322N	0	57	4.00	0.00	21.00	SECONDARY	TEST
	SJRWMD	V-0173	295011	81 837	1	1719323F	0	73	4.00	0.00	42.00	SECONDARY	TEST
	SJRWMD	V-0174	295037	81 752	1	17193211	0	65	4.00	0.00	27.00	SECONDARY	TEST
	SJRWMD	V-0172	295039	81 444	1	13193212	0	95	4.00	0.00	7.00	SECONDARY	TEST
	STONE IS. HOMEOWNERS	V-0061	295042	8114 8	1	1719312E	0	0	8.00	3.00	1.00	CONFINED	UNUSED
	STONE IS. HOMEOWNERS	V-0093	295044	8114 1	1	0819314N	0	0	3.00	1.50	5.00	CONFINED	UNUSED
	SJRWMD	v-0168	295125	81 636	1	1019322C	0	63	4.00	0.00	17.00	SECONDARY	TEST
	SJRWMD	v-0169	295126	81 725	1	0919322D	0	70	4.00	0.00	25.00	SECONDARY	TEST
	UNDETERMINED	v-0032	295144	815221	1	05193131	0	0	8.00	0.00	10.00	CONFINED	UNUSED
	J.E. PEARSON	v-0059	295621	81 538	1	1118324C	0	0	1.00	2.10	17.00	CONFINED	UNUSED
	J.E. PEARSON	v-0060	295621	81 538	2	1118324C	0	0	2.00	2.25	17.00	CONFINED	DOMESTIC

VOLUSIA

1,009

1,009

APPENDIX B

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
GEOPHYSICAL DATA BASE:
SUMMARY OF ALL WELLS LOGGED IN VOLUSIA COUNTY

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APPENDIX B

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ST.JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

WELL WELL OWNER	LAT	LONG	IP	LAND SURF ELEV		DEPTH	FORMATION	TO TOP	COMMENTS
V-0234 FP&L	285028	811931	0001	16.00	150		OCALA AVON PARK		
v-0170	285032	810622	0001	18.00	262	57	AVON PARK	76	AP DOLOSTONE 217'
V-0235 FBOG	285051	810338	0001	17.00	183	72	AVON PARK	66	
V-0236 TYRE FARM	285052	810408	0001	17.00	375	99	AVON PARK	58	AP DOLOSTONE 253'
V-0237 WESTON	285103	811158	0001	25.00	205	71	OCALA AVON PARK		
V-0238 PANDOLF FARMS	285105	810702	0001	27.00	258	88	OCALA AVON PARK	63 91	AP DOLOSTONE 226'
V-0239 ENTERPRISE RD	285126	811401	0001	17.00	103	62	OCALA AVON PARK	61 69	
V-0075 BURBAGE FARMS	285137	805218	0001	6.00	221	108	HAWTHORN OCALA		
V-0002 TURNER	285138	810706	0001	24.00	342	65	AVON PARK	77	AP DOLOSTONE 239'
V-0375 SANDRA GRAY	285146	811843	0001	0.00	340	0	AVON PARK	0	•
V-0240 FORTNER	285153	811442	0001	50.00	243	197	OCALA AVON PARK		
V-0176 PANDOLF FARMS	285206	810722	0001	24.00	222	67	OCALA AVON PARK		
V-0177 PANDOLF FARMS	285206	810722	0002	24.00	221	65	OCALA AVON PARK		
V-0178 PANDOLF FARMS	285206	810722	0003	24.00	145	64	OCALA AVON PARK	66 75	
V-0241 TISSOT	285302	-811817	0001	40.00	135	105	AVON PARK	63	
V-0242 N INDIAN HARBOR EST	A 285411	805148	0001	11.00	219	179	HAWTHORN OCALA	101 142	
V-0198 SJRWMD	285419	810410	0001	27.00	122	88	HAWTHORN AVON PARK	82 90	

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

WELL ID	WELL OWNER	LAT	LONG	IP	LAND SURF ELEV		CASIN DEPTH FEET	FORMATION	TO TOP	COMMENTS
v-0199	SJRWMD	285419	810410	2	27.00	86	86	NOT KNOWN	0	
v-0243	HIGHLANDS ESTATES	285438	811836	0001	35.00	201	81	OCALA AVON PARK	53 81	
v-0196	SJRWMD	285442	811814	0001	82.50	231	90	AVON PARK	92	·
v-0244	DELTONA DEVELOPMENT	285537	811108	0001	35.00	210	87	OCALA AVON PARK	56 71	
v-0245	ORANGE CITY	285635	811954	0001	49.00	172	83	OCALA AVON PARK	62 105	**
v-0246	ORANGE CITY	285635	811957	0001	45.00	99	59	OCALA	51	
V-0247	DELTONA UTILITIES	285636	811049	0001	60.00	253	169	OCALA AVON PARK	70 88	
v-0248	CITY OF DELTONA	285636	811049	0002	60.00	246	165	OCALA AVON PARK	86 108	
v-0249	STATE OF FLORIDA	285641	812004	0001	50.00	149	87	OCALA AVON PARK	64 102	
v-0250	STATE OF FLORIDA	285641	812004	2000	51.00	167	69	OCALA AVON PARK	67 102	
v-0251	BELMONT HOMES	285649	805304	0001	22.00	148	134	HAWTHORN OCALA	115 132	
v-0189	DAVIS	285756	811742	0001	62.00	223	137	AVON PARK	71	301 ppm CL & 180 Ft
v-0252	T G LEE	285805	811642	0001	70.00	279	141	OCALA AVON PARK	100 149	AP DOLOSTONE 229'
v-0253	DELAND C C	285903	811747	0001	35.00	372	210	AVON PARK LAKE CITY	72 3 57	
v-0254	DELAND C C	285916	811749	0001	70.00	344	.· 106	AVON PARK	65	
v-0255	CADILLAC AGENCY	285943.	811810	0001	45.00	150	80	AVON PARK	62	
v-0256	CITY OF NEW SMYRNA B	285949	805802	0001	27.00	190	111	OCALA	101	

ST.JOHNS RIVER WATER MANAGEMENT DISTRICT WAJER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

ID	WELL OWNER	LAT	LONG	ΙΡ	LAND SURF ELEV		CAS IN DEPTH FEET	FORMATION	DEP TH TO TOP	COMMENTS
								,		
v-0024	CITY OF NEW SMYRNA B	285953	805759	0001	27.00	213	112	OCALA	104	
								AVON PARK	156	
v-0259	CITY OF NEW SMYRNA B	290038	810431	0001	34.00	241	107	OCALA	98	
							•	AVON PARK	138	
v-0260	CITY OF NEW SMYRNA B	290038	810431	0002	34.00	215	110	OCALA	105	
								AVON PARK	137	
v-0261	CITY OF NEW SMYRNA B	290038	810454	0001	41.00	221	107	OCALA	98	
								AVON PARK	126	
v-0180	NEW SMYRNA BCH CTY	290103	805519	0001	8.00	998	130	HAWTHORN	93	QUESTIONALBLE
								OCALA	106	
								AVON PARK	196	
								LAKE CITY	579	
v-0076	CITY OF DELAND	290121	811858	0001	75.00	401	185	AVON PARK	70	
v-0114	USGS	290138	812032	0001	50.00	305	252	AVON PARK	56	
v-0262	CITY OF NEW SMYRNA B	290151	805503	0001	3.00	906	742	HAWTHORN	87	
								OCALA	93	
v-0263	W VOLUSIA HOSPITAL	290238	810906	0001	75.00	193	90	OCALA	48	
								AVON PARK	103	
v-0119	U.S.G.S.	290251	810014	0001	25.75	400	315	OCALA	97	
								AVON PARK	151	
v-0264	SUGAR MILL GOLF COUR	290252	805901	0001	22.00	242	102	OCALA	100	
								AVON PARK	165	
v-0265	SUGAR MILL GOLF COUR	290308	805901	0001	21.00	161	104	OCALA	91	
v-0226	SUGAR MILL GOLF C	290311	805902	0001	21.00	183	87	NOT KNOWN	. О	
v-0267	DELTONA TRANSFORMER	290323	811721	0001	76.00	337	140	OCALA	65	
							•	AVON PARK		AP DOLOSTONE 258'
v-0268	BRADDOCK	290354	811957	0001	82.00	191	104	OCALA	97	
							•	AVON PARK	132	
v-0269	CAMP	290354	812138	0001	60.00	245	115	OCALA	81	

v-0194

ST.JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

										•
WELL ID	WELL OWNER	LAT	LONG	IP	LAND SURF ELEV		DEPTH	FORMATION	DEPTH TO TOP	COMMENTS
v-0269	P CAMP	290354	812138	0001	60.00	245	115	AVON PARK	126	AP DOLOSTONE 235'
v-0270	CIRCLE-ELEVEN MOBILE	290441	811829	0001	94.00	269	110	OCALA AVON PARK	109 117	
v-027	I BOOKER	290510	812136	0001	75.00	261	107	OCALA	80	
v <i>-</i> 0186	5 BOOKER	290513	812147	0001	46.00	333	94	OCALA		BOOKER WELL # 2
								AVON PARK	137	
V-0028	3 USGS	290534	811750	0002	63.00	259	245	OCALA AVON PARK	85 104	
v-027	3 LOADHOLTZ	290537	812012	0001	100.00	287	153	OCALA AVON PARK	109 147	
v-027	4 LOADHOLTZ	290539	812006	0001	95.00	401	114	OCALA AVON PARK		
v-0181	1 CONTINENTAL FLOR GRN	290540	812145	0001	50.00	187	187	OCALA	125	QUESTIONABLE
v-0275	5 CONTINENTAL FLORAL G	290548	812126	0001	75.00	446	121	OCALA AVON PARK	79 140	
V-0276	5 DUVAL HOME RETARD CH	290553	812007	0001	71.00	307	146	OCALA AVON PARK	87 149	
v-027	7 DUDBELL	290558	812152	0001	25.00	221	53	OCALA AVON PARK	35 97	·
v-0278	B VOLUSIA COUNTY	290635	810102	0001	33.00	128	104	OCALA		
v-027	9 WARD	290646	812137	0001	75.00	353	92	OCALA AVON PARK	84 129	
v-0280) FEDERAL	290708	812333	0001	6.00	156		TAMPA	87	
	,					•	٠	OCALA AVON PARK	92 116	
v-028	1 VOLUSIA COUNTY LANDF	290750	810612	0001	27.00	205	0	OCALA AVON PARK	92 122	

3.00

79

28 OCALA

290752 812209 0001

27

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

WELL WELL OWNER ID .	LAT	LONG	IP	SURF		CASIN DEPTH FEET	FORMATION	TO TOP	COMMENTS
V-0283 BLACKWELDER	290802	811856	0001	75.00	335	123	OCALA AVON PARK		
V-0285 CITY OF DAYTONA BCH	290811	810832	0001	46.00	269	98	OCALA AVON PARK	95 118	
V-0286 CITY OF DAYTONA BCH	290812	810831	0001	46.00	219	94	OCALA AVON PARK		
V-0094 CITY OF DAYTONA BCH	290813	810832	0001	46'.00	217	96	OCALA AVON PARK		
V-0287 SPARTON ELECTRONICS	290816	811912	0001	81.00	161	95	OCALA AVON PARK	95 127	
V-0288 CITY OF DAYTONA BCH	290817	810822	0001	44.00	251	103	OCALA AVON PARK		
V-0284 CITY OF DAYTONA BCH	290820	810812	0001	41.00	260	100	OCALA AVON PARK		
V-0289 CITY OF DAYTONA BCH	290820	810823	0001	42.79	146	94	OCALA AVON PARK	93 111	
V-0290 CITY OF DAYTONA BCH	290820	810836	0001	47.00	262	101	OCALA AVON PARK		
V-0291 CITY OF DAYTONA BCH	290824	810802	0001	41.00	132	95	OCALA AVON PARK	67 89	
V-0292 CITY OF DAYTONA BCH	290829	810840	0001	46.00	261	100	OCALA AVON PARK	91 101	
V-0293 VOLUSIA CO LANDFILL	290830	810518	0001	26.00	189	91	TAMPA OCALA AVON PARK	83 86 150	
V-0183 SJRUMD	290834	810738	0001	43.00	817	. 93	OCALA AVON PARK LAKE CITY	92 141 560	TOMOKA TOWER DOLOSTONE AT 465
V-0188 SJRUMD	290834	810738	2	44.00	0	0	AVON PARK	92	
V-0192 SJRWMD	290834	810738	3	44.00	59	59	NOT KNOWN	0	

ST JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN

VOLUSIA COUNTY

WELL ID	WELL OWNER	LAT	LONG	IP	LAND SURF ELEV		CASIN DEPTH FEET	FORMATION	DEPTH TO TOP	COMMENTS
v-0192	SJRWMD	290834	810738	3	44.00	59	59	HAWTHORN	0	NO FORMATION
v-0295	CITY OF DAYTONA BCH	290838	810844	0001	44.00	502	95	OCALA AVON PARK LAKE CITY		AP DOLOSTONE 280'
v-0296	CITY OF PORT ORANGE	290847	810149	0001	31.00	182	123	OCALA	106	
v-0297	CITY OF PORT ORANGE	290847	810154	0001	31.00	185	121	OCALA AVON PARK	106 174	
v-0298	CITY PORT ORANGE	290847	810200	0001	31.00	198	121	OCALA	104	
v-0299	PELICAN BAY	290847	810312	0001	29.00	177	96	OCALA AVON PARK	94 112	
v-0301	PELICAN BAY	290944	810313	0001	29.00	159	102	OCALA AVON PARK	105 123	
v-0302	UNDERHILL	290945	813048	0001	14.00	277	89	OCALA AVON PARK	86 139	
v-0303	VOLUSIA COUNTY	290956	805848	0001	9.00	154	99	OCALA	92	
v-0304	U.S.G.S.	291024	810503	0001	27.00	232	154	OCALA AVON PARK	101 158	
v-0200	CITY DAYTONA BEACH	291031	805904	0001	13.00	879	98	OCALA AVON PARK LAKE CITY		·
v-0305	HENDRIX	291035	811800	0001	45 .00	179	96	HAWTHORN OCALA AVON PARK	34 99 157	
v-0306	CITY DAYTONA BEACH	291100	810537	0001	25 .00	211	97	OCALA AVON PARK	85 153	
v-0307	CAMP WINONA	291101	812002	0001	70.00	140	97	HAWTHORN OCALA	89 100	
v-0187	SJRWMD	291107	810342	0001	24.00	818	97	OCALA AVON PARK LAKE CITY	96 163 561	RELOGGED 10/8/85

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ST.JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN VOLUSIA COUNTY

ID	WELL OWNER		LONG	1P	SURF	TOTAL DEPTH LOGGED		FORMATION	DEPTH TO TOP	COMMENTS
v-0308	CITY DAYTONA BEACH	291113	810501	0001	27.00	172	101	OCALA	93	
v-0309	HENDERSON	291117	812513	0001	44.00	122	103	HAWTHORN OCALA		
v-0310	CITY DAYTONA BEACH	291121	810427	0001	26.00	173	105	OCALA AVON PARK	94 168	
v-0311	CITY DAYTONA BEACH	291140	810321	0001	31.00	273	137	OCALA AVON PARK	99 179	
v-0312	DEBARTOLO ENTERPRISE	291140	810356	0001	29.00	139	139	OCALA	98	
v-0313	CITY DAYTONA BEACH	291152	810237	0001	18.00	171	105	OCALA	90	
v-0314	STATE OF FLORIDA	291206	810307	0001	0.00	218	105	OCALA AVON PARK	105 192	
v-0315	STATE OF FLORIDA	291207	810305	0001	28.00	310	248	OCALA AVON PARK	106 189	
v-0317	STATE OF FLORIDA	291208	810302	0001	27.00	306	120	OCALA AVON PARK		
v-0316	STATE OF FLORIDA	291208	810305	0001	28.00	257	127	OCALA AVON PARK	105 185	
v-0318	STATE OF FLORIDA	291208	810308	0001	29.00	195	108	OCALA AVON PARK	109 183	
v-0319	STATE OF FLORIDA	291209	810300	0001	27.00	301	237	OCALA AVON PARK	99 181	
v-0320	STATE OF FLORIDA	291209	810305	0001	29.00	256	119	OCALA AVON PARK	105 191	
v-0321	STATE OF FLORIDA	291211	810302	0001	30.00	304		OCALA AVON PARK	100 180	
v-0322	UNDETERMINED	291216	812155	0001	4.00	154	154	HAWTHORN OCALA	122 150	
v-0062	SJRWMD	291216	812156	0001	25.00	154	131	HAWTHORN OCALA	122 150	NR BARBERVILLE

ST JOHNS RIVER WATER MANAGEMENT DISTRICT WATER RESOURCES DEPARTMENT - TECHNICAL DATA SERVICES DIVISION WELLS LOGGED IN

VOLUSIA COUNTY

WELL (D	WELL OWNER	LAT	LONG	IP .	LAND SURF ELEV		CASIN DEPTH FEET	FORMATION	DEPTH TO TOP	COMMENTS
v-0323	STATE OF FLORIDA	291237	810241	0001	6.00	181	106	OCALA	99	
v-0324	VOLUSIA COUNTY	291240	810050	0001	5.00	118	93	OCALA	88	
v-0325	VOL CO COUNCIL GOVTS	291246	810352	0001	31.00	172	109	OCALA	104	
v-0191	CITY OF HOLLY HILL	291248	810707	0001	26.00	248	101	OCALA	93	
								AVON PARK	112	
v-0190	BRADDOCK -	291409	812550	0001	61.00	436	105	OCALA	83	
								AVON PARK	164	
v-0144	SJRWMD	291431	812631	0001	60.00	123	86	OCALA	88	TURNER ROAD
v-0066	SJRWMD	291433	812841	0002	52.29	367	246	HAWTHORN	78	PIERSON IRON
								OCALA	85	
								AVON PARK	142	
v-0225	SJRWMD	291448	812749	0001	65.00	1,100	147	HAWTHORN	92	
						•		AVON PARK	130	
					,			LAKE CITY	510	
v-0147	USGS	291457	812709	0001	65.19	141	128	HAWTHORN	74	
		Q ,,,,,,,	0,2,0,					OCALA	128	
v 0048	C 121110	201/50	0420/2	0001	20.00	125	47			1 MI HEST DIEDSON
V-0068	SJRWMD	291438	812942	0001	20.00	125	03	HAWTHORN OCALA	63	1 MI WEST PIERSON
								AVON PARK	117	
V-0065	SJRWMD	291508	813028	0001	11.00	180	97	HAWTHORN	87	TRUCK RD # 3
								OCALA	98 149	
								AVON PARK	147	
v-0341	MR. UNATIN	291555	810458	1	0.00	198	105	TAMPA	100	
								OCALA	104	
								AVON PARK	146	
v-0343	WESLEY SINK	291821	810315	1	0.00	164	. 91	OCALA	92	
v-0064	SJRWMD	291823	812808	0001	50.00	158	113	HAWTHORN	99	COWART WELL
				-54.	- 3.00			OCALA	113	
V-0404	CIPUMO	2010/4	0130/3	0004	/5 00	404	70	OCAL 4	40	SEVILLE TOWER
A-0184	SJRWMD	271741	812942	UUU	45.00	101	19	OCALA	09	SEATEFE LOWER

APPENDIX C

WELL SITE LOCATIONS, AQUIFER SYSTEM THICKNESSES, SOURCE OF DATA, AND TYPE OF DATA

Site No.	Latitude	Long i tude	SJRWMD ⁽¹⁾ No(s).	FGS ⁽²⁾ No(s).	Thickness ⁽³⁾ of surficial aquifer (ft)	Thickness ⁽⁴⁾ of regional confining zone (ft)	Source ⁽⁵ of Data) Type of ⁽⁶⁾ Data Available
1	291941	812942	v-0353* v-0184 v-0185	W-16100	70	0	WM117 SJR	G,C,A,P,CM,WL
2	292432	810556	v-0371	W-16116	>87	-	WM117	C,A,P
3	291448	812749	V-0354 V-0225	w-16101	92	38	WM117 SJR	G,C,A,P,CM,WL
4	291337	811101	v-0356	w-16102	>97	-	WM117	C, A, P
5	291031	805904	v-0373 v-0200	W-16118	101	0	WM117 SJR	G,C,A,P
6	290905	810455	v-0357	W-16103	>87	-	WM117	C,A,P
7	290802	812112	V-0359 V-0360 V-0372 V-0374	w-16105	85	0	WM117 SJR	G,C,A,P,CM,WL
8	290834	810738	V-0358* V-0183 V-0188 V-0192 V-0193	W-16104 W-183	93	0	WM117 SJR	G,C,L,A,P,WL
9	290652	811329	v-0361	W-16107	>57	-	WM117	C, A
10	290100	811322	V-0498	W-16119 W-5	>87	-	WM117 WM112	C,P,L
11	290106	810417	v-0363	-	>68	-	WM117	G,A,P
12	285656	811037	v-0365	W-16110	>92	- -	WM117	C,A,P
13	285653	805947	V-0364	W-16108 W-16109	82	0	WM117	C,A,P,CM
14	285535	804924	-	W-16117	>102	-	WM117	G,C,A,P
15	285442	8,11814	V-0366* V-0196 V-0197	W-16111	96	0	WM117 SJR	G,C,A,P,CM
16	285419	810410	V-0367* V-0199	W-16112	82	8	WM117 SJR	G,C,A,P,CM,WL
17	285129	805105	-	w-16120	>62	. •	WM117	C,P
18	285045	810948	v-0368	W-16113	77	0	WM117	G,C,A,P,CM
19	284853	805812	v-0369	W-16114	>77 C-2	-	WM117	C,A,P,CM

Site No.	Latitude	Longitude	SJRWMD ⁽¹⁾ No(s).	FGS ⁽²⁾ No(s).	Thickness (3) of surficial aquifer (ft)	Thickness (4) of regional confining zone (ft)	Source ⁽⁵⁾ of Data) Type of ⁽⁶⁾ Data Available
20	284110	805932	v-0370	W-16115	>95	>1	WM117 SJR	G,C,A,P,CM
21	292421	810730	-	-	90	0	GOMBERG (1981), SITE 17	L
22	292353	810842	-	-	106	0	GOMBERG (1981) SITE 15	L,A
23	292309	810823	-	-	>78	. -	GOMBERG (1981) SITE 12	L,A
24	292218	810758	-	-	>76	-	GOMBERG (1981) SITE 9	L,A
25	292156	810759	v-0043	-	101	0	GOMBERG (1980) SITE 1	L,A
26	292027	810803	v-0045	-	105	0	GOMBERG (1980) SITE 2	L,A
27	292042	810703	-	-	>90	-	GOMBERG (1980) SITE 10	
28	292053	810546	V-0048	-	87	0	GOMBERG (1980) SITE 12	L
29	291004	811014	-	-	90	0	RUTLEDG (1985) WELL 2A	
30	291720	811944	F-0256	-	55	5	MUNCH ET.AL. (1979) . SJR	G
31	291818	811904	F-0251	-	63	0	SJR	G,WL
32	291903	811855	F-0003	-	46	4	SJR MUNCH ET.AL (1979)	G

Site		to in the s	SJRWMD ⁽¹⁾	FGS ⁽²⁾	Thickness ⁽³⁾ of surficial aquifer	Thickness (4) of regional confining zone	Source ⁽⁵	Type of ()
No.	Latitude	Long+tude -	Ño(s).	No(s).	(ft)	(ft)	Data	Data Available
33	292226	812056	F-0005	-	58	6	SJR MUNCH ET.AL (1979)	G
34	292302	811559	F-0240	_	88	0	SJR	G
35	292431	812244	F-0006	-	109	24	SJR MUNCH ET.AL. (1979)	G
36	291823	812808	V-0064	-	99	15	SJR MUNCH (1979)	G,L
37	291821	810315	V-0343	-	93	0	SJR	G
38	291508	813028	V-0065	-	87 ်	12	SJR MUNCH (1979)	G,L
39	291458	812942	v-0068	-	55	9	SJR MUNCH (1979)	G,L
40	291457	812853	-	-	78	32	SJR Johnson (1981)	G
41	291555	810458	v-0341	-	105	0	SJR	G
42	291431	812631	V-0144	-	76	0	SJR MUNCH (1979)	G, L -
43	291409	812550	v-0190		83	0	SJR	G
44	291248	810707	v-0191	-	93	0	SJR	G
45	291246	810352	v-0325	-	104	0	SJR	G
46	291216	812156	V-0062	-	122	. 28	SJR MUNCH (1979)	G,L
47	291207	810305	v-0315	-	106	0	SJR	G
48	291140	810321	v-0311	-	99	. 0	SJR	G
49	291117	812513	v-0309	-	92	9	SJR	G
50	291107	810342	v-0187	-	96	0	SJR	G

Site No.	Latitude '	·Longi tude -	SJRWMD ⁽¹⁾ No(s).	FGS ⁽²⁾ No(s).	Thickness (3) of surficial aquifer (ft)	Thickness ⁽⁴⁾ of regional confining zone (ft)	Source ⁽ of Data	5) Type of ⁽⁶⁾ Data Available
51	291101	812002	v-0307		89	11	SJR	
	291035	811800	v-0305	_	99	0	SJR	G
52								
53	291024	810503	v-0304	-	101	0	SJR	G
54	290956	805848	v-0303	-	92	0	SJR	G
55	290945	813048	v-0302	-	86	0	SJR	G
56	290944	810313	v-0301	-	105	0	SJR	G
57	290847	810312	v-0299	-	94	0	SJR	G
58	290847	810149	v-0296	-	106	0	SJR	G
59	290830	810518	v-0293	-	83	0	SJR	G
60	290816	811912	v-0287	-	95	0	SJR	G
61	290813	810832	v-0094	_	94	0	SJR	G
62	290802	811856	v-0283	_	69	0	SJR	G
63	290750	810612	v-0281	_	92	0	SJR	G
				_				
64	290708	812333	v-0280	-	87	0	SJR	G
65	290646	812137	v-0279	-	84	0	SJR	G
66	290635	810102	v-0278	· -	107	0	SJR	G
67	290548	812126	V-0275	-	79	0	SJR	G
68	290537	812012	v-0273	-	109	0	SJR	G
69	290534	811750	v-0028	-	85	0	SJR	G
70	290510	812136	v-0271	-	80	0	SJR	G
71	290441	811829	v-0270	-	109	0	SJR	G
72	290354	811957	V-0268	_	97	0	SJR	G
73	290323	811721	V-0267	. -	65	0	SJR	G
74	290308		v-0265	_	91	0	SJR	G
	ĺ		V-0264		100	0	SJR	G
75	290252	805901		-				
76	290238	810906 `	V-0263	-	48	0	SJR	G
77	290151	805503	v-0262	-	87	6	SJR	G

Site			SJRWMD ⁽¹⁾	FGS ⁽²⁾	Thickness ⁽³⁾ of surficial aquifer	Thickness (4) of regional confining zone	Source ⁽⁵	Type of ⁽⁶⁾
No.	Latitude	Long'i tude	No(s).	No(s).	(ft)	(ft)	Data	Data Available
78	290138	812032	V-0114	-	56	0	SJR	G
79	290121	811858	v-0076	-	70	0	SJR	G
80	290038	810431	v-0259 v-0260	-	105	0	SJR	G
81	285943	811810	V-0255		62	0	SJR	G
82	285903	811747	V-0253	-	72	o	SJR	G
83	285805	811642	v-0252	-	100	. 0	SJR	G
84	285756	811742	v-0189	-	71	0	SJR	G
85	285649	805304	v-0251	-	75*	57*	SJR	G
86	285641	812004	V-0249 V-0250	-	64	0	SJŔ	G
87	285537	811108	V-0244	-	56	0	SJR	G
88	285411	805148	v-0242	-	60*	82*	SJR	G
89	285257	811212	v-0458	-	105	0	SJR	G .
90	285206	810722	v-0176 v-0177 v-0178	-	65	0	SJR	G
91	285146	811843	v-0375	-	32	0	SJR	G
92	285153	811442	v-0240	-	114	0	SJR	G
93	285137	805218	v-0075	-	60*	58*	SJR	G
94	285105	810702	v-0238	-	63	0	SJR	G
95	285103	811158	v-0237	-	61	0	SJR	G .
96	285052	810408	v-0236	-	58	0	SJR	G
97	285032	810622	v-0170	-	55	0	. SJR	G
98	285028	811931	v-0234	-,	118	0	SJR	G
99	284953	812029	s-0082	-	134	0	SJR	G_
100	284739	811426	s-0081	-	78	0	SJR	G
101	284715	810518	s-0087 s-0201 s-0202	. • -	70	0	SJR SJR	G,L,A,WL Market Market Market Market Market

Site			SJRWMD ⁽¹⁾	FGS ⁽²⁾	Thickness (3) of surficial aquifer	Thickness ⁽⁴⁾ of regional confining zone	Source ⁽ of	5) Type of ⁽⁶⁾
No.	Latitude	Long tude	No(s).	No(s).	(ft)	(ft)	Data	Data Available
102	284712	810443	S-0029 S-0027 S-0030	-	74	29	SJR	G,L,WL
103	284658	811920	s-0079	-	66	22	SJR	G
104	284626	810518	s-0026 s-0032	-	78	4	SJR	G,L
105	284619	812118	s-0077	-	75	97	SJR	G
106	284548	811702	s-0076	-	78	0	SJR	G
107	284548	811515	s-0075	-	93	0	SJR	G
108	284456	810605	s-0074	-	69	0	SJR	G
109	284442	810524	s-0034	-	58	0	SJR	G
110	284332	810650	s-0072	-	91	0	SJR	G
111	284318	810519	s-0071	-	65	o	SJR	G
112	284247	810708	s-0001 s-0002	-	70	19	SJR	G
113	284233	810452	s-0042	-	67	54	SJR	G
114	284217	810230	s-0025	-	49	0	SJR	G
115	284116	805140	BR-0443	-	98	0	SJR	G
116	293944	804633	BR-0587	-	110	6	SJR	G
117	283819	805347	BR-0483	-	84	0	SJR	G
118	283739	805429	BR-0482	-	90	0	SJR	G
119	283732	805100	BR-0585	-	92	0	SJR	G
120	292100	813019	-	W-198	80	10	FGS	L
121	292310	811120	-	W-5038	96	0	FGS	L
122	292115	811515	-	w-5040	>96	>76	FGS	L
123	292000	812100	-	W-4067	70	0	FGS	L
124	291920	812310	- ·	W-5039	83	14	FGS	L
125	291830	811840	-	W-4057	60	0	FGS	L
126	292347	810759	-	W-12060	120	0	FGS	L

Site No.	Latitude	Longitude	SJRWMD ⁽¹⁾ No(s).	FGS ⁽²⁾ No(s).	Thickness ⁽³⁾ of surficial aquifer (ft)	Thickness (4) of regional confining zone (ft)	Source ⁽⁾ of Data	5) Type of ⁽⁶⁾ Data Available
127	292315	810509	-	W-11848	90	0	FGS	L
128	292230	810843	-	W-12059	105	0	FGS	L
129	292008	· 810606	-	W-3472	91	0	FGS	L
130	291953	810740	-	W-11776	103	0	FGS	L
131	291926	810628	-	W-12633	100	0	FGS	L
132	291812	810252	-	w-10332	90	0	FGS	L
133	291700	810340	-	W-3976	94	. 0	FGS	L
134	291644	810417	-	w-11099	90	0	FGS	L
135	291515	812628	-	W-12228	20	25	FGS	t
136	291445	812743	-	W-5743	95	45	FGS	Ĺ
137	291411	812734	-	W-11696	90	25	FGS	L
138	291200	810340	-	W-12796	>110	-	FGS	£
139	291158	810710	-	W-11329	100	0	FGS	L
140	291107	810503	-	W-3829	85	0	FGS	L .
141	291051	810504	-	W-3527	84	0	FGS	L
142	290947	810603	-	w-3476	82	0	FGS	L
143	290941	810106	-	w-3525	86	0	FGS	L
144	290831	810208	-	W-11520	100	0	FGS	
145	290718	811857	-	W-5611	85	0	FGS	L
146	290527	812000	-	w-2865	95	0	FGS	L
147	290549	810300	-	w-3527	62	0	FGS	L
148	290456	812018	-	w-3524	71	0	FGS	L
149	290448	810854	-	W-8458	77	0	FGS	L
150	290308	811817	-	W-8503	110	0	FGS	L
151	290323	811706		W-657	90	0	FGS	L
152	290208	811935	-	w-939	85	0	FGS	L
153	290210	811002	-	W-1118	100	0	FGS	L

Site			SJRWMD ⁽¹⁾	FGS ⁽²⁾	Thickness ⁽³⁾ of surficial aquifer	Thickness ⁽⁴⁾ of regional confining zone	Source ⁽⁵) Type of ⁽⁶⁾
No.	Latitude	Longitude		No(s).	(ft)	(ft)	Data	Data Available
154	290251	810014	_	W-8455	101	0	FGS	L
155	293110	811742	-	w-8134	110	0	FGS	L
156	290002	811812	-	W-3183	60	0	FGS	L
157	285948	811950	-	W-8399	140?	100?	FGS	L
158	285917	811746	-	W-12705	80	0	FGS	L
159	285951	805800	-	W-12904	100	0	FGS	L
160	285913	805627	-	W-4579	89	0 .	FGS	L
161	285625	811730	-	w-12002	50	0	FGS	L
162	285625	811227	-	W-8456	72	0	FGS	L
163	285658	805653	-	W-12786	50*	90*	FGS	L
164	285540	811427	-	W-7200	60?	30?	FGS	L
165	285533	811126	-	w-8588	80	0	FGS	L
166	285405	811926	-	W-12894	80	0	FGS	L
167	285347	811415	-	W-8612	100	0	FGS	L
168	285304	811316	-	₩-8271	110	0	FGS	L
169	285208	811227	-	w-11589	75	0	FGS	L
170	285158	811926		W-10638	20	0	FGS	L .
171	285117	811926	-	W-1639	100	0	FGS	L
172	285148	811814	-	W-8837	40	0	FGS	L
173	285110	810708	-	W-12368	60	0	FGS	L
174	285037	811930	-	W-11267	60	0	FGS	L
175	285041	811002	-	W-2798	70	0	FGS	L
176	284130	804325	-	W-5906	27	113	FGS	С
177	283930	803810	-	W-5911	135	55	FGS	С
178	291323	811912	- ·	W-1	>76	-	WM112 FGS	L,G,C,P,CM
179	291510	810740	-	W-2	>78	-	WM112 FGS	L,G,C,P,CM

Site No.	Latitude	Long-trude -	SJRWMD ⁽¹⁾ No(s).	FGS ⁽²⁾ No(s).	Thickness ⁽³⁾ of surficial aquifer (ft)	Thickness (4) of regional confining zone (ft)	Source ⁽⁵ of Data) Type of ⁽⁶⁾ Data Available
180	291016	812630	-	-	>90	-	WM112 (Well #6)	L,G,C,P,CM
181	290609	811400	-	W-7	>100	-	WM112 FGS	L,G,C,P,CM
182	290048	805852	-	W-3	91	0	WM112 FGS	L,G,C,P,CM
183	285140	805450	-	w-4	> 89	>48	WM112 FGS	L,G,C,P,CM
184	285126	810635	-	-	69	. 0	SJR Unpub.	L
185	285126	810723	-	-	63	0	SJR UNPUB.	Ĺ
186	285010	810838	-	-	73	0	SJR UNPUB.	L
187	285034	810750	-	-	57	0	SJR U npub .	L
188	285034	810435	-	-	85	0	SJR UNPUB.	L .
189	284936	810719	-	-	57	0	SJR UNPUB.	L
190	284958	810614	v-0171	-	67	0	SJR UNPUB.	L

APPENDIX D

FLORIDA GEOLOGICAL SURVEY
WELL LOG DATA SYSTEM:
SUMMARY OF WELL LOGS IN VOLUSIA COUNTY

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	en e					•
		,	-			

LITHOLOGIC WELL LOG DIRECTORY FOR VOLUSIA COUNTY

WELL NO.	TOWNSHIP/RANGE	LATITUDE/LONGITUDE	ELV. DEP	TH
	T 450 0 005 0 05 00	N 000 400 000 U 040 400 400	A(4 - 3.5.5B	,
W- 1	T.15S R.30E S.05 BC	N 29D 13M 23S W 81D 19M 12S	041 0007	
W- 2	T.14S R.31E S.05 DC	N 29D 15M 10S W 81D 07M 40S	019 0007	
₩- 3	T.17S R.33E S.22 CB	N 29D OM 48S W 80D 58M 52S	025 0009	
₩ - 4	T.19S R.34E S.	N 28D 51M 40S W 80D 54M 50S	025 0013	
W-5	T.17S R.31E S.17 AC	N 29D 01M OS W 81D 13M 22S N 29D 06M 09S W 80D 14M OS	042 0007 094 0006	
W- 7	T.16S R.30E S.17 T.16S R.32E S.06 DB	N 29D 06M 09S N 80D 14M 0S N 29D 08M 34S N 81D 07M 42S	094 0006 043 0081	
₩- 183 ₩- 198	T.13S R.28E S.19	N 29D 21M 00S W 81D 30M 19S	55 10	
W- 176 W- 416	T.175 R.30E S.28	N 29D 59M 08S W 81D 18M 03S	042 0011	
W- 418	T.16S R.29E S.38	N 29D 08M 24S W 81D 21M 37S	008 0025	
W- 421	T.15S R.30E S.19	N 29D 10M 53S W 81D 19M 41S	041 0018	
W- 422	T.30S R.31E S.16	N 29D 06M 42S W 81D 18M 28S	72 0012	
₩- 489	T.16S R.29E S.44	N 27D 04H 17S W 81D 21H 38S	88 24	
W- 492	T.15S R.28E S.03	N 29D 13M 18S W 81D 28M 43S	052 0015	
W- 582	T.165 R.33N S.03	N 29D 08M 37S W 80D 59H 19S	005 0013	
W- 657	T.17S R.30E S.03	N 29D 03M 23S W 81D 17M 06S	071 0051	
W- 744	N/A	N/A N/A	008 0031	
W- 939	T.175 R.30E S.17	N 29D 02M 08S W 81D 19M 35S	40 29	
W- 1118	T.175 R.31E S.11	N 29D 02M 10S W 81D 10M 02S	042 0595	
₩- 1639	T.195 R.30E S.09 DA	N 28D 51M 17S W 81D 19M 26S	050 0055	
W- 1746	T.15S R.30E S.02	N 29D 13M 51S W 81D 15M 54S	045 0541	
W- 2798	T.195 R.31E S.13 B	N 28D 50M 41S W 81D 10M 02S	51 0008	
W- 2865	T.16S R.30E S.19 DA	N 29D 05M 27S W 81D 20M 00S	109 N/A	
W- 2878	T.175 R.30E S.21 DD	N 29D 00M 01S W 81D 18M 07S	033 0014	2
W- 3125	N/A	N/A N/A	N/A 0012	0
W- 3183	T.17S R.30E S.21 DC	N 29D 00M 02S W 81D 18M 12S	044 0040	0
₩- 3472	T.135 R.32E S.40	N 29D 20M 08S W 81D 06M 06S	018 0014	5
W- 3476	T.15S R.32E S.33 AB	N 29D 09M 47S W 81D 06M 03S	027 0049	6
W- 3527	T.16S R.31E S.20 DB	N 29D 05M 49S W 81D 03M 00S	039 0035	1
W- 3528	T.158 R.32E S.33	N 29D 09M 19S W 81D 06M 06S	025 0023	
W- 3531	N/A	N/A N/A	N/A 0012	
W- 3535	T.15S R.32E S.33 BB	N 29D 09H 49S W 81D 05H 47S	027 0023	
W- 3540	T.15S R.32E S.22 CD	N 29D 10M 51S W 81D 05M 04S	026 0049	
W- 3541	T.155 R.33E S.	N/A N/A	011 0018	
W- 3573	T.15S R.33E S.34	N 28D 11H 52S W 81D 01H 40S	9 0016	
W- 3677	T.175 R.30E S.08 D	N 29D 01M 46S W 81D 18M 29S	038 0072	
W- 3731	T.17S R.34E S.	N 28D 58M 45S W 80D 54M 55S	012 0015	
₩- 3732	T.14S R.33E S.	N/A N/A	011 0013	
W- 3732	T.14S R.33E S.	N/A N/A	011 0013	
W- 3732	T.14S R.33E S.	N/A N/A	011 0013	
₩- 3775 W- 3775	T.17S R.29E S.24 CC T.17S R.29E S.24 CC	N 29D 00M 03S W 81D 21M 23S N 29D 00M 03S W 81D 21M 23S	008 0013 008 0013	
W- 37/3 W- 3789	T.16S R.30E S.36 DC	N 29D 00M 03S W 81D 21M 23S N 29D 03M 37S W 81D 15M 07S	062 0013	
W- 3767 W- 3976	T.145 R.32E S.	N 29D 17M 00S W 81D 03M 40S	012 0020	
W- 4166	N/A	N/A N/A	012 0015	
W- 4223	T.15S R.32E S.23	N 29D 11H 20S W 81D 04H 38S	058 0050	
W- 4226	T.155 R.33E S.27	N 29D 10M 23S W 80D 58M 54S	019 0017	
W- 3471	T.155 R.33E S.	N 29D 09H 54S W 80D 59H 05S	21 14	
W- 3472	T.135 R.32E S.40	N 29D 20M 08S W 81D 18M 12S	018 0014	
₩- 3473	T.135 R.32E S.32	N 27D 20M 08S W 81D 18M 12S	011 0014	
.				-

₩-	3475	T.179	R.33E	9.23		N	290	00M	47S	¥	800	57H	405	N/A	00170
# -	3476	T.159	R.32E	S.33	AB	N	29D	09Ħ	475	¥	810	06M	038	027	00496
# -	3524	T.16S	R.30E	S.30	Α	N	29D	04Ħ	565	W	81D	20M	185	043	00084
4 -	3525	T.15S	R.33E	5.24	DD	N	29D	09M	415	W	81D	01M	065	008	00125
₩-	3529	T.16S	R.33E	s.		N/	Α				/A			009	00100
# -	3532	T.158	R.32E	S.33	CA	N	290	09M	325			06 M	035	027	00235
# -	3534		R.32E					09H				06M		026	00234
Ų -	3539		R.32E					09M				068		026	00233
	3574		R.33E					11M				01M		008	00160
	3581		R.30E		RΑ			59H				18M		052	00185
	3697		R.30E					04M				18M		084	00138
	3829		R.32E		ΔD			11#				05M		059	00200
	4164		R.29E					MOO				21M		019	00050
	4166	N/A	N12/2	J.L.		N/		V V 11	505		/A	£ 411		012	00150
	4167	N/A				N/					/A			017	00175
	4226		R.33E	S 27	n R			10M	255			59M	200	19	170
	4579		R.34E		00			59H				56M		10	183
	4725		R.34E					58M				55M		010	01270
	5611		R.30E		Δħ			07M				18M		75	215
	5611		R.30E			N/i		V/11	103	N/		100	J / J	75	255
	5743		R.28E		עא			14M	450			27H	4.2C		355
	5743		R.28E			N/		1413	733	N/		EM	733	66 34	355
	5758		R.28E		nc.			14M	45C			27H	4 L C	74	250
			R.31E					54H				15H		042	00500
	6094		R.31E												00250
	6893				dd			54M				15H		050	
	7200		R.31E					55M				14H		087	00254
	7200	T.185						55M				14#		087	00254
	7200		R.31E					55M				148		087	00254
	7871		R.32E					10H				04Ħ		25	500
	7942		R.30E					10H				19H		49	500
	8134		R.30E		CA			31H				17H		89	390
	8259		R.31E					53H				14#		087	00252
	8264		R.31E					53H				15M		80	248
	8271		R.31E					53M				13H		059	00250
	8399		R.30E					59M				19M		58	310
	8453		R.31E					06M	275			10M	57S	40	304
	8453		R.31E			N/I				N/				40	304
	8454		R.31E					01 H				128		39	317
	8455		R.33E		BD				515			MOO		25	700
. \ -	8456		R.31E					56M				128		37	505
W -	8458	T.16S	R.31E	S.25		N i	29D	04M	485	W	81D	08M	545	43	310
	8458		R.31E			N/i				N/				43	310
W-	8469	T.17S	R.31E	5.18	BB	N i	29D	00M	525			13M		45	530
¥-	8503	T.17S	R.30E	5.04				03M		¥	810	18M	175	70	407
W-	8588	T.18S	R.31E	5.14		N i	28D	55M	335	W	81D	118	265	039	00215
₩-	8588	T.18S	R.31E	5.14		N i	28D	55M	335	¥	81D	118	265	039	00215
¥-	8589	T.185	R.31E	5.21		N i	28D	54Ħ	405	W	81D	128	265	050	00550
¥-	8590	T.17S	R.29E	5.13	C	N A	29D	01M	005	W	81D	10S	465	42	498
	8612		R.31E			N i	28D	53 H	475	W	81D	14H	158	080	00235
	8837		R.30E			N a	280	51M	485	W	81D	18M	145	50	172

₩-	10332		R.32E		CB	N	290	18M	125	W	810	02M	525	6	558
W-	10332	T.145	R.32E	S.41		N/	A			N.	/A			6	N/A
₩-	10638	T.19S	R.30E	S.		N	580	51H	585	¥	81D	19H	269	45	147
₩-	11099	T.14S	R.32E	5.41		N	29D	16H	445	W	81D	04M	175	6	300
₩-	11099	T.14S	R.32E	5.41		N	29D	16M	445	¥	810	04M	175	5	300
# -	11267	T.195	R.30E	5.27		N	58D	50M	375	¥	810	19H	30S	30	140
# -	11329	T.15S	R.32E	S.17		N	290	118	585	¥	810	07H	105	25	160
¥ -	11520	T.16S	R.33E	5.06		N	29D	08M	315	¥	81D	02#	085	30	205
₩-	11569	T.17S	R.30E	S.28		N	28D	59H	265	¥	810	17H	545	50	210
¥ -	11589	T.19S	R.31E	5. 3		N	28D	52M	085	W	810	12M	275	25	260
₩-	11696	T.145	R.28E	5.34		N	290	148	115	¥	810	27M	345	70	200
₩-	11776	T.13S	R.31E	5.36	В	N	29D	19M	535	W	810	07H	405	28	160
¥-	11848	T.13S	R.32E	5.09		N	290	23M	155	W	810	05M	095	15	155
₩-	12002	T.18S	R.30E	5.11		N	280	56M	255	¥	810	178	305	35	295
W -	12059	T.13S	R.31E	S.14		N	290	82M	305	¥	810	08M	435	25	260
W-	12060	T.13S	R.31E	5.37		N	290	23H	475	¥	810	07H	595	30	200
W-	12081	T.18S	R.30E	S.15		N	280	55M	345	W	810	18M	265	58	203
W-	12228	T.14S	R.28E	5.26		N	290	15M	155	W	81D	26M	285	40	190
W-	12231	T.185	R.30E	5.34		N	280	52M	57\$	¥	810	18M	265	65	170
# -	12368	T.195	R.32E	5.09		N	280	51M	105	W	810	07H	085	25	270
¥-	12514	T.165	R.29E	5.06		N	290	08M	205	W	810	25H	065	3	220
W-	12633	T.14S	R.32E	5.30		N	290	19H	265	W	810	06M	285	25	500
¥-	12705	T.17S	R.30E	85.2		N	2 3 D	59M	175	W	810	17M	465	50	250
₩-	12786	T.185	R.34E	5.8		N	580	56M	585	¥	80D	56M	535	50	140
# -	12796	T.15S	R.32E	S.13	DD	N	290	12M	005	¥	810	03M	405	25	150
¥-	12894	T.18S	R.30E	5.28	DA	N	280	54M	058	¥	81D	19H	265	N/A	200
H -	12904	T.17S	R.33E	5.26		N	280	59M	515	W	800	58M	005	25	210
# -	14181	T.14S	R.28E	5.10	AA	N	2 9 D	18M	238	W	81D	28M	085	50	166
W-	14182	T.15S	R.29E	5.14	AB	N	290	12M	165	¥	810	218	558	25	170
# -	14183	T.145	R.28E	5.35	AB	N	29D	14M	315	¥	810	26M	305	60	125
# -	15995	T.158	R.32E	5.39		N	29D	118	075	W	810	03M	425	024	00820
¥-	16109	T.185	R.33E	5.11		N	28D	56M	53 S	¥	80D	59H	475	N/A	00087
W-	16120	T.195	R.35E	5.08				51M		W	800	51M	055	N/A	00062
₩-	16117	T.18S	R.35E	5.22		N	5 8D	55M	358	¥	80D	49M	245	010	00102
W -	16110		R.31E					56M				10M		040	00092
	16107		R.30E					06 H				13M		040	00057
	16104		R.31E					0 8M				07M		044	00097
	16116		R.32E					24M				05H		005	00087
	16118		R.33E					10M				59H		016	00095
	16119		R.31E					OIM		¥		13H		N/A	00087
	16102		R.31E					13M		W		11M		045	00097
	16103		R.32E					09M		¥		04M		950	00087
	16100		R.28E					19 H			_	29 H		098	00072
	16101		R.28E					14H		¥		27H		040	00087
	16105		R.29E					08M		W		21H		065	00092
	16108		R.33E					56M				59M		060	N/A
	16111		R.30E					54M				18M		083	00097
	16112		R.33E		AA			54H		W		04M		27	00070
	16113		R.31E					50M				09M		N/A	00085
W -	16114	T.195	R.33E	5.25		N	58D	48M	53\$	W	80D	58M	125	025	00077

H- 16115 T.21S R.33E S.11 N 28D 04M 08S N 80D 59M 32S N/A 00096

THERE ARE 151 WELLS AVAILABLE FOR VOLUSIA COUNTY

APPENDIX E

LITHOLOGIC DESCRIPTIONS OF CORE HOLES AT PROJECT SITES

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LITHOLOGIC WELL LOG PRINTOUT

SOURCE - F6S

WELL NUMBER: W- 16100

COUNTY - VOLUSIA

TOTAL DEPTH: 00072 FT.

LOCATION: T.135 R.28E S.32

1 SAMPLES FROM 10 TO 72 FT.

LAT = N 29D 19M 41 LON = W 81D 29M 42

COMPLETION DATE - / /87

ELEVATION - 098 FT

OTHER TYPES OF LOGS AVAILABLE - NONE

16S AVAILABLE - NONE

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: FISHER, 8-12-87; POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS WHERE APPLICABLE

0. - 25. 090UDSC UNDIFFERENTIATED SAND AND CLAY

25. - 70. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

70. - 72. 1240CAL OCALA GROUP

0 - 10 NO SAMPLES

10 - 12 SAND; LIGHT OLIVE GRAY TO DARK YELLOWISH BROWN; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: CLAY-10%;
OTHER FEATURES: UNWASHED SAMPLE;

12 - 15 NO SAMPLES

- 15 17 SAND; DARK YELLOWISH BROWN TO MODERATE BROWN; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-10%;
 OTHER FEATURES: UNWASHED SAMPLE;
 THE LOWER 2" IS YELLOWISH GRAY SAND CONTAINING LESS CLAY
- 17 20 NO SAMPLES
- 20 21 SAND; BROWNISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-75%, CLAY-15%, SILT-09%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: UNWASHED SAMPLE;
 THERE IS AN ABRUPT FACIES CHANGE TO SILTY CLAY AT A DEPTH OF 21 FEET
- 21 22 CLAY; LIGHT OLIVE GRAY; 63% POROSITY, INTERGRANULAR; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-65%, SILT-35%; OTHER FEATURES: UNWASHED SAMPLE;
- 22 25 NO SAMPLES

W- 16100 CONTINUED

- 25 27 CLAY; LIGHT OLIVE GRAY; 75% POROSITY, INTERGRANULAR, INTRAGRANULAR; UNCONSOLIDATED;
 ACCESSORY MINERALS: CLAY-70%, SHELL-28%, SILT-02%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 MOLLUSC FRAGMENTS ARE CONCENTRATED IN THE MIDDLE OF THE 2 FOOT INTERVAL
- 27 30 NO SAMPLES

- 30 32 CLAY; LIGHT OLIVE GRAY; INTERGRANULAR; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-80%, SILT-15%, CALCILUTITE-05%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 32 35 NO SAMPLES
- 35 37 CLAY; LIGHT OLIVE GRAY TO OLIVE GRAY; 64% POROSITY, INTERGRANULAR; UNCONSOLIDATED; CEMENT TYPE(S): CALCILUTITE MATRIX; ACCESSORY MINERALS: CLAY-75%, CALCILUTITE-20%, SILT-05%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 37 40 NO SAMPLES
- 40 42 SAND; YELLOWISH GRAY TO LIGHT OLIVE; INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE; ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: QUARTZ SAND-60%, SHELL-30%, SILT-05%, CLAY-03%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 42 45 NO SAMPLES
- 45 46 CLAY; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: CLAY-60%, SHELL-35%, SILT-05%;

 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;

 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 46 47 SAND; LIGHT OLIVE TO LIGHT OLIVE GRAY; 50% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;

 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;

 CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: CALCILUTITE-10%, SHELL-40%, PHOSPHATIC SAND-05%, CLAY-10%;

 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;

 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 47 50 NO SAMPLES
- 50 52 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-70%, SHELL-25%, SILT-04%, HEAVY MINERALS-01%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;

H- 16100 CONTINUED

- 52 55 NO SAMPLES
- 55 57 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 42% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: QUARTZ SAND-54%, SHELL-40%, SILT-05%, HEAVY MINERALS-01%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 57 60 NO SAMPLES
- 50 62 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 41% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-60%, SHELL-35%, SILT-04%, CALCILUTITE-01%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 62 65 NO SAMPLES
- 65 67 SAND; OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-20%, SHELL-35%, SILT-15%, CLAY-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 67 70 NO SAMPLES
- 70 72 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT DRANGE; INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: PELLET, BIOGENIC, SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO GRAVEL; UNCONSOLIDATED;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: LIMESTONE-80%, SHELL-10%, CALCILUTITE-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 72 TOTAL DEPTH

WM117 Site No. 2

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16116 TOTAL DEPTH: 00087 FT.

COUNTY - VOLUSIA

SAMPLES - NONE

LOCATION: T.135 R.32E S.05

LAT = N 29D 24M 32

LON = W 81D 05M 56

COMPLETION DATE - / /87

ELEVATION - 005 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

0. - 10. 000NOSM NO SAMPLES

10. - 11. 090UDSC UNDIFFERENTIATED SAND AND CLAY

11. - 87. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

0 - 10 NO SAMPLES

10 - 17 SAND; LIGHT BROWNISH GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; SEDIMENTARY STRUCTURES: MOTTLED, ACCESSORY MINERALS: PHOSPHATIC SAND-01%, HEAVY MINERALS-01%, SHELL-05%;

17 - 20 NO SAMPLES

20 - 22 SAND; OLIVE GRAY; INTERGRANULAR; GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-25%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%;

22 - 30 NO SAMPLES

SHELL BED; MODERATE LIGHT GRAY TO MODERATE GRAY; INTERGRANULAR; UNCONSOLIDATED; 30 - 32 SEDIMENTARY STRUCTURES: STREAKED, , , ACCESSORY MINERALS: PHOSPHATIC SAND-01%, HEAVY MINERALS-01%; UPPER PART OF THE INTERVAL IS A FINE GRAINED SAND

32 - 45 NO SAMPLES

45 -CLAY; DARK GRAY; INTERGRANULAR, LOW PERMEABILITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX: ACCESSORY MINERALS: SILT-30%, SHELL-07%, QUARTZ SAND-01%;

47 - 50 NO SAMPLES

50 - 57 SAND; LIGHT OLIVE GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-01%, SHELL-10%; CLAY IS CONFINED TO THE LOWEST PART OF THE INTERVAL

57 - 60 NO SAMPLES

PAGE - 2

N- 16116 CONTINUED

- 60 67 SAND; OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-10%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS;
- 67 70 NO SAMPLES
- 70 77 SAND; OLIVE GRAY TO BROWNISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-15%, PHOSPHATIC SAND-01%;
- 77 80 NO SAMPLES
- 80 87 SAND; LIGHT OLIVE GRAY TO DLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
 SEDIMENTARY STRUCTURES: MOTTLED,
 ACCESSORY MINERALS: SHELL-15%, PHOSPHATIC SAND-01%, CLAY-03%, CALCILUTITE-03%;
- 87 TOTAL DEPTH

WM117 Site No. 3

LITHOLOGIC WELL LOS PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16101

TOTAL DEPTH: 00087 FT.

1 SAMPLES FROM 10 TO 87 FT.

COUNTY - VOLUSIA

LOCATION: T.14S R.28E S.27

LAT = N 29D 14M 48

LON = W 81D 27H 49

COMPLETION DATE - / /87

OTHER TYPES OF LOGS AVAILABLE - NONE

ELEVATION - 060 FT

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: FISHER, 8-12-87, POROSITY RESULTS WERE OBTAINED FROM

0. - 60. 090UDSC UNDIFFERENTIATED SAND AND CLAY

50. - 87. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

0 - 10 NO SAMPLES

10 - 12 SAND; DARK BROWN; 43% POROSITY, INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED;
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
ACCESSORY MINERALS: QUARTZ SAND-55%, CLAY-35%, CALCILUTITE-07%, ORGANICS-03%;
OTHER FEATURES: UNWASHED SAMPLE, CALCAREDUS, MUDDY;

12 - 15 NO SAMPLES

15 - 17 SAND; DARK BROWN TO MODERATE YELLOWISH BROWN; 37% POROSITY, INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE; ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; CEMENT. TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: QUARTZ SAND-65%, CLAY-30%, SILT-03%, ORGANICS-02%; OTHER FEATURES: UNWASHED SAMPLE;

17 - 20 NO SAMPLES

20 - 22 SAND; MODERATE YELLOWISH BROWN; 42% POROSITY, INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: QUARTZ SAND-83%, SILT-08%, CLAY-08%, ORGANICS-01%;
OTHER FEATURES: UNMASHED SAMPLE;

22 - 25 NO SAMPLES

25 - 27 SAND; DARK YELLOWISH BROWN; 41% POROSITY, INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: QUARTZ SAND-85%, SILT-07%, CLAY-07%, ORGANICS-01%;
OTHER FEATURES: UNWASHED SAMPLE:

27 - 30 NO SAMPLES

PAGE - 2

W- 16101 CONTINUED

- 30 32 SAND; YELLOWISH GRAY TO VERY LIGHT DRANGE; 46% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-93%, SILT-04%, CLAY-03%;
 OTHER FEATURES: UNWASHED SAMPLE;
- 32 35 NO SAMPLES
- 35 37 CLAY; DARK GREENISH GRAY; 82% POROSITY, INTERGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-97%, ORGANICS-03%; OTHER FEATURES: UNWASHED SAMPLE;
- 37 40 NO SAMPLES
- 40 42 CLAY; DARK GREENISH GRAY; 85% POROSITY, INTERGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX, CLAY MATRIX, CALCILUTITE MATRIX; ACCESSORY MINERALS: CLAY-90%, CALCILUTITE-07%, ORGANICS-03%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 42 45 NO SAMPLES
- 45 47 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 77% POROSITY, INTERGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-87%, CALCILUTITE-10%, ORGANICS-03%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 47 50 NO SAMPLES
- 50 52 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 68% POROSITY, INTERGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-84%, CALCILUTITE-13%, ORGANICS-03%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 52 60 NO SAMPLES
- 60 62 CLAY; LIGHT OLIVE GRAY TO OLIVE GRAY; 57% POROSITY, INTERGRANULAR, INTRAGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-75%, SHELL-20%, CALCILUTITE-05%;
 OTHER FEATURES: UNNASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 62 75 NO SAMPLES

W- 16101 CONTINUED

- 75 77 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 34% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-45%, SHELL-40%, CLAY-15%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 THE UPPER HALF OF INTERVAL CONTAINS MORE CLAY
- 77 80 NO SAMPLES
- SAND; OLIVE GRAY TO YELLOWISH GRAY; 39% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-50%, SHELL-30%, SILT-05%, CLAY-05%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 ONLY 6 INCHES WERE RECOVERED FOR THIS INTERVAL
- 82 85 NO SAMPLES
- 85 87 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 40% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-77%, SHELL-20%, HEAVY MINERALS-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 87 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOS

WELL NUMBER: W- 16102 TOTAL DEPTH: 00097 FT. SAMPLES - NONE COUNTY - VOLUSIA LOCATION: T.15S R.31E S.03

LAT = N 29D 13M 37 LON = W 81D 11M 01

COMPLETION DATE - / /87

ELEVATION - 045 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER, GEOLOGIST

P BOND

0. - 10. 000NOSM NO SAMPLES

10. - 41. 090UDSC UNDIFFERENTIATED SAND AND CLAY

41. - 97. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 10 NO SAMPLES
- 10 17 SAND; LIGHT BROWNISH GRAY TO GRAYISH BROWN; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: PLANT REMAINS-01%, ORGANICS-05%;
- 17 25 NO SAMPLES
- 25 27 SAND; LIGHT OLIVE BROWN; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: ORGANICS-01%;
- 27 30 NO SAMPLES
- 30 32 SAND; MODERATE LIGHT GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: SUB-ROUNDED TO ROUNDED; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: ORGANICS-01%;
- 32 40 NO SAMPLES
- 40 47 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-05%, HEAVY MINERALS-01%;
 OTHER FEATURES: CALCAREOUS;
- 47 50 NO SAMPLES
- 50 52 SAND; BROWNISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): ORGANIC MATRIX;
 ACCESSORY MINERALS: SHELL-10%;
- 52 60 NO SAMPLES

W- 16102 CONTINUED

- 60 62 SHELL BED; MODERATE LIGHT SRAY TO PINKISH GRAY; INTERGRANULAR; UNCONSOLIDATED; ACCESSORY MINERALS: QUARTZ SAND-01%;
- 62 70 NO SAMPLES
- 70 72 SAND; DARK GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): ORGANIC MATRIX;
 ACCESSORY MINERALS: SHELL-03%;
- 72 77 CLAY; OLIVE GRAY; LOW PERMEABILITY; UNCONSOLIDATED;
- 77 80 NO SAMPLES
- 80 82 SAND; OLIVE GRAY TO DARK GREENISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: SHELL-03%;
- 82 85 NO SAMPLES
- 95 87 SAND; YELLOWISH GRAY TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: ANGULAR TO SUB-ROUNDED; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: PHOSPHATIC SAND-01%, SHELL-40%;
- 87 90 NO SAMPLES
- 90 92 SAND; YELLOWISH GRAY TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-15%;
- 92 95 NO SAMPLES
- 95 97 SHELL BED; YELLOWISH GRAY TO PINKISH GRAY; INTERGRANULAR;
 ACCESSORY MINERALS: PHOSPHATIC SAND-01%;
- 97 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16118 TOTAL DEPTH: 00095 FT. SAMPLES - NONE

COUNTY - VOLUSIA LOCATION: T.155 R.33E S.

LAT = N 29D 10M 31

LON = W 80D 59M 04

COMPLETION DATE - / /87

ELEVATION - 016 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

OWNER/DRILLER: ST JOHNS RIVER WMD

WORKED BY:

0. - 10. 000NOSM NO SAMPLES

10. - 20. O9OUDSC UNDIFFERENTIATED SAND AND CLAY

20. - 95. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 10 NO SAMPLES
- 10 12 SAND; PINKISH GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: HEAVY MINERALS-01%;
- 12 20 ND SAMPLES
- 20 27 SAND; PINKISH GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: HEAVY MINERALS-01%, SHELL-10%;
- 27 30 NG SAMPLES
- 30 37 SAND; YELLOWISH GRAY; INTERGRANULAR; GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-20%, HEAVY MINERALS-01%;
- 37 40 NO SAMPLES
- 40 47 SHELL BED; LIGHT OLIVE GRAY TO PINKISH GRAY; INTERGRANULAR; ACCESSORY MINERALS: QUARTZ SAND-10%, CALCILUTITE-01%; UPPER PORTION IS MODERATELY INDURATED WITH CALCILUTITE CEMENT
- 47 50 NO SAMPLES
- SHELL BED; ; A CLAY LAYER OF POSSIBLE LOW PERMEABILITY OCCURS NEAR THE TOP
- 57 60 NO SAMPLES

PASE - 2

- W- 16118 CONTINUED
 - 60 67 SAND; LIGHT OLIVE GRAY TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-03%, HEAVY MINERALS-01%;
 SHELL LAYERS ALTERNATE WITH SAND LAYERS IN THIS INTERVAL
 - 67 70 NO SAMPLES
 - 70 77 SILT; LIGHT DLIVE GRAY; INTERGRANULAR, LOW PERMEABILITY; MODERATE INDURATION; CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX; ACCESSORY MINERALS: SHELL-03%, PHOSPHATIC SAND-01%, QUARTZ SAND-01%; OTHER FEATURES: CALCAREOUS; SILT LAYERS ALTERNATE WITH COARSE SHELLY LAYERS
 - 77 80 NO SAMPLES
 - 80 87 SILT; VERY LIGHT GRAY TO GREENISH GRAY; INTERGRANULAR, LOW PERMEABILITY;
 MODERATE INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: PHOSPHATIC SAND-02%;
 LOWEST PART OF INTERVAL IS PROBABLY CALCILUTITE
 - 87 90 NO SAMPLES
 - 90 95 SAND; PINKISH GRAY TO MODERATE LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-35%;
 AT 94 FEET IS A CALCARENITE LAYER
 - 95 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16103 TOTAL DEPTH: 00087 FT. SAMPLES - NONE

COUNTY - VOLUSIA LOCATION: T.158 R.32E S.34

LAT = N 29D 09M 05 LON = W 810 04M 55

COMPLETION DATE - / /87

ELEVATION - 026 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

Note: This log describes 18 inch long OWNER/DRILLER: ST JOHNS RIVER WMD core samples from within each 10 ft interval, rather than entire 10 ft section. WORKED BY:

0. - 10. 000NOSM NO SAMPLES

10. - 46.5 090UDSC UNDIFFERENTIATED SAND AND CLAY

46.5- 87. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 10 NO SAMPLES
- SAND; OLIVE GRAY TO VERY LIGHT ORANGE; INTERGRANULAR; 10 - 20 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; SEDIMENTARY STRUCTURES: MOTTLED, ACCESSORY MINERALS: CLAY-05%, HEAVY MINERALS-01%, PLANT REMAINS-01%;
- SAND; DARK GREENISH GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; SEDIMENTARY STRUCTURES: MOTTLED, ACCESSORY MINERALS: CLAY-02%, HEAVY MINERALS-01%, PLANT REMAINS-01%, SHELL-01%;
- SAND; PINKISH GRAY TO BROWNISH GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-01X, HEAVY MINERALS-01X;
- SAND: LIGHT OLIVE GRAY TO LIGHT GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-30X, HEAVY MINERALS-01X, PEAT-01X; AT ABOUT 46.5 INTERVAL IS A SHELLY SAND
- SAND: LIGHT GRAY TO MODERATE LIGHT GRAY: INTERGRANULAR: GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-02%, PHOSPHATIC SAND-02%, HEAVY MINERALS-01%; INTERVAL CONTAINS ISOLATED THIN SHELLY LAYERS
- SAND; OLIVE GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-02%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;

W- 16103 CONTINUED

PASE - 2

- 67 75 NO SAMPLES
- 75 77 SAND;;

 GRAIN SIZE: VERY FINE;

 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;

 ACCESSORY MINERALS: SHELL-03%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
- 77 87 SAND;;

 SRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;

 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;

 ACCESSORY MINERALS: SHELL-10%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
- 87 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16105 TOTAL DEPTH: 00092 FT.

LOCATION: T.16S R.29E S.01

1 SAMPLES FROM 17 TO 92 FT.

LAT = N 29D 08M 02

LON = W 81D 21M 12

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - NONE ELEVATION - 045 FT

COUNTY - VOLUSIA

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: FISHER, 7-1-87; POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS. WHERE APPLICABLE.

UNDIFFERENTIATED SAND AND CLAY 0. - 37. 090UDSC

37. - 85. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

85. - 92. 1240CAL OCALA SROUP

- 0 15 NO SAMPLES
- 15 17 SAND; GRAYISH ORANGE TO YELLOWISH GRAY; 38% POROSITY, INTERGRANULAR; GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE; ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-01%; OTHER FEATURES: UNWASHED SAMPLE;
- 17 20 NO SAMPLES
- SAND; YELLOWISH GRAY; 39% POROSITY, INTERGRANULAR; 20 - 22 GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE; ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-01%; OTHER FEATURES: UNWASHED SAMPLE;
- 22 25 NO SAMPLES
- SAND; YELLOWISH GRAY; 41% POROSITY, INTERGRANULAR; 25 -GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SILT-10%, CLAY-01%; OTHER FEATURES: UNWASHED SAMPLE:
- 27 30 NO SAMPLES
- SAND; YELLOWISH GRAY; 43% POROSITY, INTERGRANULAR; GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE; ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SILT-20%, CLAY-02%, CALCILUTITE-01%; OTHER FEATURES: UNWASHED SAMPLE;
- 32 35 NO SAMPLES
- SILT; YELLOWISH GRAY; INTERGRANULAR; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-02%; OTHER FEATURES: UNWASHED SAMPLE;

- 36 37 SILT; DARK YELLOWISH ORANGE TO GRAYISH ORANGE; 50% POROSITY, INTERGRANULAR; UNCONSOLIDATED;
 ACCESSORY MINERALS: CLAY-03%, CALCILUTITE-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 37 45 NO SAMPLES
- 45 47 SAND; DARK GREENISH GRAY TO DARK GREENISH GRAY; 61% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX; ACCESSORY MINERALS: SHELL-35%, CLAY-10%, CALCILUTITE-20%; OTHER FEATURES: CALCAREOUS, VARVED; FOSSILS: MOLLUSKS;
- 47 50 NO SAMPLES
- 50 52 CLAY; OLIVE GRAY TO GREENISH BLACK; 74% POROSITY, INTERGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED; CEMENT TYPE(S): CALCILUTITE MATRIX; ACCESSORY MINERALS: CALCILUTITE-15%, SILT-04%, ORGANICS-03%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 52 60 NO SAMPLES
- 60 62 CLAY; DARK GREENISH GRAY TO YELLOWISH GRAY; 36% POROSITY, INTERGRANULAR, INTRAGRANULAR, LOW PERMEABILITY; UNCONSOLIDATED;

 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;

 ACCESSORY MINERALS: QUARTZ SAND-15%, SILT-10%, SHELL-20%;

 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;

 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;

 THE LOWER 2° IS YELLOW-GRAY MOLLUSC SHELL HASH
- 62 65 NO SAMPLES
- 65 67 SAND; LIGHT OLIVE TO DARK GREENISH GRAY; 34% POROSITY, INTERGRANULAR, INTRAGRANULAR,
 LOW PERMEABILITY;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-25%, SILT-10%, CLAY-15%, CALCILUTITE-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 CORE IS SHELLY SAND AT THE BASE WITH CLAY CONTENT INCREASING UP TO THE SHELLY LIMEY CLAY
- 67 70 NO SAMPLES
- 70 72 SILT; GREENISH GRAY TO DARK GREENISH GRAY; 35% POROSITY, INTERGRANULAR, INTRAGRANULAR; UNCONSOLIDATED;
 ACCESSORY MINERALS: SILT-25%, SHELL-25%, CALCILUTITE-05%;
 OTHER FEATURES: UNNASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 THIS CORE IS SHELLY SAND AT THE BASE GRADING INTO A CLAYEY SHELLY SILT.THE UPPER 2° IS LIMEY CLAY

W- 16105 CONTINUED

- 75 77 SAND; LIGHT OLIVE GRAY TO DARK GREENISH GRAY; 39% POROSITY, INTERGRANULAR, INTRAGRANULAR, LOW PERMEABILITY;

 GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE;

 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;

 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;

 ACCESSORY MINERALS: SHELL-30%, CLAY-15%, CALCILUTITE-15%;

 OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;

 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 77 80 NO SAMPLES
- 90 82 SAND; YELLOWISH GRAY; 14% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-20%, CLAY-04%, CALCILUTITE-02%, PHOSPHATIC SAND-02%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 82 85 NO SAMPLES
- 85 87 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE; 38% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: SKELETAL, CALCILUTITE; 80% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-20%, SHELL-80%;
 OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA;
- 87 90 NO SAMPLES
- 90 92 LIMESTONE; VERY LIGHT GRAY; 29% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-20%, SHELL-40%, PHOSPHATIC SAND-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA;
- 92 TOTAL DEPTH

LITHOLOGIC WELL LOS PRINTOUT

SOURCE - BOS

WELL NUMBER: W- 16104 TOTAL DEPTH: 00097 FT. SAMPLES - NONE COUNTY - VOLUSIA LOCATION: T.16S R.31E S.05

LAT = N 29D 08M 34

LON = W 810 07M 38

COMPLETION DATE - / /87

ELEVATION - 044 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

OWNER/DRILLER: ST JOHNS RIVER WMD

WORKED BY:

0. - 65. 000NOSH NO SAMPLES

55. - 97. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

0 - 65 NO SAMPLES

65 - 67 SAND; YELLOWISH GRAY TO OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-02%;
LOWEST PART OF THE INTERVAL HAS A DARK OLIVE CLAY MATRIX

67 - 70 NO SAMPLES

70 - 77 SAND; LIGHT OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: SHELL-04%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
OTHER FEATURES: CALCAREOUS;

77 - 80 NO SAMPLES

80 - 87 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
ACCESSORY MINERALS: SHELL-15%, PHOSPHATIC SAND-02%, HEAVY MINERALS-01%, CLAY-04%;
OTHER FEATURES: CALCAREOUS;

87 - 90 NO SAMPLES

90 - 97 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: SHELL-30%, PHOSPHATIC SAND-02%, CLAY-05%;
OTHER FEATURES: CALCAREOUS;

97 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - F6S

WELL NUMBER: W- 183 TOTAL DEPTH: 00818 FT.

88 SAMPLES FROM 0 TO 818 FT.

COUNTY - VOLUSIA

LOCATION: T.16S R.32E S.06 D

LAT = N 29D 08M 34 LON = W 81D 07M 42

ELEVATION - 043 FT

COMPLETION DATE - 06/03/85

OTHER TYPES OF LOGS AVAILABLE - CALIPER

OWNER/DRILLER: V-183 TOWER WELL

WORKED BY: VOLUSIA GROUNDWATER MODEL TEST WELL 1

0. - 104. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

104. - 147. 1240CAL OCALA GROUP

147. - 918. 124AVPK AVON PARK LIMESTONE

- 0 9 SAND; DARK GRAY; 35% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-05%, HEAVY MINERALS-01%: OTHER FEATURES: UNWASHED SAMPLE;
- SAND; MODERATE YELLOWISH BROWN; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS: SUB-ANGULAR TO ROUNDED: MEDIUM SPHERICITY: POOR INDURATION; ACCESSORY MINERALS: CLAY-05%, HEAVY MINERALS-01%; OTHER FEATURES: FROSTED, UNWASHED SAMPLE: FOSSILS: FOSSIL FRAGMENTS;
- 27 35 SAND; OLIVE GRAY; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; GRAIN SIZE: VERY FINE: RANGE: VERY FINE TO FINE: ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; ACCESSORY MINERALS: CLAY-10%: OTHER FEATURES: UNWASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS;
- SAND; OLIVE GRAY; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; GRAIN SIZE: FINE: RANGE: VERY FINE TO COARSE: ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; ACCESSORY MINERALS: CLAY-10%, MICA-01%; OTHER FEATURES: UNWASHED SAMPLE;
- 40 45 SAND; BROWNISH GRAY; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM: ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; ACCESSORY MINERALS: CLAY-05%, HEAVY MINERALS-01%; OTHER FEATURES: UNWASHED SAMPLE: FOSSILS: FOSSIL FRAGMENTS;

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- 45 48 SAND; OLIVE GRAY; 30% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 ACCESSORY MINERALS: CLAY-05%, HEAVY MINERALS-01%, CALCITE-02%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 48 50 SHELL BED; GREENISH GRAY; 60% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 UNCONSOLIDATED;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 MOLLUSK FRAGMENTS DOMINANT
- 50 54 SHELL BED; GREENISH GRAY; 60% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; UNCONSOLIDATED; OTHER FEATURES: UNWASHED SAMPLE; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 54 62 AS ABOVE
- 62 65 SAND; YELLOWISH GRAY; 35% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 OTHER FEATURES: UNWASHED SAMPLE;
- 65 68 SHELL BED; GREENISH GRAY; 60% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 UNCONSOLIDATED;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 68 72 SHELL BED; GREENISH GRAY; 50% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; UNCONSOLIDATED;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 72 72 SHELL BED; GREENISH GRAY; 50% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-50%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 72 75 SHELL BED; YELLOWISH GRAY; 60% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY; UNCONSOLIDATED; OTHER FEATURES: UNWASHED SAMPLE; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 75 82 SHELL BED; GREENISH GRAY; 40% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-50%;
 OTHER FEATURES: UNMASHED SAMPLE;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;

- 82 90 SHELL BED; GREENISH GRAY; 50% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 UNCONSOLIDATED;
 ACCESSORY MINERALS: QUARTZ SAND-50%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 90 93 SHELL BED; YELLOWISH GRAY; 60% POROSITY, INTERGRANULAR, FOSSIBLY HIGH PERMEABILITY; UNCONSOLIDATED;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 93 104 LIMESTONE; LIGHT GREENISH GRAY; 25% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 GRAIN TYPE: CALCILUTITE;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA;
- 104 108 AS ABOVE

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16107

TOTAL DEPTH: 00057 FT.

LOCATION: T.165 R.30E S.17

COUNTY - VOLUSIA

TUTAL DEPTH: 0003/ FT.

LAT = N 29D 06M 52

SAMPLES - NONE

LON = W 810 13M 29

COMPLETION DATE - / /87

ELEVATION - 040 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

OWNER/DRILLER: ST JOHNS RIVER WMD

Note: From 20 ft to 57 ft, log describes 18 inch core samples from within each 10 ft interval, rather than entire 10 ft section.

WORKED BY: BOND 11-9-87

- 0. 57. 090UDSC UNDIFFERENTIATED SAND AND CLAY
- 0 10 NO SAMPLES
- 10 13 SAND; GRAYISH BROWN TO GRAYISH ORANGE; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: IRON STAIN-01%, HEAVY MINERALS-01%, CLAY-01%;
- 13 15 NO SAMPLES
- 15 18 SAND; GRAYISH BROWN TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 SEDIMENTARY STRUCTURES: MOTTLED,
 ACCESSORY MINERALS: IRON STAIN-01%, HEAVY MINERALS-01%, CLAY-01%;
- 18 20 NO SAMPLES
- 20 30 SAND; GRAYISH BROWN TO LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): IRON CEMENT, ORGANIC MATRIX;
 ACCESSORY MINERALS: IRON STAIN-01%, HEAVY MINERALS-01%, ORGANICS-02%;
- 30 40 SAND; LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;

 SRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;

 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;

 CEMENT TYPE(S): CLAY MATRIX;

 SEDIMENTARY STRUCTURES: BEDDED,

 ACCESSORY MINERALS: CLAY-10%, HEAVY MINERALS-01%;
- 40 50 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: ORGANICS-01%, SHELL-03%, PHOSPHATIC SAND-03%;
 AT 46 FT SAMPLE BECOMES MORE COARSE SHELLY AND PHOSPHATIC

W- 16107 CONTINUED

- 50 57 SILT; MODERATE GRAY TO LIGHT OLIVE GRAY; LOW PERMEABILITY, INTERGRANULAR; MODERATE INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-30%, PEAT-02%, SHELL-01%, QUARTZ SAND-04%;
- 57 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16119 TOTAL DEPTH: 00087 FT. SAMPLES - NONE

COUNTY - VOLUSIA LOCATION: T.17S R.31E S.18

LAT = N 29D 01M 00

LON = W 81D 13M 22

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - CALIPER ELEVATION - N/A FT

OWNER/DRILLER: ST JOHNS RIVER WMD

WORKED BY: PA BOND 11-87

0. - 10. 000NOSM NO SAMPLES

10. - 21. O9OUDSC UNDIFFERENTIATED SAND AND CLAY

21. - 87. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

0 - 10 NO SAMPLES

10 - 17 SAND; VERY LIGHT ORANGE TO GRAYISH BROWN; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
SEDIMENTARY STRUCTURES: MOTTLED,
ACCESSORY MINERALS: HEAVY MINERALS-01%;

17 - 20 NO SAMPLES

20 - 27 SAND; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN; INTERGRANULAR;
GRAIN SIZE: VERY FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-03%, ORGANICS-01%;
OTHER FEATURES: CALCAREOUS;

27 - 30 NO SAMPLES

30 - 32 SAND; LIGHT OLIVE GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
ACCESSORY MINERALS: SHELL-30%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
OTHER FEATURES: CALCAREOUS;

32 - 40 NO SAMPLES

40 - 47 SAND; PINKISH GRAY TO YELLOWISH GRAY; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
CEMENT TYPE(S): CALCILUTITE MATRIX;
ACCESSORY MINERALS: SHELL-10%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
OTHER FEATURES: CALCAREOUS;

47 - 50 NO SAMPLES

W- 16119 CONTINUED

PAGE - 2

- 50 57 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-15%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS;
- 57 60 NO SAMPLES
- 60 67 SAND; GRAYISH BROWN TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-03%, HEAVY MINERALS-01%, PHOSPHATIC SAND-03%;
 OTHER FEATURES: CALCAREOUS;
- 67 70 NO SAMPLES
- 70 77 SAND; LIGHT OLIVE GRAY TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-05%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS;
- 77 80 NO SAMPLES
- 80 82 CALCARENITE; GRAYISH ORANGE; LOW PERMEABILITY;
 GRAIN TYPE: CALCILUTITE;
 MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-01%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS;
- 82 87 SAND; YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
- 87 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16110 TOTAL DEPTH: 00092 FT.

SAMPLES - NONE

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COUNTY - VOLUSIA

LOCATION: T.185 R.31E S.01

LAT = N 28D 56M 56

LON = W 81D 10M 37

COMPLETION DATE - / /87

FLE

ELEVATION - 040 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER

OWNER/DRILLER: ST JOHNS RIVER WMD

WORKED BY: BOND 11-87

0. - 10. 000NOSM NO SAMPLES

10. - 45. 090UDSC UNDIFFERENTIATED SAND AND CLAY

0 - 10 NO SAMPLES

10 - 17 SAND; GRAYISH BROWN TO GRAYISH BROWN; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
ACCESSORY MINERALS: ORGANICS-03%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%;

17 - 20 NO SAMPLES

20 - 22 SAND; GRAYISH BROWN TO GRAYISH BROWN; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
ACCESSORY MINERALS: ORGANICS-03%;

22 - 30 NO SAMPLES

30 - 37 SAND; VERY LIGHT ORANGE TO GRAYISH BROWN; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): IRON CEMENT;
SEDIMENTARY STRUCTURES: MOTTLED,
ACCESSORY MINERALS: HEAVY MINERALS-01%, IRON STAIN-01%;

37 - 40 NO SAMPLES

40 - 42 SAND; VERY LIGHT ORANGE; INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
ACCESSORY MINERALS: HEAVY MINERALS-01%;

42 - 45 NO SAMPLES

45 - 47 SAND; LIGHT OLIVE GRAY; INTERGRANULAR;
GRAIN SIZE: VERY FINE;
ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: SHELL-10%, CALCILUTITE-05%;
OTHER FEATURES: CALCAREOUS;
LOWER THREE INCHES IS A SHELLY CLAY

W- 16110 CONTINUED

- 47 50 NO SAMPLES ·
- 50 57 SILT; OLIVE GRAY; INTERGRANULAR, LOW PERMEABILITY; MODERATE INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: SHELL-20%, PHOSPHATIC SAND-01%, QUARTZ SAND- %; OTHER FEATURES: CALCAREOUS;
- 57 60 NO SAMPLES
- 60 62 SHELL BED; DARK GREENISH GRAY; INTERGRANULAR; POOR INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX;
- 62 67 SAND; YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LON SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-20%, PHOSPHATIC SAND-01%;
- 67 70 NO SAMPLES
- 70 77 SAND; LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; MODERATE INDURATION;
 ACCESSORY MINERALS: SHELL-05%, PHOSPHATIC SAND-03%, CLAY-01%;
- 77 80 NO SAMPLES
- 80 87 SAND; VERY LIGHT GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-10%, PHOSPHATIC SAND-01%, CALCILUTITE-01%;
 LOWER 2 FT IS VERY SHELLY
- 87 92 CALCILUTITE; YELLOWISH GRAY; LOW PERMEABILITY;
 MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 UPPER PART IS SANDY AND PHOSPHATIC WITH SHELL
- 92 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16108
TOTAL DEPTH: N/A FT.
1 SAMPLES FROM 5 TO 58 FT.

COUNTY - VOLUSIA LOCATION: T.18S R.33E S.11

N: 1.103 N.33E 3.11

LAT = N 28D 56M 53

LON = W 80D 59M 47

COMPLETION DATE - / /87

ELEVATION - 060 FT

OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER: ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: GREEN, 5-29-87 (CORE DESCRIPTION); POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS

- 5. 7. 090UDSC UNDIFFERENTIATED SAND AND CLAY
- 7. 58. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS
- 0 5 NO SAMPLES
- 5 7 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 40% POROSITY, INTERGRANULAR, POSSIBLY HIGH PERMEABILITY;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: CLAY-02%, PHOSPHATIC SAND-01%, PLANT REMAINS-01%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: NO FOSSILS:
- 7 10 NO SAMPLES
- 10 12 SHELL BED; LIGHT OLIVE GRAY TO YELLOWISH GRAY; 43% POROSITY, INTERGRANULAR,
 POSSIBLY HIGH PERMEABILITY, INTRAGRANULAR; POOR INDURATION;
 ACCESSORY MINERALS: PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 SAMPLE CONSISTS OF 70% QTZ. SAND (MED-FINE) AND 30% SHELLS, MOSTLY WHOLE MOLLUSK SHELL VALVES
- 12 15 NO SAMPLES
- 15 17 SAND; OLIVE GRAY TO DARK GREENISH GRAY; 46% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO MICROCRYSTALLINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-30%, SHELL-10%, SILT-10%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS, UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 17 20 NO SAMPLES
- 20 22 CLAY; DARK GREENISH GRAY; 58% POROSITY, INTERGRANULAR, LOW PERMEABILITY; POOR INDURATION; ACCESSORY MINERALS: SILT-05%, SHELL-08%; OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 22 25 NO SAMPLES

W- 16108 CONTINUED

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- 25 26 SAND; OLIVE GRAY TO DARK GREENISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO MICROCRYSTALLINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: PHOSPHATIC SAND-03%, CLAY-35%, SHELL-15%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 26 27 CLAY; BLACK TO GREENISH BLACK; 59% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
 POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: -11%, -M1%, %;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
 ABRUPT CHANGE FROM SAND/CLAY MIX (65/35) AT 26' TO BLACK ORGANIC RICH? CLAY AT 27'
- 27 30 NO SAMPLES
- 30 32 CLAY; OLIVE GRAY TO DARK GREENISH GRAY; 80% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-15%, SHELL-10%, SILT-05%, MICA-01%;
 OTHER FEATURES: CALCAREOUS, UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MOLLUSKS;
- 32 40 NO SAMPLES
- 40 42 SAND; DARK GREENISH GRAY; 45% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: MICA-02%, CLAY-30%, CALCILUTITE-08%, SHELL-10%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 42 45 NO SAMPLES
- 45 47 SAND; BROWNISH GRAY TO LIGHT OLIVE GRAY; 37% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM; ROUNDNESS: SUB-AMGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-20%, SHELL-15%, MICA-02%; OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS; CLAY CONTENT DECREASES FROM 20 TO 10% FROM 45' TO 47', COLOR BECOMES LIGHTER, SHELL FRAGMENT % ALSO INCREASES DOWNSECTION
- 47 50 NO SAMPLES

W- 16108 CONTINUED

- 50 50.3 SAND; LIGHT OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: COARSE; RANGE: VERY COARSE TO VERY FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: SILT-10%, CLAY-05%, PHOSPHATIC SAND-02%, SHELL-10%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 50.3- 52 SAND; LIGHT OLIVE GRAY TO LIGHT GRAY; 32% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: COARSE; RANGE: VERY COARSE TO VERY FINE; ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: SHELL-35%, CLAY-03%, SILT-05%; OTHER FEATURES: UNMASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS; ALMOST HALF OF SHELL FRAGS ARE DARK GRAY-BLACK IN COLOR-POSSIBLY PHOSPHATIZED
- 52 56 NO SAMPLES
- 56 58 SAND; WHITE TO VERY LIGHT GRAY; 36% POROSITY, INTERGRANULAR, INTRAGRANULAR, POSSIBLY HIGH PERMEABILITY;

 GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM;

 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;

 CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: CLAY-05%, PHOSPHATIC SAND-02%, SHELL-05%, MICA-02%;

 OTHER FEATURES: UNWASHED SAMPLE;

 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 58 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16109 TOTAL DEPTH: 00087 FT. SAMPLES - NONE

COUNTY - VOLUSIA LOCATION: T.18S R.33E S.11 LAT = N 28D 56M 53 LON = W 80D 59M 47

COMPLETION DATE - N/A

OTHER TYPES OF LOGS AVAILABLE - NONE

ELEVATION - N/A FT

OWNER/DRILLER: ST JOHNS RIVER WMD

Note: Log for 10 ft - 32 ft and 60 ft - 77 ft combines descriptions of 18 inch core samples within each interval. WORKED BY: BOND 11-16-87

NASHUA OCCURS BETWEEN 45 AND 82 FEET BUT PICK IS QUESTIONABLE 2 WELLS NO. 364 EXIST AT ADJACENT LOCATIONS TOTAL DEPTHS ARE DIFFERENT

0. - 10. 000NOSM NO SAMPLES

10. - 45. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

ERROR-INCORRECT FORMATION CODE 45. - 82.

82. - 87. 1240CALL OCALA LIMESTONE LOWER MEMBER

0 - 10 NO SAMPLES

- 10 20 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDNESS:SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; SEDIMENTARY STRUCTURES: MOTTLED, ACCESSORY MINERALS: SHELL-02%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%; FOSSILS: MOLLUSKS;
- 20 32 CLAY; OLIVE GRAY; LOW PERMEABILITY; MODERATE INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: QUARTZ SAND-01%, SHELL-02%, CALCITE-02%; FOSSILS: MOLLUSKS;
- 32 40 NO SAMPLES
- SAND; VERY LIGHT GRAY; INTERGRANULAR; 40 - 47 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM; ROUNDMESS:SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-05%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%, MICA-01%; FOSSILS: MOLLUSKS;
- 47 50 NO SAMPLES
- 50 50.7 SAND; ; INTERGRANULAR; GRAIN SIZE: MEDIUM: RANGE: FINE TO COARSE; ROUNDNESS: ROUNDED; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: SHELL-03%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%; FOSSILS: MOLLUSKS: MODERATE INDURATION AT LOWER PART OF INTERVAL WITH CARBONATE CEMENT
- 50.7- 60 NO SAMPLES

W- 16109 CONTINUED

PAGE - 2

- 60 67 SAND; PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS:ROUNDED; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: PHOSPHATIC SAND-01%, SHELL-20%;
 FOSSILS: MOLLUSKS;
- 67 67 NO SAMPLES
- 67 77 SAND; PINKISH GRAY TO LIGHT OLIVE GRAY; I % POROSITY,
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-10%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS;
 FOSSILS: MOLLUSKS;
- 77 80 NO SAMPLES
- 80 82 SILT; LIGHT OLIVE GRAY; LOW PERMEABILITY, INTERGRANULAR; MODERATE INDURATION; CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX; ACCESSORY MINERALS: SHELL-10%, PHOSPHATIC SAND-01%; OTHER FEATURES: CALCAREOUS; FOSSILS: MOLLUSKS;
- 82 85 NO SAMPLES
- 85 87 CALCARENITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY; INTERGRANULAR, PIN POINT VUGS; GRAIN TYPE: BIOGENIC, SKELETAL; 98% ALLOCHEMICAL CONSTITUENTS; GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE; GOOD INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX; FOAMINIFERA ABUNDANT
- 87 TOTAL DEPTH

WMll7 Site No. 14

LITHOLOGIC WELL LOS PRINTOUT

SOURCE - BOG

WELL NUMBER: W- 16117

TOTAL DEPTH: 00102 FT.

16 SAMPLES FROM 10 TO 102 FT.

COUNTY - VOLUSIA

LOCATION: T.185 R.35E S.22

LAT = N 28D 55M 35

LON = W 80D 49M 24

COMPLETION DATE - N/A

ELEVATION - 010 FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER, GEOLOGIST, GAMMA

OWNER/DRILLER: ST JOHNS RIVER WMD

Note: This log combines descriptions of 18 inch core samples taken from each

WORKED BY: BOND 11-10-87 interval.

0

0

0. - 10. 000NOSH NO SAMPLES

10. - 15.5 090UDSC UNDIFFERENTIATED SAND AND CLAY

15.5- 102. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 10 NO SAMPLES
- 10 20 SAND; MODERATE LIGHT GRAY TO VERY LIGHT ORANGE; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-10%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
 AT ABOUT 16 FT INTERVAL BECOMES VERY SHELLY
- 20 35 SAND; VERY LIGHT ORANGE TO PINKISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-70%;
 AT ABOUT 25 FT INTERVAL BECOMES A SHELL HASH
- 35 40 SAND; VERY LIGHT GRAY TO LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-01%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%;
- 40 51 SAND; VERY LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO HEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: SHELL-40%, HEAVY MINERALS-02%, PHOSPHATIC SAND-01%;
 SHELL RICH LAYERS CONTAINING SAND LAYERS
- 51 65 CLAY; OLIVE GRAY; LOW PERMEABILITY; POOR INDURATION;
 SEDIMENTARY STRUCTURES: BEDDED,
 ACCESSORY MINERALS: QUARTZ SAND-80%, SHELL-01%;
 INTERVAL IS A SILTY CLAY TO 52 FT AT 55 FT IT BECOMES A CLAY AT 60 FT CLAY INCLUDES
 SIGNIFICANT AMOUNTS OF SHELLY SAND
- 65 75 SAND; MODERATE LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: SHELL-40%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;

PA6E - 2

W- 16117 CONTINUED

- 75 85 SAND; LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: VERY FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-01%;
- 85 90 SAND; LIGHT GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-01%;
 AT ABOUT 86 FT THE INTERVAL BECOMES A SILTY CLAY
- 70 100 CLAY; OLIVE GRAY; LOW PERMEABILITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: SHELL-01%, MICA-01%, SILT-40%;
- 100 102 DOLOMITE; MODERATE GRAY; LOW PERMEABILITY, INTERGRANULAR; ALTERED; 600D INDURATION; CEMENT TYPE(S): DOLOMITE CEMENT; ACCESSORY MINERALS: PHOSPHATIC SAND-03%, SHELL-01%;
- 102 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16111 TOTAL DEPTH: 00097 FT. COUNTY - VOLUSIA LOCATION: T.185 R.30E S.22

2 SAMPLES FROM 5 TO 97 FT.

LAT = N 28D 54M 42 LON = W 81D 18M 14

COMPLETION DATE - / /87

ELEVATION - 083 FT

OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: FISHER, 6-22-87, POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS; CORE RECEIVED FROM SJRWMD

0. - 37. 090UDSC UNDIFFERENTIATED SAND AND CLAY

37. - 97. OPOUDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

0 - 10 NO SAMPLES

10 - 12 SAND; DARK YELLOWISH BROWN TO LIGHT GRAYISH BROWN; 36% POROSITY, INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: CLAY-03%, SHELL-01%;
OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;

12 - 15 NO SAMPLES

15 - 17 SAND; YELLOWISH GRAY TO VERY LIGHT ORANGE; 39% POROSITY, INTERGRANULAR;
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: SHELL-04%, CLAY-03%, HEAVY MINERALS-01%;
OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
THE UPPER 4*IS DARKER AND LESS CALCAREOUS

17 - 20 NO SAMPLES

20 - 22 SAND; LIGHT YELLOWISH DRANGE TO DARK YELLOWISH DRANGE; 40% POROSITY, INTERGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE;
ROUNDNESS: SUB-ANGULAR TO ANGULAR; LOW SPHERICITY; POOR INDURATION;
ACCESSORY MINERALS: HEAVY MINERALS-02%;
OTHER FEATURES: UNWASHED SAMPLE;

22 - 35 NO SAMPLES

25 - 37 LIMESTONE; GREENISH GRAY TO DARK GREENISH GRAY; 68% POROSITY, INTRAGRANULAR, INTERGRANULAR; GRAIN TYPE: SKELETAL, CALCILUTITE; 35% ALLOCHEMICAL CONSTITUENTS; GRAIN SIZE: VERY FINE; POOR INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX; ACCESSORY MINERALS: SHELL-20%, CALCILUTITE-30%, ORGANICS-05%, SILT-10%; OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS; GRAVEL SIZED GRAINS ARE UNBROKEN BIVALVES

W- 16111 CONTINUED

- 37 40 NO SAMPLES
- 40 42 · CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 70% POROSITY, LOW PERMEABILITY, INTERGRANULAR; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-40%, CLAY-50%, SILT-05%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
- 42 45 NO SAMPLES
- 45 47 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 74% POROSITY, LOW PERMEABILITY, INTERGRANULAR, INTRAGRANULAR; POOR INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX; ACCESSORY MINERALS: CALCILUTITE-35%, CLAY-40%, SHELL-15%, SILT-10%; OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS;
- 47 50 NO SAMPLES
- 50 52 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 77% POROSITY, LOW PERMEABILITY, INTERGRANULAR; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-40%, CLAY-50%, SILT-05%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
- 52 55 NO SAMPLES
- 55 57 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 75% POROSITY, LOW PERMEABILITY,
 INTERGRANULAR; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-35%, CLAY-45%, SILT-06%, SHELL-03%;
 OTHER FEATURES: CALCAREOUS, UNMASHED SAMPLE;
 THE LOWER INCH OF THE CORE IS YELLOW-GRAY FOSSILIFEROUS LS. W/ 5% SUBANGULAR SILT
- 57 60 NO SAMPLES
- 60 61 SAND; YELLOWISH GRAY TO LIGHT DLIVE; INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE;
 ROUNDNESS:SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-20%, CALCILUTITE-05%, SILT-05%, SHELL-20%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
- 61 62 CLAY; OLIVE GRAY-TO LIGHT OLIVE GRAY; 55% POROSITY, INTERGRANULAR, INTRAGRANULAR, LOW PERMEABILITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-40%, SHELL-25%, CALCILUTITE-15%, SILT-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 62 65 NO SAMPLES

W- 16111 CONTINUED

1. . _ _ _ 1

- 65 67 CLAY; DARK GREENISH GRAY TO LIGHT OLIVE GRAY; 42% POROSITY, INTERGRANULAR,
 LOW PERMEABILITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-40%, CALCILUTITE-20%, SHELL-25%, SILT-15%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 THE LOWEST 4" IS VERY RICH IN SHELL FRAGMENTS
- 67 75 NO SAMPLES
- 75 77 SAND; ; 44% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-10%, CLAY-30%, SHELL-25%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 MANY BIVALVES UNBROKEN AND UP TO 0.5 **
- 77 80 NO SAMPLES
- 80 81 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; INTERGRANULAR, LOW PERMEABILITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-20%, SILT-05%, SHELL-08%, CLAY-65%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
- 81 82 SAND; LIGHT OLIVE TO LIGHT OLIVE GRAY; 33% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-25%, SHELL-35%, CLAY-05%, PHOSPHATIC SAND-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
 SAMPLE REPRESENTED BY 4" OF CORE
- 82 85 NO SAMPLES
- 85 87 SAND; YELLOWISH GRAY; 32% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; HIGH SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-45%, SHELL-40%, CLAY-05%, PHOSPHATIC SAND-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 THE UPPER HALF OF THIS SAMPLE IS A SANDY SHELL HASH; THE LOWER HALF HAS MORE SAND
- 87 95 NO SAMPLES
- 95 96 SAND; YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: SHELL-25%, CALCILUTITE-03%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: MOLLUSKS. FOSSIL FRAGMENTS:

W- 16111 CONTINUED

96 - 97 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY; 40% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
MODERATE INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: CLAY-03%, QUARTZ SAND-03%;
OTHER FEATURES: UNWASHED SAMPLE;
GRAY WELL INDURATED LIMESTONE, GRAVEL IS PRESENT IN YELLOW LIME MUD

97 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - F6S

WELL NUMBER: W- 16112 TOTAL DEPTH: 00070 FT. 2 SAMPLES FROM 5 TO 70 FT. COUNTY - VOLUSIA LOCATION: T.185 R.33E S.30 A

LAT = N 28D 54M 19

LON = W 81D 04M 10

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - NONE ELEVATION - 27 FT

OWNER/DRILLER: ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: GREEN, 4-16-87, POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS WHERE APPLICABLE

0. - 46. 090UDSC UNDIFFERENTIATED SAND AND CLAY

46. - 70. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 5 NO SAMPLES
- 5 7 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 37% POROSITY, INTERGRANULAR; GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE; ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: HEAVY MINERALS-01%, CLAY-03%;
- 7 10 NO SAMPLES
- 10 12 SAND; LIGHT GRAY TO YELLOWISH GRAY; 35% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-15%, HEAVY MINERALS-02%;
- 12 15 NO SAMPLES
- 15 17 SAND; LIGHT OLIVE GRAY; 40% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-03%, HEAVY MINERALS-01%;
- 17 20 NO SAMPLES
- 20 22 SAND; YELLOWISH GRAY; 41% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-15%, HEAVY MINERALS-02%, SHELL-02%;
 FOSSILS: FOSSIL FRAGMENTS;
- 22 25 NO SAMPLES

W- 16112 CONTINUED

- 25 26 SAND; LIGHT OLIVE GRAY; INTERGRANULAR;

 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;

 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;

 CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-01%, HEAVY MINERALS-01%;
- 26 27 SAND; VERY LIGHT GRAY TO VERY LIGHT ORANGE; INTERGRANULAR;

 SRAIN SIZE: FINE; RANGE: FINE TO VERY FINE;

 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;

 CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: CLAY-02%, HEAVY MINERALS-03%;
- 27 30 NO SAMPLES
- 30 32 SAND; DARK GREENISH GRAY TO LIGHT OLIVE GRAY; 53% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: MICA-01%, CLAY-35%;
- 32 32 CLAY; DARK GREENISH SRAY; POOR INDURATION;
 ACCESSORY MINERALS: QUARTZ SAND-40%;
 SAND AND CLAY MIXTURE OVER 30-32' INTERVAL
- 32 40 NO SAMPLES
- 40 41 SAND; WHITE TO VERY LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-05%, MICA-02%, HEAVY MINERALS-01%;
 OTHER FEATURES: POOR SAMPLE;
 MOST OF INTERVAL NOT RECOVERED
- 41 42 SAND; GREENISH BLACK; 50% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-50%, MICA-03%;
- 42 45 NO SAMPLES
- 45 46.5 SAND; YELLOWISH GRAY TO LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: COARSE; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: PHOSPHATIC SAND-03%, CALCILUTITE-05%;
 FOSSILS: FOSSIL FRAGMENTS;
- 46.5- 47 SAND; GREENISH GRAY TO DARK GREENISH GRAY; 35% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-02%, SHELL-40%, CALCILUTITE-10%;
 FOSSILS: FOSSIL FRAGMENTS;

W- 16112 CONTINUED

- 47 50 NO SAMPLES
- 50 52 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;

 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO FINE;

 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;

 CEMENT TYPE(S): CLAY MATRIX;

 ACCESSORY MINERALS: MICA-01%, CLAY-05%, HEAVY MINERALS-02%;

 FOSSILS: FOSSIL FRAGMENTS;
- 52 55 NO SAMPLES
- 55 57 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: HEAVY MINERALS-02%, CLAY-05%, MICA-01%;
 FOSSILS: FOSSIL FRAGMENTS;
- 57 60 NO SAMPLES
- 60 62 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-05%, PHOSPHATIC SAND-03%, HEAVY MINERALS-02%;
 FOSSILS: FOSSIL FRAGMENTS;
- 62 68 NO SAMPLES
- 68 69 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-02%, PHOSPHATIC SAND-03%, HEAVY MINERALS-02%;
 FOSSILS: FOSSIL FRAGMENTS;
- 69 70 SAND; LIGHT GRAY TO MODERATE GRAY; 68% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDMESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-05%, PHOSPHATIC SAND-02%, SHELL-20%, CALCILUTITE-10%;
 FOSSILS: FOSSIL FRAGMENTS;
 LAST 3" IS GR-GRAY SANDY CLAY LAYER
- 70 TOTAL DEPTH

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - 806

WELL NUMBER: W- 16120 TOTAL DEPTH: 00062 FT. SAMPLES - NONE COUNTY - VOLUSIA LOCATION: T.195 R.35E S.08 LAT = N 28D 51M 29 LON = W 80D 51M 05

COMPLETION DATE - / /87

ELEVATION - N/A FT

OTHER TYPES OF LOGS AVAILABLE - CALIPER, GEOLOGIST

OWNER/DRILLER: ST JOHNS RIVER WMD

Note: This log combines descriptions of 18 inch core samples taken from each interval

WORKED BY: BOND 11-19-87

- 0. 10. 000NOSH NO SAMPLES
- 10. 35. O9OUDSC UNDIFFERENTIATED SAND AND CLAY
- 35. 62. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS
- 0 10 NO SAMPLES
- 10 17 SAND; MODERATE YELLOWISH BROWN TO VERY LIGHT ORANGE; INTERGRANULAR; GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE; ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: HEAVY MINERALS-01%, PHOSPHATIC SAND-01%, SHELL-03%;
- 17 20 NO SAMPLES
- 20 27 SAND; DLIVE GRAY TO VERY LIGHT ORANGE; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: CLAY-03%, HEAVY MINERALS-01%, PHOSPHATIC SAND-01%;
- 27 30 NO SAMPLES
- 30 37 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: CLAY-03%, SHELL-04%, PHOSPHATIC SAND-02%;
- 37 40 NO SAMPLES
- 40 47 SHELL BED; LIGHT BROWNISH GRAY TO OLIVE GRAY; INTERGRANULAR; UNCONSOLIDATED; ACCESSORY MINERALS: CLAY-10%, QUARTZ SAND-30%, PHOSPHATIC SAND-02%;
- 47 50 NO SAMPLES
- 50 57 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE;
 ROUNDNESS: ANGULAR TO SUB-ANGULAR; LOW SPHERICITY;
 ACCESSORY MINERALS: SHELL-10%, PHOSPHATIC SAND-02%, CLAY-04%;
- 57 60 NO SAMPLES
- 60 62 SHELL BED; DARK GREENISH GRAY; INTERGRANULAR; UNCONSOLIDATED; ACCESSORY MINERALS: SILT-30%, CLAY-10%, PHOSPHATIC SAND-02%;

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

COUNTY -

WELL NUMBER: W- 16113 TOTAL DEPTH: 00085 FT. 2 SAMPLES FROM 5 TO 85 FT.

VOLUSIA LOCATION: T.185 R.31E S.07 LAT = N 28D 50M 45

LON = W 81D 09M 48

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - NONE ELEVATION - 046 FT

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: GREEN, 4-18-87, SAMPLES WERE DESCRIBED FROM CORES POROSITY IS DETERMINED FROM PERMEAMETER TESTS WHERE PRESENT; STRAT PICK MADE ON THE BASIS OF DICTYOCONUS

0. - 37. 090UDSC UNDIFFERENTIATED SAND AND CLAY

37. - 77. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

77. - 85. 124AVPK AVON PARK LIMESTONE

- 0 6 NO SAMPLES
- 7 SAND: VERY LIGHT GRAY TO LIGHT GRAY; INTERGRANULAR; GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE; ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED; ACCESSORY MINERALS: MICA-01%, HEAVY MINERALS-02%, CLAY-02%; OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE; FOSSILS: FOSSIL FRAGMENTS:
- SAND: VERY LIGHT GRAY TO VERY LIGHT ORANGE; 36% POROSITY, INTERGRANULAR; GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE; ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-15%; OTHER FEATURES: UNWASHED SAMPLE:
- 10 NO SAMPLES
- SAND; VERY LIGHT ORANGE TO YELLOWISH GRAY; 47% POROSITY, INTERGRANULAR; 10 - 12 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE; ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; PODR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-20%, HEAVY MINERALS-01%; OTHER FEATURES: UNWASHED SAMPLE;
- 12 15 NO SAMPLES
- SAND; GRAYISH ORANGE; INTERGRANULAR; 15 - 16 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO VERY FINE; ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-25%, HEAVY MINERALS-01%, IRON STAIN-15%; OTHER FEATURES: UNWASHED SAMPLE; UPPER 6" IS CLAY; GRAY-GREEN IN COLOR; WHOLE INTERVAL IS IRON-STAIMED; CLAY HAS FE-STAINS THROUGHOUT

W- 16113 CONTINUED

- 16 17 SAND; VERY LIGHT ORANGE TO YELLOWISH GRAY; 38% POROSITY, INTERGRANULAR; GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-30%, HEAVY MINERALS-01%;
 OTHER FEATURES: UNWASHED SAMPLE;
- 17 20 NO SAMPLES
- 20 21 SAND; VERY LIGHT ORANGE TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-30%, HEAVY MINERALS-01%;
 OTHER FEATURES: UNWASHED SAMPLE;
- 21 22 SAND; WHITE; INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: FINE TO VERY FINE; UNCONSOLIDATED;
 SEDIMENTARY STRUCTURES: ,
 ACCESSORY MINERALS: -1C%, -5 %;
- 22 25 NO SAMPLES
- 25 27 SAND; LIGHT GRAY TO MODERATE LIGHT GRAY; 47% POROSITY, INTERGRANULAR; GRAIN SIZE: FINE; RANGE: FINE TO VERY FINE; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; SEDIMENTARY STRUCTURES: BRECCIATED, ACCESSORY MINERALS: SHELL-5H%, -2 %;
- 27 30 NO SAMPLES
- 30 32 SAND; VERY LIGHT ORANGE TO GRAYISH ORANGE; 35% POROSITY, INTERGRANULAR;
 GRAIN SIZE: FINE; RANGE: MEDIUM TO VERY FINE; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-15%, HEAVY MINERALS-03%, CALCILUTITE-03%, IRON STAIN-10%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 3 CM CLAY LAYER AT TOP OF INTERVAL (30')
- 32 35 NO SAMPLES
- 35 37 LIMESTONE; GRAYISH ORANGE; INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: GRAVEL; RANGE: GRAVEL TO FINE; GOOD INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-10%, IRON STAIN-10%, CALCILUTITE-15%, QUARTZ SAND-10%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 LIMESTONE GRAVEL-(CEMENTED SHELLS AND SAND)
- 37 40 NO SAMPLES

- 40 41 LIMESTONE; GRAYISH ORANGE; INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: GRAVEL; RANGE: GRAVEL TO FINE; GOOD INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-10%, IRON STAIN-10%, CALCILUTITE-15%, QUARTZ SAND-10%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 41 42 LIMESTONE; VERY LIGHT DRANGE TO YELLOWISH GRAY; 29% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY COARSE; RANGE: GRAVEL TO FINE; GOOD INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-10%, CALCILUTITE-15%, QUARTZ SAND-15%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 LS, SHELL, AND QTZ SAND CEMENTED W/ MICRITE AND CLAY
- 42 45 NO SAMPLES
- 45 47 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY; INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, CRYSTALS, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY COARSE; RANGE: GRAVEL TO FINE; GOOD INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CLAY-10%, CALCILUTITE-15%, QUARTZ SAND-15%;
 OTHER FEATURES: UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 47 50 NO SAMPLES
- 50 52 LIMESTONE; GRAYISH ORANGE; INTERGRANULAR;
 GRAIN TYPE: CRYSTALS, SKELETAL, BIOGENIC; 65% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY COARSE; RANGE: GRAVEL TO FINE; GOOD INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-10%, CLAY-10%, QUARTZ SAND-15%;
 OTHER FEATURES: UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS;
 6° OF CORE PRESENT TO REPRESENT 2' INTERVAL
- 52 55 NO SAMPLES
- 55 57 SAND; DARK YELLOWISH BROWN TO GRAYISH ORANGE; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-25%, PHOSPHATIC SAND-02%, CLAY-10%, SHELL-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 57 57 SAND; DARK YELLOWISH BROWN TO GRAYISH ORANGE; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-10%, PHOSPHATIC SAND-02%, CLAY-10%;
 OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;

- 57 60 NO SAMPLES
- 60 61 SAND; DARK YELLOWISH BROWN TO GRAYISH ORANGE; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-10%, PHOSPHATIC SAND-02%, CLAY-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 51 62 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-10%, CLAY-05%, HEAVY MINERALS-02%, SHELL-25%;
 OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS:
- 62 65 NO SAMPLES
- 65 67 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; 33% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-08%, CLAY-05%, HEAVY MINERALS-02%, SHELL-20%;
 OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS;
 BOTTOM 10 CM OF INTERVAL CONTAINS 10% CALCILUTI TE MATRIX CEMENTING QTZ SAND ANS SHELL FRAGS
- 67 70 NO SAMPLES
- 70 72 AS ABOVE SAME AS INTERVAL 67'
- 72 75 NO SAMPLES
- 75.5 SAND; VERY LIGHT GRAY TO YELLOWISH GRAY; INTERGRANULAR;
 GRAIN SIZE: COARSE; RANGE: FINE TO COARSE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CALCILUTITE-35%, SHELL- %;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS;
- 75.5- 77 LIMESTONE; MODERATE GRAY TO GREENISH GRAY; 43% POROSITY, INTERGRANULAR;
 GRAIN TYPE: BIOGENIC, CRYSTALS, CALCILUTITE; 35% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: PHOSPHATIC SAND-03%, QUARTZ SAND-15%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA;
 STRAT PICK FOR AVPK MADE ON THE BASIS OF A DICTYOCONUS FORAM

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W- 16113 CONTINUED

- 80 81 AS ABOVE SAME AS 77' INTERVAL
- 81 82 CALCILUTITE; WHITE TO VERY LIGHT GRAY; INTERGRANULAR;
 GRAIN TYPE: CALCILUTITE; 20% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-05%;
 OTHER FEATURES: UNWASHED SAMPLE, CHALKY;
- 82 84 NO SAMPLES
- 84 85 CALCILUTITE; WHITE TO VERY LIGHT GRAY; INTERGRANULAR;
 GRAIN TYPE: CALCILUTITE, CRYSTALS; 10% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: COARSE; RANGE: VERY FINE TO VERY COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: CHERT-05%;
 OTHER FEATURES: UNWASHED SAMPLE, CHALKY;
- 85 TOTAL DEPTH

WM117 Site No. 19

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16114 TOTAL DEPTH: 00077 FT. 2 SAMPLES FROM 5 TO 77 FT. COUNTY - VOLUSIA LOCATION: T.19S R.33E S.25

LAT = N 28D 48M 53

LON = W 80D 58M 12

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - NONE ELEVATION - 025 FT

OWNER/DRILLER: ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: GREEN, 4-9-87; POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER TESTS WHERE APPLICABLE

0. - 47. 090UDSC UNDIFFERENTIATED SAND AND CLAY

47. - 77. O9OUDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

- 0 5 NO SAMPLES
- 5 7 SAND; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN; 34% POROSITY, INTERGRANULAR; GRAIN SIZE: COARSE; RANGE: COARSE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-02%;
- 7 10 NO SAMPLES
- 10 11 SAND; VERY LIGHT GRAY TO LIGHT GRAY; INTERGRANULAR;
 GRAIN SIZE: COARSE; RANGE: COARSE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-02%;
- 11 12 SAND; DARK BROWN; 47% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): ORGANIC MATRIX;
 ACCESSORY MINERALS: ORGANICS-25%;
 FOSSILS: ORGANICS;
- 12 15 NO SAMPLES
- 15 17 SAND; MODERATE YELLOWISH BROWN; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-01%;
- 17 20 NO SAMPLES
- 20 22 SAND; YELLOWISH GRAY; 39% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-02%;
- 22 25 NO SAMPLES

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W- 16114 CONTINUED

- 25 27 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-03%, PHOSPHATIC SAND-01%;
- 27 30 NO SAMPLES
- 30 31 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: COARSE TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; UNCONSOLIDATED;
 ACCESSORY MINERALS: HEAVY MINERALS-03%, PHOSPHATIC SAND-01%;
- 31 32 CLAY; OLIVE GRAY; 65% POROSITY, INTERGRANULAR; POOR INDURATION;
- 32 35 NO SAMPLES
- 35 37 AS ABOVE
- 37 40 NO SAMPLES
- 40 42 SAND; LIGHT OLIVE GRAY; 65% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-03%, HEAVY MINERALS-02%;
- 42 45 NO SAMPLES
- 45 47 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 45% POROSITY, INTERGRANULAR;
 GRAIN SIZE: HEDIUM; RANGE: MEDIUM TO FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-02%, SHELL-02%;
 FOSSILS: FOSSIL FRAGMENTS;
 B* CLAY LAYER (GREENISH-GRAY) WITH SAND STRING- ERS PRESENT IN MIDDLE OF SECTION
- 47 56 NO SAMPLES
- 56 58 SAND; LIGHT OLIVE GRAY TO GREENISH GRAY; 41% POROSITY, INTERGRANULAR; GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO FINE; ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-03%, SHELL-40%; FOSSILS: FOSSIL FRAGMENTS;
- 58 65 NO SAMPLES
- 65 67 LIMESTONE; LIGHT OLIVE GRAY TO LIGHT GRAY; INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: BIOGENIC, SKELETAL;
 GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO VERY COARSE; MODERATE INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-30%, HEAVY MINERALS-03%, CLAY-10%;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 67 71 NO SAMPLES

W- 16114 CONTINUED

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- 71 73 AS ABOVE
- 73 75 NO SAMPLES
- 75 77 LIMESTONE; LIGHT GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR; GRAIN TYPE: BIOGENIC, SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS; GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE; MODERATE INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX; ACCESSORY MINERALS: QUARTZ SAND-20%, HEAVY MINERALS-02%, CLAY-10%; FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 77 TOTAL DEPTH

WM117 Site No. 20

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 16115
TOTAL DEPTH: 00096 FT.
2 SAMPLES FROM 5 TO 96 FT.

COUNTY - VOLUSIA

LOCATION: T.21S R.33E S.11

LAT = N 28D 41M 10

LON = W 80D 59M 32

COMPLETION DATE - / /87 OTHER TYPES OF LOGS AVAILABLE - NONE ELEVATION - 011 FT

OWNER/DRILLER: ST JOHNS RIVER WATER MANAGEMENT DISTRICT

WORKED BY: FISHER, 6-2-87, SAMPLES DESCRIBED FROM CORES RECEIVED FROM SJRWMD; POROSITY RESULTS WERE OBTAINED FROM PERMEAMETER STUDIES

0. - 10. 090UDSC UNDIFFERENTIATED SAND AND CLAY

10. - 95. 090UDSS UNDIFFERENTIATED SAND, CLAY, AND SHELLS

95. - 96. 122HTRN HAWTHORN GROUP

0 - 5 NO SAMPLES

5 - 7 SAND; DARK BROWN TO BROWNISH GRAY; 40% POROSITY, INTERGRANULAR;
GRAIN SIZE: MEDIUM; RANGE: COARSE TO VERY FINE;
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
CEMENT TYPE(S): CLAY MATRIX, ORGANIC MATRIX;
ACCESSORY MINERALS: ORGANICS-15%, CLAY-15%;
OTHER FEATURES: UNWASHED SAMPLE;
FOSSILS: NO FOSSILS;

7 - 10 NO SAMPLES

10 - 12 SAND; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 37% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: MEDIUM; RANGE: COARSE TO VERY FINE; ROUNDMESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION; CEMENT TYPE(S): CLAY MATRIX; ACCESSORY MINERALS: CLAY-10%, SHELL-20%, SILT-10%; OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS, MUDDY; FOSSILS: FOSSIL FRAGMENTS;

12 - 15 NO SAMPLES

15 - 16 SAND; VERY LIGHT GRAY TO LIGHT OLIVE GRAY; INTERGRANULAR, INTRAGRANULAR; GRAIN SIZE: HEDIUM; RANGE: MEDIUM TO VERY FINE;
ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; PODR INDURATION;
CEMENT TYPE(S): CLAY MATRIX;
ACCESSORY MINERALS: CLAY-10%, HEAVY MINERALS-01%, SHELL-02%, SILT-05%;
OTHER FEATURES: UNMASHED SAMPLE, CALCAREOUS;
FOSSILS: FOSSIL FRAGMENTS;

W-.16115 CONTINUED

- 16 17 SAND; LIGHT OLIVE GRAY TO OLIVE GRAY; 35% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO VERY FINE;
 ROUNDNESS: ROUNDED TO SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: CLAY-35%, SHELL-20%, SILT-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS;
- 17 20 NO SAMPLES
- 20 22 CLAY; DLIVE GRAY TO DARK GREENISH GRAY; 57% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
 MODERATE INDURATION;
 ACCESSORY MINERALS: SHELL-10%, SILT-05%, QUARTZ SAND-15%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 FOSSIL CONTENT DECREASES DOWN-SECTION; FOSSILS ARE MOSTLY MOLLUSK FRAGMENTS
- 22 25 NO SAMPLES
- 25 27 CLAY; OLIVE GRAY TO DARK GREENISH GRAY; 67% POROSITY, INTERGRANULAR, LOW PERMEABILITY;
 MODERATE INDURATION;
 ACCESSORY MINERALS: SHELL-20%, SILT-05%, QUARTZ SAND-15%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 27 30 NO SAMPLES
- 30 32 CLAY; DARK GREENISH GRAY TO DARK GREENISH GRAY; 73% POROSITY, INTERGRANULAR, LOW PERMEABILITY; MODERATE INDURATION;
 ACCESSORY MINERALS: ORGANICS-03%, QUARTZ SAND-10%, SILT-03%;
 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: PLANT REMAINS;
- 32 35 NO SAMPLES
- 35 37 SHELL BED; VERY LIGHT GRAY TO MODERATE LIGHT GRAY; 41% POROSITY, INTERGRANULAR,
 INTRAGRANULAR, POSSIBLY HIGH PERMEABILITY; UNCONSOLIDATED;
 CEMENT TYPE(S): CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-20%, HEAVY MINERALS-01%;
 OTHER FEATURES: UNMASHED SAMPLE, MUDDY;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 37 40 NO SAMPLES
- 40 42 SHELL BED; GREENISH GRAY TO MODERATE BLUISH GRAY; 57% POROSITY, INTERGRANULAR,
 LOW PERMEABILITY, INTRAGRANULAR; POOR INDURATION;
 ACCESSORY MINERALS: QUARTZ SAND-10%, SHELL-70%, CLAY-20%;
 OTHER FEATURES: UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
 TOP 6" OF SECTION IS M-F GRAINED SAND WITH 10% CLAY; CONTACT IS SHARP; LT. OLIVE GRAY COLOR(SAND)
- 42 45 NO SAMPLES

W- 16115 CONTINUED

- 45 47 SHELL BED; GREENISH GRAY TO MODERATE BLUISH GRAY; 51% POROSITY, INTERGRANULAR, LOW PERMEABILITY; POOR INDURATION;

 ACCESSORY MINERALS: QUARTZ SAND-25%, CLAY-15%;

 OTHER FEATURES: UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 47 50 NO SAMPLES
- 50 52 CLAY; OLIVE GRAY; 74% POROSITY, LOW PERMEABILITY, NOT OBSERVED; MODERATE INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX; ACCESSORY MINERALS: LIMESTONE-25%, ORGANICS-05%, QUARTZ SAND-15%; OTHER FEATURES: CALCAREOUS, MUDDY, UNWASHED SAMPLE;
- 52 55 NO SAMPLES
- 55 57 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY; 32% POROSITY, INTERGRANULAR, INTRAGRANULAR;

 GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS;

 GRAIN SIZE: VERY COARSE; RANGE: GRANULE TO MICROCRYSTALLINE; POOR INDURATION;

 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX, ORGANIC MATRIX;

 ACCESSORY MINERALS: ORGANICS-10%;

 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;

 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 57 60 NO SAMPLES
- 60 62 LIMESTONE; VERY LIGHT GRAY TO LIGHT GRAY; 29% POROSITY, INTERGRANULAR, INTRAGRANULAR; GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE; 40% ALLOCHEMICAL CONSTITUENTS; GRAIN SIZE: GRANULE; RANGE: MICROCRYSTALLINE TO GRAVEL; MODERATE INDURATION; CEMENT TYPE(S): CALCILUTITE MATRIX; OTHER FEATURES: CALCAREOUS, UNMASHED SAMPLE; FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS;
- 62 70 NO SAMPLES
- 70 72 SAND; LIGHT OLIVE GRAY; 46% POROSITY, INTERGRANULAR;
 GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE;
 ROUNDNESS:SUB-ANGULAR; MEDIUM SPHERICITY; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: SHELL-40%, ORGANICS-05%, HEAVY MINERALS-02%, CLAY-15%;
 OTHER FEATURES: CALCAREOUS, UNMASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 72 75 NO SAMPLES
- 75 77 LIMESTONE; LIGHT OLIVE GRAY TO DARK GREENISH GRAY; 43% POROSITY, INTERGRANULAR,
 INTRAGRANULAR;
 GRAIN TYPE: SKELETAL, CALCILUTITE; 50% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: GRANULE; RANGE: MICROCRYSTALLINE TO GRAVEL; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-30%, CLAY-05%, CALCILUTITE-05%, PHOSPHATIC SAND-01%;
 OTHER FEATURES: CALCAREOUS, UNWASHED SAMPLE;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS:

PAGE - 4

W- 16115 CONTINUED

- 90 92 LIMESTONE; VERY LIGHT GRAY TO YELLOWISH GRAY; 31% POROSITY, INTERGRANULAR, INTRAGRANULAR;
 GRAIN TYPE: SKELETAL, CALCILUTITE; 50% ALLOCHEMICAL CONSTITUENTS;
 GRAIN SIZE: VERY COARSE; RANGE: MICROCRYSTALLINE TO GRAVEL; POOR INDURATION;
 CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX;
 ACCESSORY MINERALS: QUARTZ SAND-15%, CALCILUTITE-25%, CLAY-05%, SHELL-50%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS;
- 92 95 NO SAMPLES
- 95 96 DOLOMITE; VERY LIGHT GRAY TO YELLOWISH GRAY; 21% POROSITY, 10-50% ALTERED;
 GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION;
 CEMENT TYPE(S): DOLOMITE CEMENT;
 ACCESSORY MINERALS: PHOSPHATIC GRAVEL-15%, DOLOMITE-25%, QUARTZ SAND-10%, SHELL-10%;
 OTHER FEATURES: UNWASHED SAMPLE, CALCAREOUS;
 FOSSILS: FOSSIL FRAGMENTS;
 DOLOMITE PRESENT AS ROUNDED PEBBLES AND ALSO AS CEMENT FOR COARSE-GRAINED WELL ROUNDED SAND WHICH ALSO CONTAINS 5% ROUNDED PHOSPHATE
- 96 TOTAL DEPTH

APPENDIX F

LABORATORY ANALYSIS PROCEDURE

Vertical Hydraulic Conductivity

Permeameter samples were taken from the 18-in polyurethane tubes. An attempt was made to choose the least disturbed section of each core tube because defects would influence the permeameter tests. Each tube was then marked and a small length (approximately 5 cm long) of tube cut from the core. After each sample was taken, it was covered at both ends with a polyurethane mesh in order to keep the sediment from escaping. The samples were then placed in a beaker of water to allow for partial saturation of the sample before the permeameter tests were performed. The permeameter tests were performed on a SOILTEST model K-605 falling head permeameter.

The length of each sample was measured to the nearest millimeter and recorded. Since all samples were of the same inner diameter (3.4 cm), and the same cross-sectional area (9.08 cm 2), these values were recorded as constants for each test. The area of the standpipe (1.74 cm 2) was also listed as a constant for each test. In order to standardize the calculations even further, the temperature of the water was kept at a constant 25 ° Celsius. The viscosity correction factor (Tc) equals 0.8 at this temperature.

After each sample was placed on the permeameter and sealed, the head was raised to the maximum limit allowed by the apparatus (about 150 cm) in order to accelerate the saturation process. After water began to flow out of the outflow tube, the head was readjusted so that the bottom of the burette was level with the top of the sample.

The initial head (Ho) was then measured and the test for hydraulic conductivity was begun. Three tests for permeability (K) were performed on each sample. The average of the three runs was recorded as the K for that sample. If a sample did not pass water within 24 hours it was assumed that the value for K is lower than the lowest value of any sample which was measured.

Following this stage of testing, each sample was taken off the permeameter and held over a weighed beaker until all observed gravity drainage ceased. In most cases, the sample either was not saturated, and therefore the K was sufficiently low that the amount of water drained from the sample had an unmeasurable specific yield (Sy) or the permeability (K) was sufficiently high that the sample drained before it could be completely removed from the permeameter, and the specific yield (Sy) was again unmeasurable.

Total Porosity

The next test performed on the samples was the determination of total porosity. This involved taking the weighed, saturated sample and placing it in a weighed beaker. The beaker and sample were then placed in a drying oven at $105\,^{\circ}$ C and allowed to dry for 48 hours, they were then re-weighed and the difference in weight divided by the volume of the sample gave the total porosity of the sample.

The unsaturated samples were also weighed and dried, and their total porosity calculated. This value is probably less than the true value for the sample since it was not saturated with water. As a check, all samples were replaced in the oven after their initial reweighing and weighed again after several days to check for a weight change. There was no difference between the initial and final dry weights of all the samples.

X-Ray Diffraction Method for Clay and Bulk Mineral Identification

Samples weighing approximately three grams were taken from 68 cores from 9 sites at selected intervals. These intervals corresponded to those used for the permeameter tests. The calgon method was used to separate the clay fraction from the bulk. The calgon method includes mixing 25 ml of calgon and distilled water. This mixture is added to each sample and stirred briskly until the clay fraction was separated form the bulk. The mixture settled for 45 seconds and the clays were mounted on a glass slide using a small straw and left to dry. The remaining bulk was oven-dried and crushed using a mortar and pestle. Clay mineralogy was analyzed using the X-ray diffractometer.

APPENDIX G

CLAY AND BULK
MINERALOGY OF CORE SUB-SAMPLES

Maria de Caracteria de Caracte		
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1 W-1610042 X X X X X X X X X X X X X X X X X X X	TE TE LITE		DOLOMITE	CALCITE	ARAGONITE	PALYGORSKITE	KAOLINITE	ILLITE	FGS Site No. Well No.
7 W-1610562	X X X	X	χ			X	X	X	1 W-16100 ⁴²
7 W-1610562	X	X			X		X	X	67'
3 W-1610137 X X X X X X X X X X X X X X X X X X X	X X X X X	χ X		X	X X		X	X	$7 W-16105_{62}^{22}$
3 W-1610137 X X X X X X X X X X X X X X X X X X X	X X X		χ	X	X		X	χ	77' 121
13 W-1610842; X X X X X X X X X X X X X X X X X X X	X	X	х	X X X	X X X X X X X X X X X X X X X X X X X	X	X X X X X X X X	X X X X X	17' 22' 27' 33' 3-2' 37' 42' 42' 47' 52' 62' 77'
15 W-1611147	X X X	X	X	X	X X		X	Y	121
15 W-1611147	X X X	X			X	X	X	X	13 W-1610842'
16 W-1611232; X X X X X X X X X X X X X X X X X X X	X	X		X	X X X X X X		X X X X	X	371
18 W-16113 ³⁷ ; X X X X X X X X X X X X X X X X X X X	X	X X X		X	X X X X X X X X X X X X X X X X X X X	X	X X X X X X	X X X X X X	52' 57' 62' 67' 77' 82' 87'
18 W-16113 ₅₇ , X X X X X X X X X X X X X X X X X X X	X	X X	X	X X X	XXXX		X X X	X	70"
19 W-16114 ₅₈ , X X X X X X X X X X X X X X X X X X X	X X X X X X X X X X X X X X X X X X X	X	X X	X X X	X X X		X	X	18 W-16113 ³⁷ ′ 67′
12*	X	X X		X	X X X		X	X X X	19 W-16114 ³⁷ '
20 W-1611542' X X X X X X X X X X X X X X X X X X X	X	X X X X X X X X X X X X X X X X X X X		X X X X X X X	X X X X X X X X X X X X X X X X X X X	X	X X X X X X X X X X	X X X X X X X X	12' 17' 22' 27' 32' 37' 20 W-1611542' 47' 52' 57' 62' 77' 87'

APPENDIX H

CORE SAMPLE VERTICAL HYDRAULIC CONDUCTIVITY (Kz) and TOTAL POROSITY: LABORATORY ANALYSIS RESULTS

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	FGS		VERT	CAL		AVERAGE (Kz)	TOTAL POROSITY	
SITE NO.	WELL NO.	DEPTH	HYDRAULIC COM	IDUCTIVITY (KZ)	(cm/sec)	(cm/sec)	(%)	LITHOLOGY
1	W-16100	22'	No flow	after 24	hours		63.26%	Clay
		27'	No flow	after 24	hours		75.03%	Clay
		37'	No flow	after 24	hours		63.88%	Clay
		47'			hours	_	50.02%	Sand/clay matrix
		57'	No flow 1.236x10 ⁻⁵	after 24 9.098x10	9.077X10 ⁻⁶	1.018x10 ⁻⁵	41.99%	Sand
		62'	No flow	after 24	hours		40.47%	Sand
3	w-16101	12' 17' 22' 27' 32'	7.200x10 ⁻⁵ 9.090x10 ⁻⁶ 2.839x10 ⁻⁵ 1.457x10 ⁻⁵ 1.797x10	8.262×10 ⁻⁵ 7.674×10 ⁻⁶ 2.820×10 ⁻⁵ 1.482×10 ⁻⁵ 1.837×10 ⁻³	8.505X10 ⁻⁵ 7.484X10 ⁻⁶ 2.711X10 ⁻⁵ 1.618X10 ⁻³ 1.884X10 ⁻³	-7.989x10 ⁻⁵ 8.083x10 ⁻⁶ 2.790x10 ⁻⁵ 1.519x10 ⁻³ 1.839x10	42.85% 37.01% 41.85% 40.97% 45.80%	Sand Sand Sand Sand Sand
		37'	No flow	after 24	hours		82.33%	Clay
		421	No flow	after 24	hours		84.86%	Clay
		47'	No flow	after 24	hours		77.09%	Clay
		52'	No flow	after 24	hours		68.47%	Clay
		62'	No flow _s	after 24	hours	_5	57.02%	Clay
		77'	1.048X10_5	1.387X10_2	6.836X10 ⁻⁶ 8.451X10 ₋₄	1.218×10 ⁻⁵	33.06%	Sand
		82'	No flow 1.048X10 ⁻⁵ 9.026X10 ⁻⁴	8.737X1U ,	8.451X10_4	8.738X IU_,	39.34%	Sand
		87'	1.343x10 ⁻⁴	1.307x10 ⁻⁴	1.262x10 ⁻⁴	1.304x10 ⁻⁴	40.38%	Sand
4	W-16102	921	2.534x10 ⁻⁵	2.220x10 ⁻⁵		2.38x10 ⁻⁵	34.22%	Sand
6	W-16103	20' 52' 77'	9.980x10 ⁻⁸ 1.805x10 ⁻⁷ 4.637x10 ⁻⁸	3.932x10 ⁻⁷ 1.476x10 ⁻⁷ 4.479x10 ⁻⁸	1.281x10 ⁻⁷ 2.378x10 ⁻⁸ 2.263x10 ⁻⁸	2.070x10 ⁻⁷ 1.173x10 ⁻⁷ 3.793x10 ⁻⁸	42.39% 38.96% 54.45%	Sand Sand Sand
8	W-16104	67'	1.326x10 ⁻⁴	3.094x10 ⁻⁴	3.314x10 ⁻⁴	2.578x10 ⁻⁴	45.85%	Sand
7	W-16105	17' 22' 27' 32'	2.288x10 ⁻⁴ 3.911x10 ⁻⁴ 1.105x10 ⁻⁵ 1.415x10	2.186x10 ⁻⁴ 4.035x10 ⁻⁴ 1.309x10 ⁻⁵ 1.393x10	2.148X10 ⁻⁴ 4.054X10 ⁻⁴ 1.367X10 ⁻⁵ 1.377X10	2.207x10 ⁻⁴ 4.000x10 ⁻⁴ 1.260x10 ⁻⁴ 1.395x10 ⁻⁵	38.08% 39.39% 41.19% 43.18%	Sand Sand Sand Sand
		37'	No flow	after 24	hours		49.56%	Silt
		47'	Not	saturated	after 24	hours	60.69%	Sand/clay matrix
	.*	52' 62' 67' 72' 77' 82'	Not 1.228x10 ⁻⁶ 1.088x10 ⁻⁵ 1.522x10 ⁻⁶ 1.763x10 ⁻⁴ 4.148x10 ⁻⁴	saturated ₇ 5.264x10 ⁻⁶ 9.477x10 ⁻⁶ 1.615x10 ⁻⁵ 1.716x10 ⁻⁴ 4.062x10	after 24-7 4.507x10-6 8.868x10-6 1.959x10-5 1.687x10-4 4.035x10-4	hours 7.350x10 ⁻⁷ 9.742x10 ⁻⁶ 1.699x10 ⁻⁵ 1.722x10 ⁻⁴ 4.082x10	35.57% 34.29% 34.55% 38.34% 13.57%	Clay Clay Sand Silt Sand
		87' 92'	No flow 9.784X10 ⁻⁶	after 24 9.869X10 ⁻⁶	hours 9.813X10 ⁻⁶	9.822x10 ⁻⁶	37.73% 29.23%	Limestone Limestone
9	W-16107	22'	0.292	0.226	0.225	0.248 Sam	ole Damaged	Silty sand
		47'	0.030	0.042	0.089	0.054 Samp	ole Damaged	Sand

	FGS VERTICAL					AVERAGE (Kz)	POROSITY	
SITE NO.	WELL NO.	DEPTH	HYDRAULIC COM	NDUCTIVITY (KZ) (cm/sec)	(cm/sec)	(%)	LITHOLOGY
2	W-16116	12' 47' 57' 67' 72' 82'	9.95 x10 ⁻⁴ 3.009x10 ⁻⁵ 3.87 x10 ⁻⁷ 1.305x10 ⁻⁷ 2.085x10 ⁻⁴ 4.89 x10 ⁻⁸	1.31 x10 ⁻³ 6.999x10 ⁻⁴ 2.97 x10 ⁻⁸ 3.496x10 ⁻⁵ 3.889x10 ⁻⁵ 9.34 x10 ⁻⁸	3.32 x10 ⁻³ 6.794x10 ⁻⁴ 6.09 x10 ⁻⁸ 4.115x10 ⁻⁵ 6.459x10 ⁻⁸ 9.58 x10 ⁻⁸	3.41 ×10 ⁻³ 4.698×10 ⁻⁴ 1.59 ×10 ⁻⁵ 2.541×10 ⁻⁶ 1.040×10 ⁻⁶ 7.94 ×10 ⁻⁸	40.17% 41.07% 48.55% 37.44% 38.19% 52.73%	Sand Clay Sand Sand Sand Sand
14	W-16117	52 ' 82 '	6.144X10 ⁻⁶ 1.10 X10 ⁻⁷	Sample 1.10 X10 ⁻⁷	Damaged 1.17 X10 ⁻⁷	1.12 x10 ⁻⁷	46.75%	Silty Clay Sand
5	W-16118	21 ' 72 '	0.220 1.47 X10 ⁻⁶	0.313 1.42 x10 ⁻⁶	0.307 1.47 x10 ⁻⁶	0.280 1.45 x10 ⁻⁶	Damaged	Sand Silt
10	W-16119	32' 42'	8.460x10 ⁻⁷ 5.89 x10 ⁻⁷	1.094x10 ⁻⁷ 8.60 x10 ⁻⁸	1.573x10 ⁻⁸ 5.76 x10 ⁻⁷	3.237X10 ⁻⁷ 4.17 X10 ⁻⁷	45.57% 43.39%	Sand Sand
17	W-16120	37' 62'	1.396x10 ⁻⁶ 4.89 x10 ⁻⁷	5.143x10 ⁻⁷ 7.75 x10 ⁻⁸	7.933x10 ⁻⁷ 1.38 x10 ⁻⁷	9.012X10 ⁻⁷ 2.35 X10 ⁻⁷	48.79% 50.84%	Sand Shell

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