FLD980729610

GROUND WATER MONITORING PLAN

for

INTERNATIONAL SOLVENT RECOVERY INC.

Submitted: August 8, 1983

INTERNATIONAL SOLVENT RECOVERY INC.

GROUND WATER MONITORING PLAN

(To be incorporated with DER Hazardous Waste Operating Permit)

Definition & Characterization Of The Sources

As described in our Hazardous Waste Construction Permit Application, pp. 1-8, ISR plans to operate a solvent reclamation facility on the Bartow Municipal Airport. This project will involve accepting industrial wastes as described in the aforementioned section, and processing the wastes to obtain a usable product, at which point the Solvents are considered to be hazardous materials, and not hazardous wastes.

Certain portions, the exact percentages will vary, of the wastes will have no economic value, and will have to be handled as a waste which will be disposed of properly. These wastes, referred to as sludges in our permit application will be contained in 55 gallon drums and will be shipped to an EPA approved disposal site. The closest disposal sites are in Alabama or South Carolina.

As seen in the Construction Permit, ISR will handle a variety of industrial chemicals, the specific enviromental hazard created by these waste streams, varies depending upon the specific industrial source and processes utilized. In order to effectively operate a quality reclamation project, precise analytical analyses of wastes handled are paramount to effective separation. Therefore ISR plans to install and operate a sophisticated analytical laboratory. Specific tests to be conducted and retention of these tests are described in section four of our construction permit, application #HO53-60967.

Waste Disposal

ISR does not generate an industrial waste which in discharged to the waters of the State. Any water wastes are discharged to the POTW, and must meet the standards set forth by the treatment plant. The entire reclaimation, and storage processes utilized by ISR are designed to contain spills. Secondary and in some cases tertiary containment strategies are employed. (See drawings submitted under the Hazardous Wastes Permit). The implementation of a groundwater monitoring program is essential if significant long term liabilities are to be avoided. The cost of trying to clean up twenty years of undetected pollution, versus a single readily detected incident easily justifies the implementation of a monitoring program which will readily detect any contamination in the areas where the contamination will begin. The monitoring wells must be strategically located so

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that they can record the existing groundwater quality background and the extent of contamination resulting from a spill. The earlier an incident is detected the less costly the cleanup. Because of the type of soil, (myakka fine sand) which characterizes the upper strata of our site, and the relative short distance to the water table (one to two feet), it is essential that a well developed surveillance system be installed and properly maintained in order to minimize possible environmental impacts.

Monitoring Wells

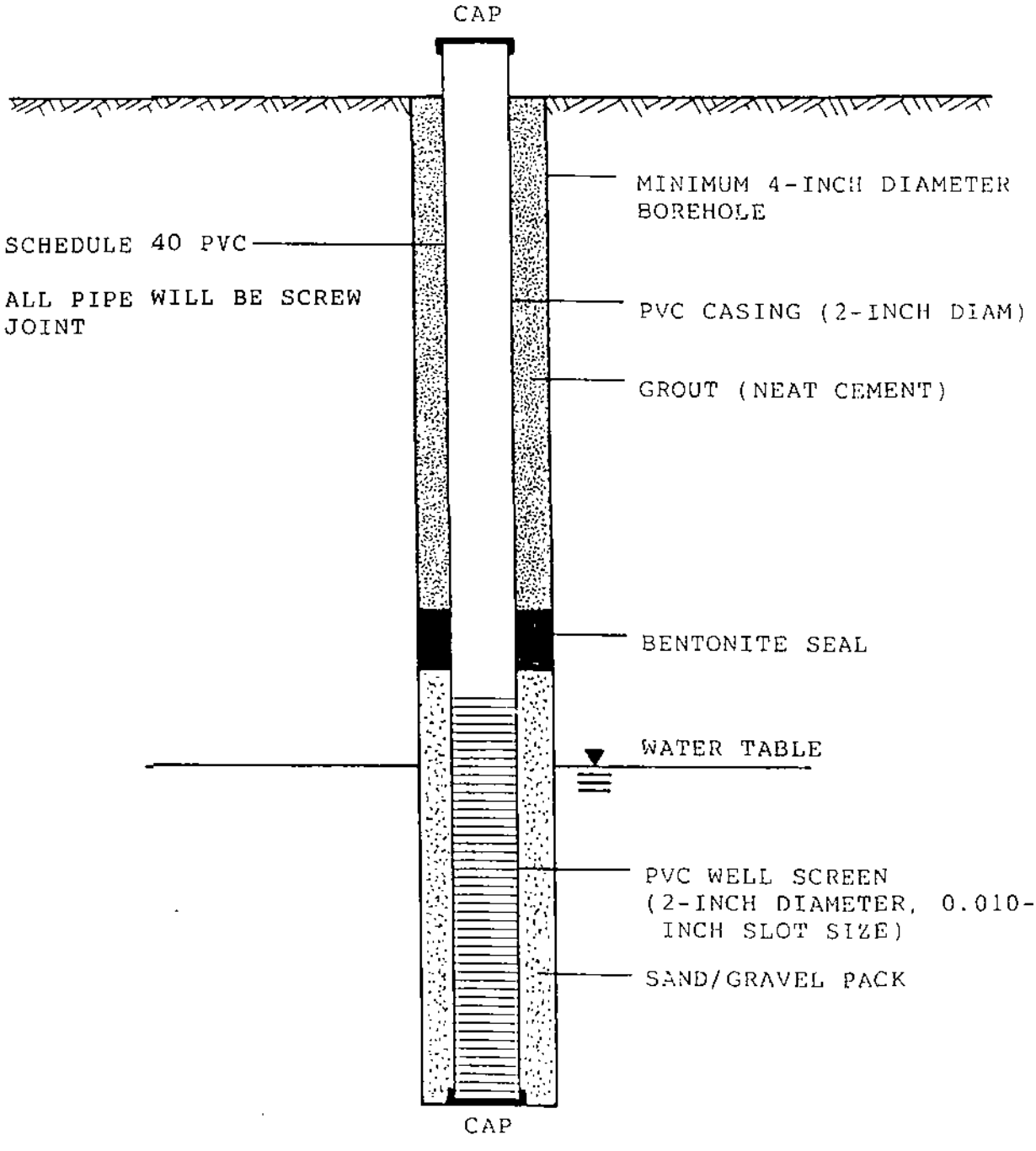
A preliminaty study to determine suitable locations for monitoring wells was conducted by Enviromental Science and Engineering. Based on the existing literature and the data ES&E generated the preliminary well locations were determined. See Appendix A for hydrogeologic data and proposed locations of monitoring wells. Additional information regarding the specific well specifications (construction materials, etc.) will be submitted prior to drilling. The wells will be approximately twenty feet below grade, two inches in diameter and screened from five to twenty feet. See Appendix B for the list of information which will be submitted upon completion of the well construction.

Frequency of Analyses

Monitoring of these wells will be conducted at a minimum on a semi-annual basis, with the first analysis to be conducted prior to receiving any hazardous wastes. In addition, the initial analysis will consist of three consecutive samples taken at weekly intervals. This will be completed to establish possible varience in the background levels.

In the event of an incident resulting in the implementation of the contingency plan, monitoring will be conducted once a week for four consecutive weeks. If significant quantities of contaminents are detected after an incident, the monitoring frequency will be appropriately increased to accurately track the episode. This frequency will be determined on a case by case basis with consultation with the DER. Notice of the event will be given to the DER as specified in a permit #HC53--60967 part 16b, and corrective action will be jointly developed for the clean-up.

In the event of an uncontained spill of a halogenated hydrocarbon with a specific gravity greater than one, well samples will be drawn from deep wells located on the industrial park to assess if the spill has reached the Floridan aquifer. The frequency and



NOTE: NOT TO SCALE

SCHEMATIC OF PROPOSED GROUND WATER MONITORING WELL

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.

specific wells to be sampled will be determined during consultation with the DER. For well locations see Hazardous Waste Construction Permit Application. See Appendix C for hydrogeologic data on the Floridan and surficial aquifers.

Retention Of Records

All groundwater monitoring data will be retained on-site for a period of three years from sampling date. In addition, the background analysis will be permanently maintained with the groundwater monitoring records. The drilling logs will be certified by a Professional Geologist and will be maintained at all times in these files. The logs will contain the information shown in Appendix B. When requested by the DER or other authorized agencies, International Solvent Recovery Inc. will furnish within a reasonable time any information developed from the groundwater monitoring program.

Test Parameters

The test results will be interpreted for qualitative aspects, unless significant quantities are present which would merit accurate determination of the concentrations. All analyses will be performed in accordance with EPA document #SW 846, and all samples will be taken in accordance with the Standard Operating Procedures and Quality Assurance Manual for Field Sampling, published by the DER.

The test results to be maintained on file will include:

* The date, exact place, and time of sampling;
* The person responsible for taking the sample - procedures used, pH, temperature, specific conductance, and preservation methods;
* The date the analysis was performed;
* The person responsible for performing the analysis;
* The analytical technique or method used, and the results of the analysis.

*** Note to all persons who may review this plan seperately from the RCRA or 17-30 permit application -- The Hazardous Waste Permit contains much of the normally requested information for a groundwater monitoring plan, such as engineering drawings, topographic maps, rainfall data, etc. Rather than duplicate this information it was felt that the groundwater plan should be

incorporated with our Hazardous Waste Operating Permit. Therefore if specific information appears to be lacking in this plan please refer to the Hazardous Waste Permit Application #HW53-60967 for more details.

APPENDIX A

Hydrogeologic Data And Proposed Monitoring Locations

ENVIRONMENTAL SCIENCE
AND ENGINEERING, INC.

August 3, 1983

Mr. Mark Worley
International Solvent Recovery, Inc.
Bartow Municipal Airport
P.O. Box 235
Bartow, FL 33803

Re: Location of Groundwater Monitoring Wells

Dear Mark:

Attached are four copies of a map depicting monitoring well and soil boring locations on the plant site; soil descriptions per boring down to the water table depth; and a graph indicating the results of the infiltrometer test (location of the test is indicated on the map). I have also attached a copy of the Soil Conservation Service's (SCS) Soil Map and Interpretations Record for myakka fine sand (#17) which is the soil type on the plant site.

Based on data from the hand auger borings conducted onsite on Monday, August 1, 1983, elevations of the shallow water table were developed utilizing South West Florida Water Management District aerial photographs (with ground elevations) to estimate elevations above mean sea level (msl). In general, shallow water table movement occurs from northeast to south, southeast beneath the site, from elevations of 127 msl to 121 msl. There appears to be some westward movement of the shallow water table and a flattening of the contours on the western part of the plant site.

The monitoring well locations (four) shown on the accompanying map should be viewed as general locations. One well is located south, southeast of the sump as we discussed; the remaining wells are situated to obtain downgradient and upgradient (baseline) groundwater data. It may be appropriate to place a monitoring well in the northwest area of the site; however, this decision should be made when the soil borings (30 feet in depth) are conducted to refine the monitoring well locations and develop hydrogeologic cross-sections. As we discussed, this should be coordinated with the contractor when soil borings are conducted for the plant.

5406 Hoover Boulevard, Suite D Airport Service Center Tampa, Florida 33614
P. O. Box 151167 Tampa, Florida 33684-1167 813/886-6672

Results of the infiltrometer tests are shown on the attached chart and location of the tests is shown on the map of soil borings and well locations. Infiltration rates varied from 2 to approximately 4.5 inches per hour. In general, this tends to correspond with soil data describing permeability rates for myakka fine sand.

These well locations should be discussed with Florida Department of Environmental Regulation (FDER). We can develop drilling and sampling specifications for the driller and monitoring well specifications at a later date. For discussion with FDER, the wells will be approximately 20 feet below grade, 2 inches in diameter, and screened from 5 to 20 feet.

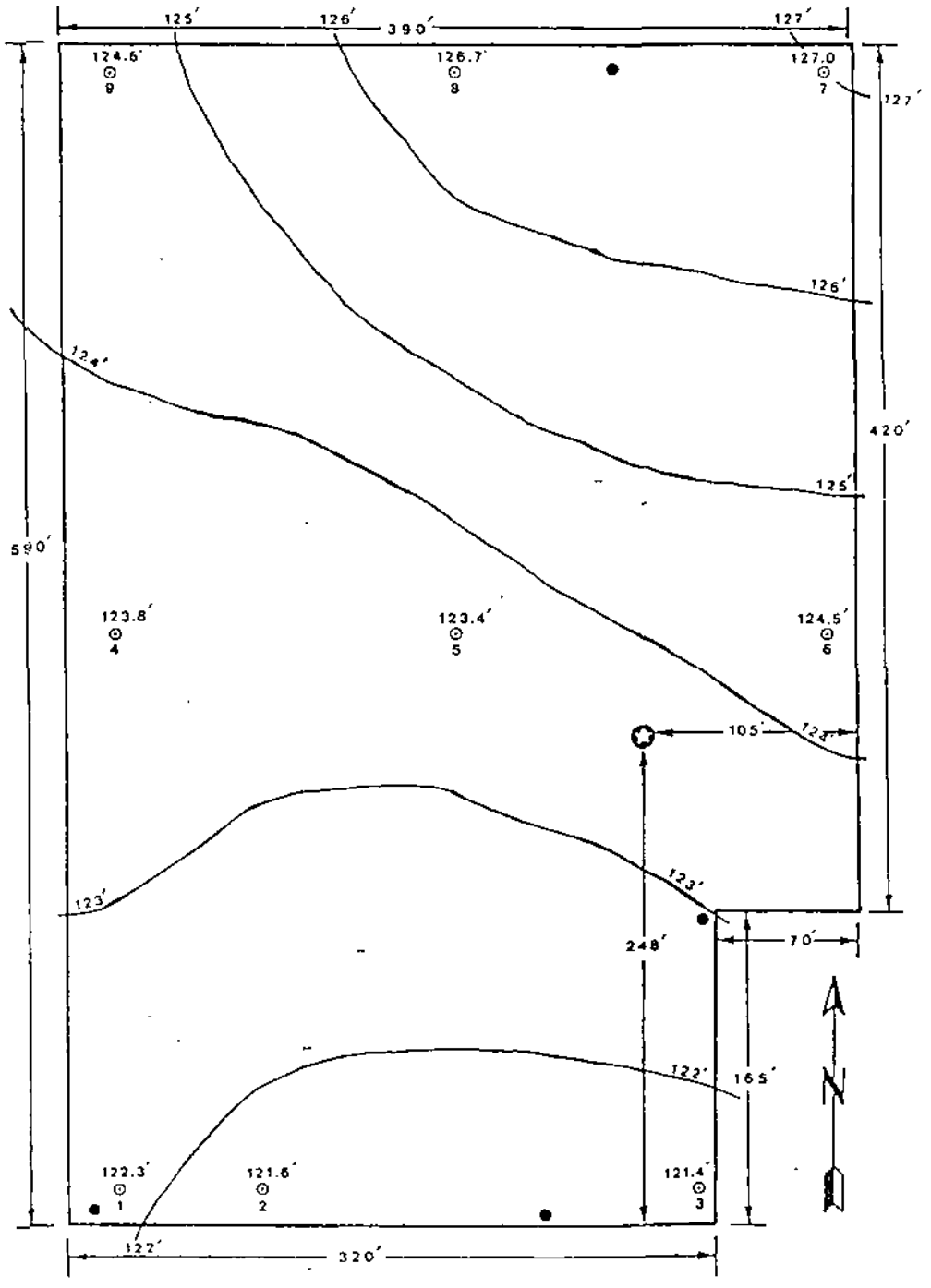
If you have any questions, please contact me.

Sincerely,

Quen Wilson
Project Manager

DQW/nha
Enclosures

MONITORING WELL & SOIL BORING LOCATIONS



- • Monitoring Well Sites
- ⊙ Soil Boring Sites
- 122 Elevations (Estimated Above MSL)
- ✪ Infiltration Test Site

International Solvents

Soil Borings - August 1, 1983

#1 - Southwest corner of property boundary

Description:

0-1 feet	Dark grey fine sand with a trace of organic fines; moist, non-cohesive and non-plastic
1-2.4	Grey medium clean sand, moist—characteristic of Myakka sand
2.4	Dark brown sand with trace of silt
2.09 feet	Water table

#2 - Southwest property boundary, 97 feet from SW corner

Description:

0-0.8 feet	Limerock and brown sand mixture
0.8-1.05	Dark grey sand, low organic content
1.05-2.0	Dark grey medium sand, moist; grades into medium sand
2.0-2.5	Grey brown sand with trace of silt, non-cohesive, non-plastic
2.5	Light brownish grey sand
2.6 feet	Water table

#3 - Southeast corner of property boundary

Description:

0-0.9 feet	Dark grey sand, organic fines
0.9-1.7	Dark brown, very fine sand with trace of fines
1.7	Grey medium sand
2.54 feet	Water table

#4 - Mid property line - western boundary

Description:

0-0.9 feet	Dark grey sand with trace of organic fines and trace of organic debris
0.9-1.4	Grey medium sand
1.4	Dark brown sand with trace of fines, non-cohesive
2.28 feet	Water table

#5 - Mid property line - mid point at 195 feet (E-W)

Description:

0-2.0 feet	Dark greyish brown sand with organic fines; low cohesion; non-plastic; moist
2.0	Grey, medium, moist sand
2.68 feet	Water table

International Solvents

Soil Borings - August 1, 1983
(Continued, Page 2 of 2)

#6 - Mid property line, eastern boundary

Description:

0-1.2 feet	Black sand with muck; non-plastic; moderate cohesion
1.2	Grey medium, very moist sand
1.5 feet	Water table

#7 - North property boundary, NE corner

Description:

0-1.0 feet	Black sand with organic fines; cohesive, very moist
1.0	Grey medium, wet sand--slight H_2S odor
0.64 feet	Water table

#8 - North property boundary - midpoint

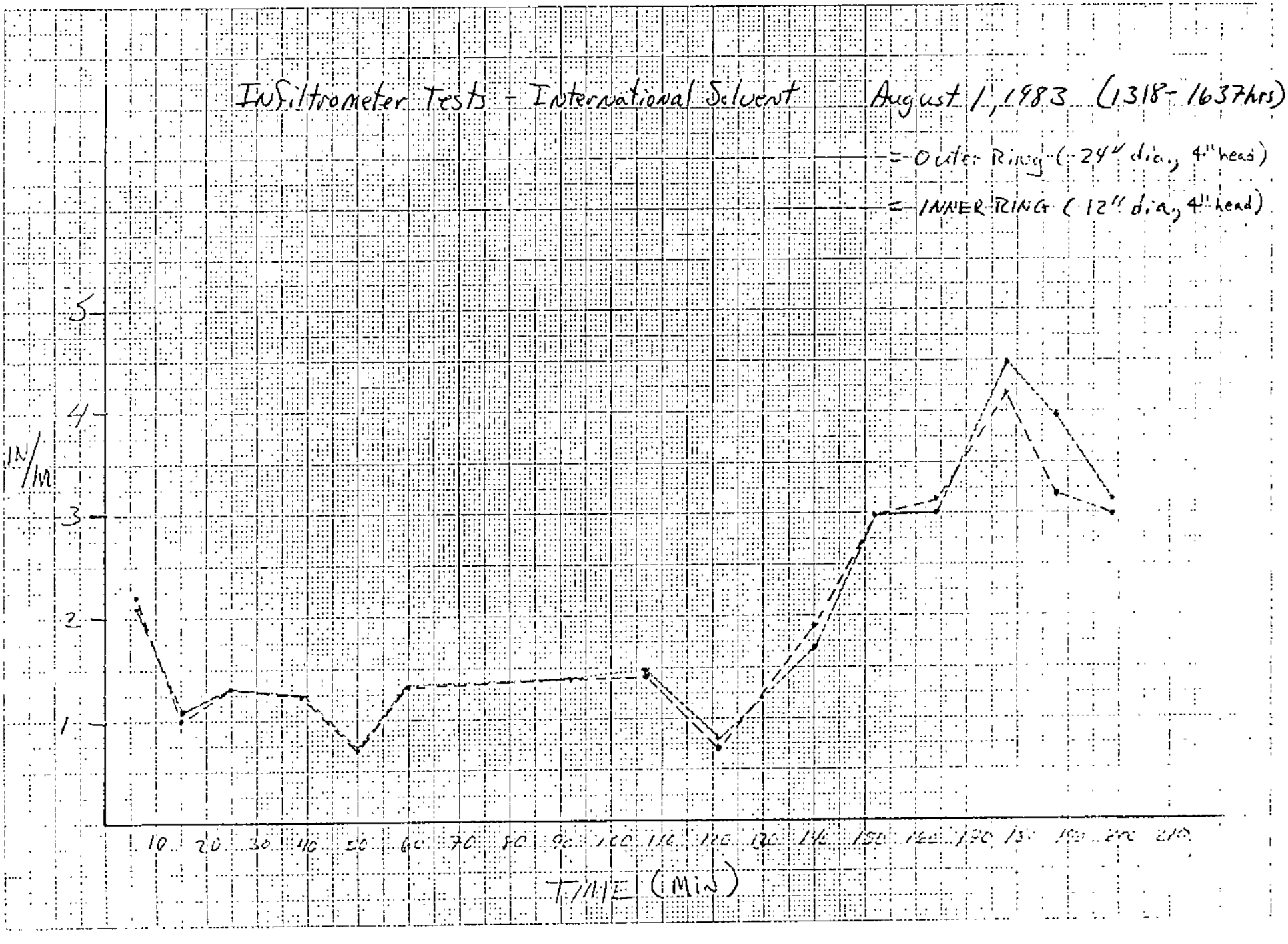
Description:

0-0.9 feet	Dark grey sand, slight organic fines, slightly cohesive
0.9	Grey, medium, wet sand
0.8 feet	Water table

#9 - North property boundary - NW corner

Description:

0-1.3 feet	Black sand, with low organic fines, slightly cohesive
1.3-1.7	Dark brown, medium sand
1.7	Dark grey sand with trace of silt; non-cohesive
2.9 feet	Water table


Infiltrometer Tests - International Solvent August 1, 1983 (1318-1637hrs)
= Outer Ring (~24" dia., 4" head)
= INNER RING (12" dia, 4" head)
IN/HR
5
4
3
2
1
10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210
TIME (MIN)

SOIL INTERPRETATIONS RECORD

FL0059

17 MYAKKA FINE SAND

THE MYAKKA SERIES CONSISTS OF POORLY DRAINED SANDY SOILS THAT HAVE A DARK COLORED SANDY SUBSOIL WITHIN 30 INCHES OF TH[illegible]CE. THEY ARE ON LOWER ATLANTIC AND GULF COASTAL FLATWOODS AND FORMED IN SANDY MARINE SEDIMENTS. IN A REPRESENTATI[illegible]ILE THE SURFACE LAYER IS BLACK SAND ABOUT 6 INCHES THICK. BELOW THIS IS 14 INCHES OF WHITE SAND. BETWEEN 20 AND 56 INCHES IS BLACK SAND THAT BECOMES REDDISH BROWN AND DARK BROWN WITH DEPTH. BELOW 56 INCHES IS DARK GRAYISH BROWN SAND [illegible] DEPTH MORE THAN 80 INCHES.

ESTIMATED SOIL PROPERTIES

DEPTH (IN.)	USDA TEXTURE	UNIFIED	AASHTO	FRACT >3 IN (PCT)	PERCENT OF MATERIAL LESS THAN 3" PASSING SIEVE NO. 4	10	40	200	LIQUID LIMIT	PLASTICITY INDEX
0-20	FS	SP, SP-SM	A-3	0	100	100	85-100	2-10	-	NP
20-36	S, FS, LFS	SM, SP-SM	A-3, A-2-4	0	100	100	85-100	5-20	-	NP
36-80	S, FS	SP, SP-SM	A-3	0	100	100	85-100	2-8	-	NP

DEPTH (IN.)	CLAY (PCT)	MOIST BULK DENSITY (G/CM3)	PERMEABILITY (IN/HR)	AVAILABLE WATER CAPACITY (IN/IN)	SOIL REACTION (PH)	SALINITY (MMHOS/CM)	SHRINK-SWELL POTENTIAL	EROSION FACTORS K	T	WIND EROD. GROUP	ORGANIC MATTER (PCT)	CORROSIVITY STEEL	CONCRETE
0-20	<2	1.35-1.55	6.0-20	0.02-0.05	3.6-6.5	-	LOW	.10	5	2	<2	HIGH	HIGH
20-36	1-8	1.45-1.60	0.6-6.0	0.10-0.20	3.6-6.5	-	LOW	.15					
36-80	<2	1.48-1.70	6.0-20	0.02-0.10	3.6-6.5	-	LOW	.10					

FLOODING FREQUENCY	DURATION	MONTHS	HIGH WATER TABLE DEPTH (FT)	KIND	MONTHS	CEMENTED PAN DEPTH (IN)	HARDNESS	BEDROCK DEPTH (IN)	HARDNESS	SUBSIDENCE INIT. (IN)	TOTAL (IN)	HYD GRP	POTENTIAL FROST ACTION
NONE			0-1.0	APPARENT	JUN-NOV	-		>60		-		B/D	-

SANITARY FACILITIES		CONSTRUCTION MATERIAL	
SEPTIC TANK ABSORPTION FIELDS	SEVERE-WETNESS	ROADFILL	POOR-WETNESS
SEWAGE LAGOON AREAS	SEVERE-SEEPAGE,WETNESS	SAND	PROBABLE
SANITARY LANDFILL (TRENCH)	SEVERE-SEEPAGE,WETNESS,TOO SANDY	GRAVEL	IMPROBABLE-TOO SANDY
SANITARY LANDFILL (AREA)	SEVERE-SEEPAGE,WETNESS	TOPSOIL	POOR-TOO SANDY,WETNESS
DAILY COVER FOR LANDFILL	POOR-SEEPAGE,TOO SANDY,WETNESS		

BUILDING SITE DEVELOPMENT		WATER MANAGEMENT	
		POND RESERVOIR AREA	SEVERE-SEEPAGE
SHALLOW EXCAVATIONS	SEVERE-CUTBANKS CAVE,WETNESS	EMBANKMENTS DIKES AND LEVEES	SEVERE-SEEPAGE,PIPING,WETNESS
DWELLINGS WITHOUT BASEMENTS	SEVERE-WETNESS	EXCAVATED PONDS AQUIFER FED	SEVERE-CUTBANKS CAVE
DWELLINGS WITH BASEMENTS	SEVERE-WETNESS	DRAINAGE	CUTBANKS CAVE,SLOPE
SMALL COMMERCIAL BUILDINGS	SEVERE-WETNESS	IRRIGATION	WETNESS,DROUGHTY,FAST INTAKE
LOCAL ROADS AND STREETS	SEVERE-WETNESS	TERRACES AND DIVERSIONS	WETNESS,TOO SANDY,SOIL BLOWING
LAWNS, LANDSCAPING AND GOLF FAIRWAYS	SEVERE-WETNESS	GRASSED WATERWAYS	WETNESS,DROUGHTY

	RECREATIONAL DEVELOPMENT	
CAMP AREAS	SEVERE-WETNESS,TOO SANDY	SEVERE-TOO SANDY,WETNESS
PLAYGROUNDS		
PATHS AND TRAILS		
PICNIC AREAS	SEVERE-WETNESS,TOO SANDY	SEVERE-WETNESS,TOO SANDY

PRODUCTIVITY AND YIELDS PER ACRE OF CROPS AND PASTURE (HIGH LEVEL MANAGEMENT)

SOIL SYM	CITRUS PRODUCTIVITY INDEX	ORANGES (BOXES) LOW	ORANGES (BOXES) HIGH	GRAPEFRUIT (BOXES) LOW	GRAPEFRUIT (BOXES) HIGH	TOMATOES (TONS) LOW	TOMATOES (TONS) HIGH	CABBAGE (CRATES) LOW	CABBAGE (CRATES) HIGH	BAHIAGRASS (AUM) LOW	BAHIAGRASS (AUM) HIGH	GRASS-CLOVER (AUM) LOW	GRASS-CLOVER (AUM) HIGH	IMPROVED PASTURE LOW	IMPROVED PASTURE HIGH
AM	46	250	550			15		320		9.0		-	12.0		

WOODLAND SUITABILITY

SOIL SYM	MANAGEMENT PROBLEMS: EROSION HAZARD	EQUIP. LIMIT	SEEDLING MORTALITY	WINDTHROW HAZARD	PLANT COMPET.	POTENTIAL PRODUCTIVITY: COMMON TREES	SITE INDEX	TREES TO PLANT
AM	SLIGHT	MODERATE	MODERATE	MODERATE	MODERATE	SLASH PINE	70	SLASH PINE
						LONGLEAF PINE	60	IS FLORIDA SLASH PINE
						IS FLORIDA SLASH PINE	35	

WINDBREAKS

SPECIES	HT	SPECIES	HT	SPECIES	HT	SPECIES	HT
SLASH PINE	45	LOBLOLLY PINE	40	SOUTHERN RED OAK	45	CAROLINA LAURELCHY	30
JAPANESE PRIVET	30	PAMRCO	25				

WILDLIFE HABITAT SUITABILITY

POTENTIAL FOR HABITAT ELEMENTS: GRAIN AND SEED CROPS	GRASS AND LEGUME HERB.	WILD HERB.	HARDWD TREES	CONIFER/SHRUBS	WETLAND PLANTS	SHALLOW WATER	POTENTIAL AS HABITAT FOR: OPENLD WILDLF	WOODLD WILDLF	WETLAND WILDLF	RANGELD WILDLF
POOR	FAIR	FAIR	POOR	POOR	-	FAIR	POOR	FAIR	POOR	POOR	-

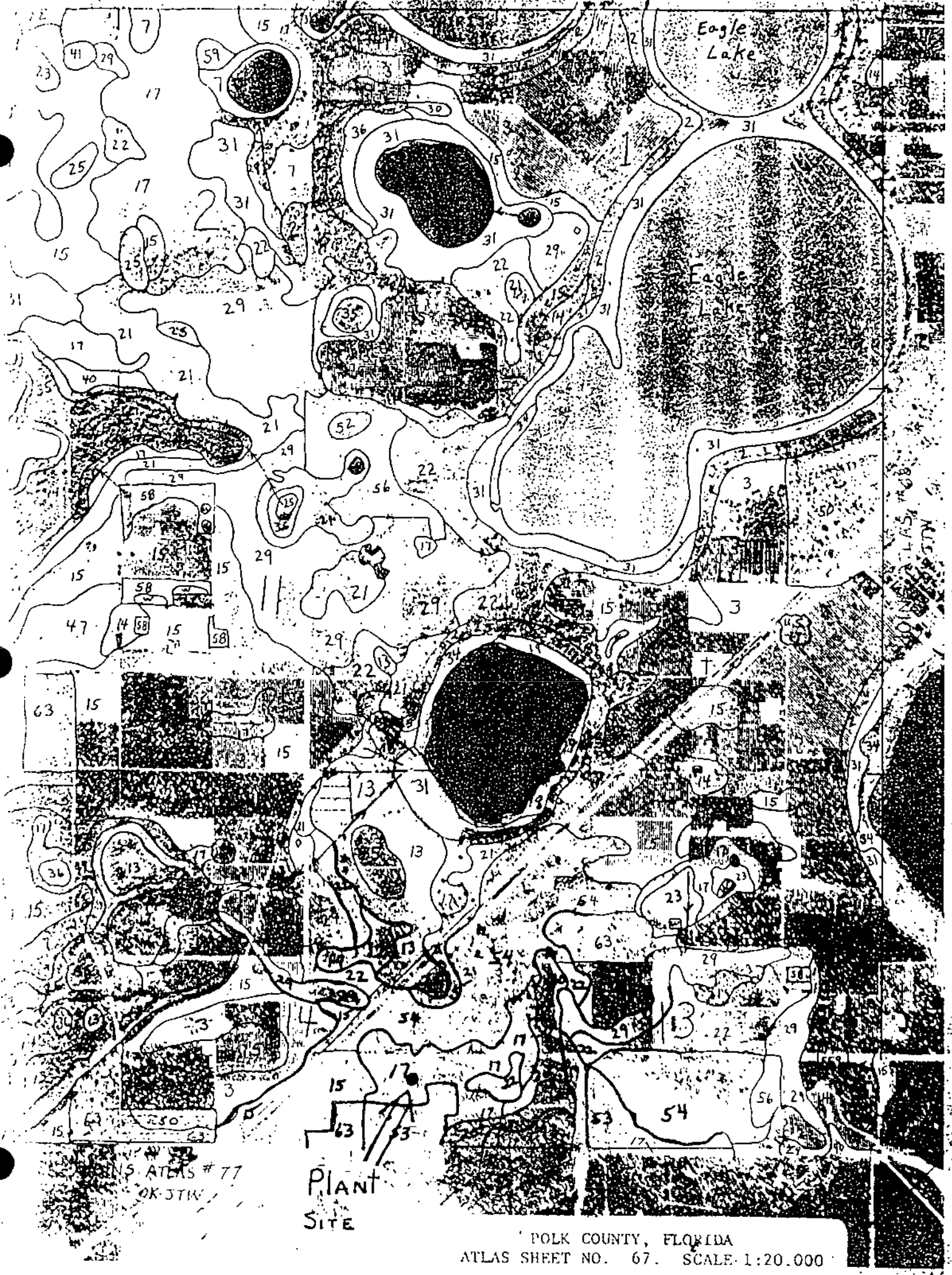
POTENTIAL NATIVE PLANT COMMUNITY (PREDOMINANT OR FORMER UNDERSTORY VEGETATION)

COMMON PLANT NAME	PLANT SYMBOL (USDA)	PERCENTAGE COMPOSITION (DRY WEIGHT)
[illegible] BLUESTEM	ANGE	35
[illegible] BLUESTEM	ANGE	10
[illegible] PANICUM	PANVI	5
[illegible] INDIANGRASS	SORNU	10
[illegible] THREEAW	ARSTA	5
BROOM	PANHE	5
[illegible]STED	SERPI	10
[illegible] ANNUAL FORBS	ANFF	5
[illegible] PERENNIAL GRASSES	PEGR	5
[illegible] PERENNIAL FORBS	PEFF	5

POTENTIAL PRODUCTION REDUCERS, PER CENT

FAVORABLE YEARS	PEFF	
NORMAL YEARS	PEFF	
UNFAVORABLE YEARS	PEFF	

FOOTNOTES



POLK COUNTY, FLORIDA
ATLAS SHEET NO. 67. SCALE 1:20,000

APPENDIX B

Well Construction Information To Be Submitted Prior To Drilling

Information to be developed and provided to the Department of Environmental Regulation for all monitoring wells constructed.

1. The WMD water well permit number.
2. A copy of the water well completion report filed with the WMD.
3. A well log for each well shall include the following information:
   a. Drillers name
   b. Date drilled
   c. Location and identification of the well
   d. Approximate elevation of the well
   e. Size and depth of the hole
   f. Method of drilling
   g. Method of sampling (core, splitspoon, cuttings, etc.)
   h. Description and approximate depth of all geologic strata encountered
   i. Drilling rate or effort
   j. Loss of circulation with estimated percentage of loss, reason for loss, and method by which it was regained and all drops of the drill stem
   k. Well description
      1. Casing description
         a. Type (if PVC - was glue used and brand name)
         b. Size
         c. Length and depth
      2. Screen description
         a. Type
         b. Length and diameter
         c. Depth interval
         d. Screen size
      3. Sand or gravel pack information

4. Open hole description if screens are not used.

   a. Depth interval

   b. Diameter

5. Casing annular space seal

   a. Materials used

   b. Volume of material used

6. Well development information

   a. Method

   b. Time

   c. Volume

l. Static water level below the top of casing after recovery from well development

m. Miscellaneous comments

4. Each wells identification number

5. The surveyed location and elevation (of the casing and land surface) for each well.

6. The latitude and longitude of each well.

7. The hydraulic conductivity and/or the specific capacity of the sampling interval.

8. A lithologic description of the monitoring wells sampling interval.

9. A lithologic log of each monitoring well.

10. A table indicating the following and comparing all wells constructed on site.

a. Well identification

b. Latitude and longitude location

c. Well depth

d. Top of casing elevation

e. Casing diameter

f. Casing type (if PVC - glued or threaded)

g. Casing depth

h. Screen type/slot size

i. Screen interval elevation range

j. Lithologic description of the screened interval

k. Aquifer monitored

l. Specific capacity or hydraulic conductivity of the screened interval and the well

11. A map clearly indicating the location of all monitoring wells by each well identification number.

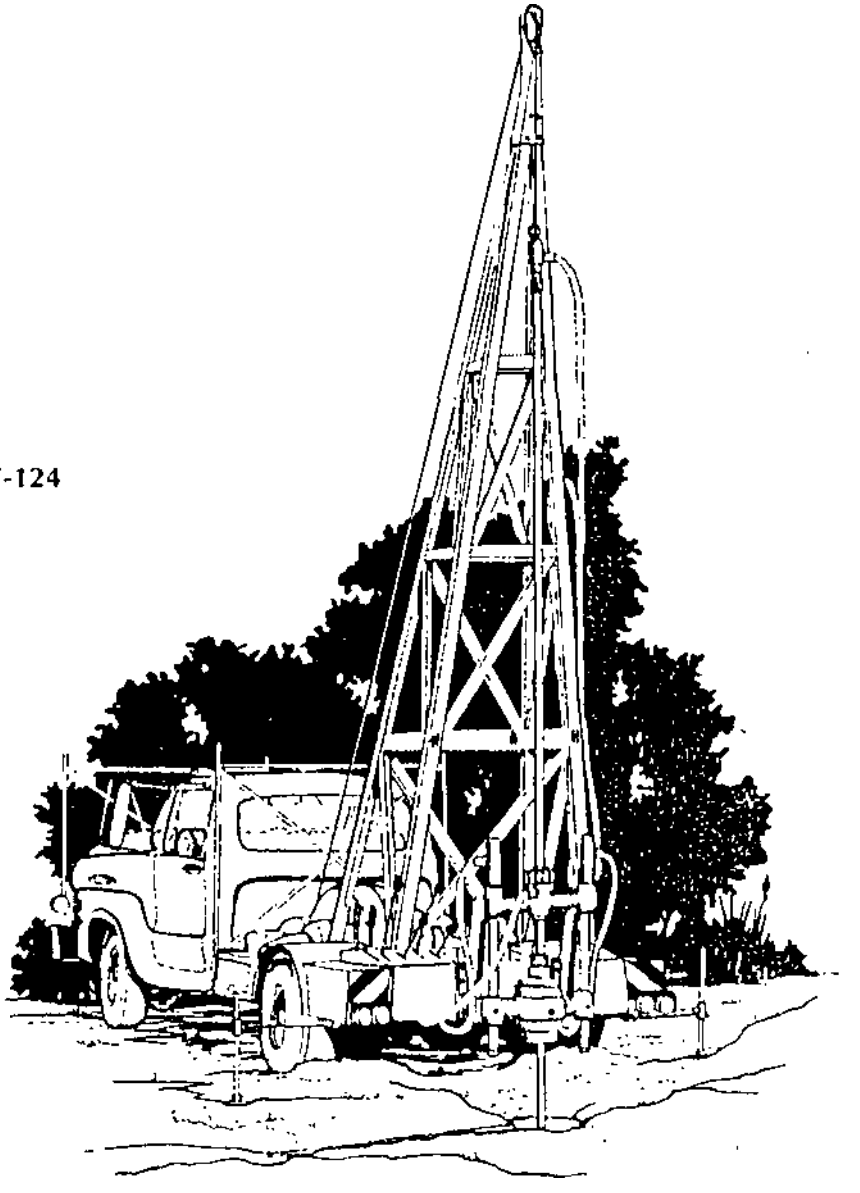
APPENDIX C

Hydrogeolic Data

APPRAISAL OF SHALLOW GROUND-WATER RESOURCES AND MANAGEMENT ALTERNATIVES IN THE UPPER PEACE AND EASTERN ALAFIA RIVER BASINS, FLORIDA

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations 77-124



Prepared in cooperation with the
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

AND EASTERN ALAFIA RIVER BASINS, FLORIDA

BIBLIOGRAPHIC DATA SHEET	1. Report No.	2.	3. Recipient's Accession No.

4. Title and Subtitle

APPRAISAL OF SHALLOW GROUND-WATER RESOURCES AND MANAGEMENT ALTERNATIVES IN THE UPPER PEACE AND EASTERN ALAFIA RIVER BASINS, FLORIDA

5. Report Date: February 1978

6.

7. Author(s): C.B. Hutchinson

8. Performing Organization Rept. No. USGS WRI 77-124

9. Performing Organization Name and Address
U.S.Geological Survey, Water Resources Division
325 John Knox Road, F-240
Tallahassee, Florida 32303

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address
U.S.Geological Survey, Water Resources Division
325 John Knox Road, F-240
Tallahassee, Florida 32303

13. Type of Report & Period Covered

14.

15. Supplementary Notes
Prepared in cooperation with the Southwest Florida Water Management District

16. Abstracts: The shallow aquifer system underlying the 1,250-square-mile upper Peace and eastern Alafia River basins is a relatively untapped source of supply. The shallow aquifer system ranges between 50 and 300 feet thick and is composed of a surficial sand unit underlain by a limestone unit. Sand and clay confining beds separate the shallow aquifer system from the highly productive, extensively developed deep aquifer system. The hydrologic budget of the area indicates that annual leakage of water from the shallow to the deep aquifer system is 2.6 inches while annual pumpage from the deep aquifer system averages 5.5 inches.

Management alternatives to be considered for efficient use of the shallow ground-water resources include development by withdrawal wells or connector wells for recharge. One solution for a gridded network of wells consists of 540 wells spaced 7,000 feet apart, each producing 453 gallons per minute. The network would derive water to meet demand by capturing water that would normally have run off evapotranspired.

17. Key Words and Document Analysis. 17a. Descriptors

*Water resources development, ground-water movement, hydrologic budget, aquifer characteristics, Florida

17b. Identifiers/Open-Ended Terms

Connector wells

17c. COSATI Field Group

18. Availability Statement: No restriction on distribution

19. Security Class (This Report): UNCLASSIFIED — 21. No. of Pages: 58

20. Security Class (This Page): UNCLASSIFIED — 22. Price

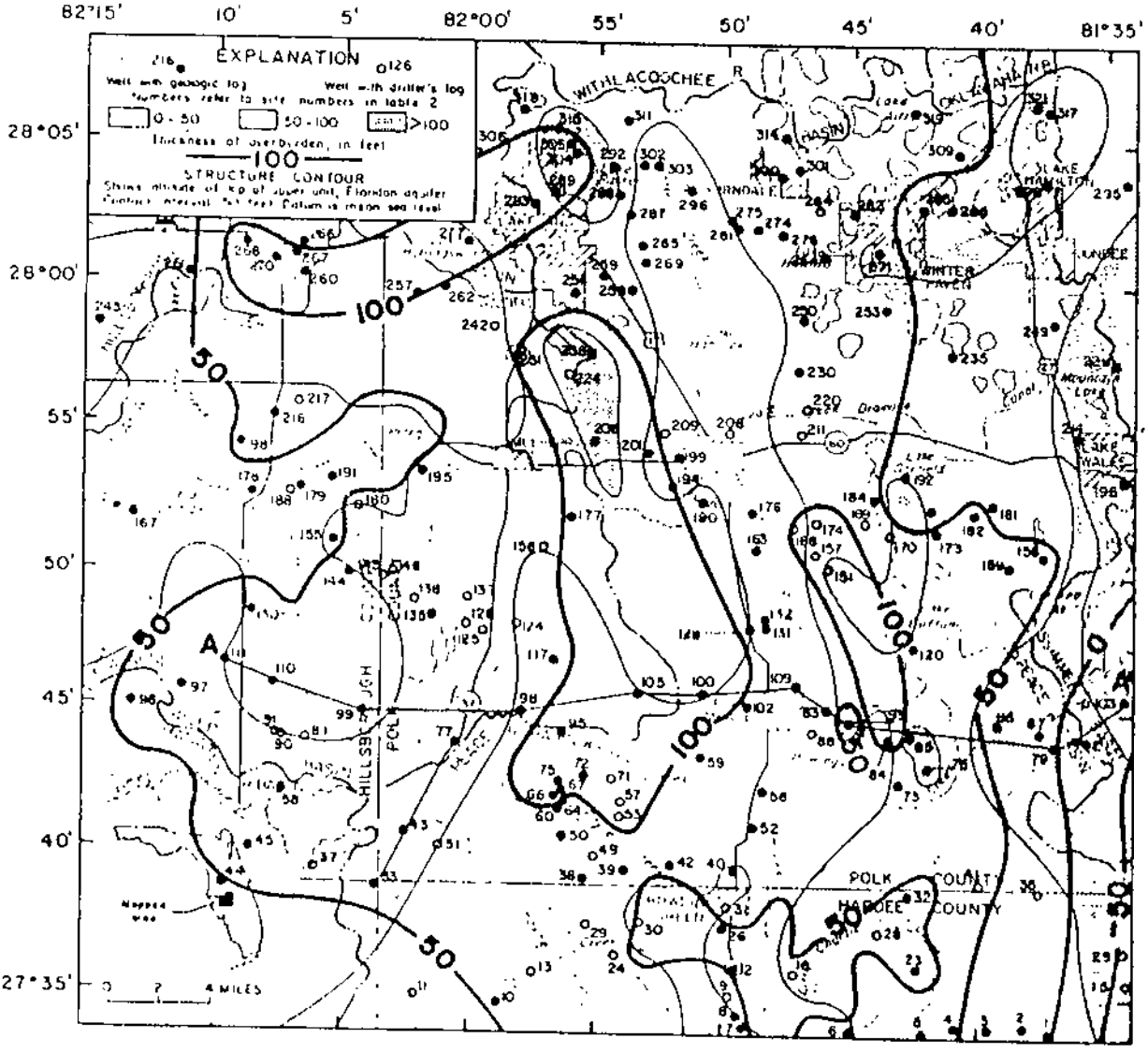


Figure 6.--Altitude of the top of the upper unit, Floridan aquifer, and thickness of overburden deposits.

Table 3. -- Physical characteristics of the surficial aquifer

[From core samples analyzed at U.S. Geological Laboratory, Denver, Colorado.]

Site number on fig. 10	Latitude/longitude	Section-township-range	Depth of sample (ft)	Median grain size (mm)	Clay content (percent)	Effective porosity (percent)
14	273516/814628	24-33S-25E	17	0.26	0	29.5
34	273835/814637	01-33S-25E	22	.37	5	19.3
48	274004/815330	27-32S-24E	22	.17	10	--
54	274043/813733	21-32S-27E	32	.25	10	--
68	274216/820847	07-32S-22E	22	.21	5	--
89	274400/813552	34-31S-27E	22	.31	0	--
94	274451/815316	35-31S-24E	27	.61	10	--
102	274505/814903	28-31S-25E	22	.21	5	35.8
104	274536/815938	27-31S-23E	17	.23	10	--
107	274544/821442	30-31S-21E	22	.35	0	--
108	274547/820725	20-31S-22E	32	.39	15	32.9
114	274622/814141	23-31S-26E	17	.25	10	25.3
122	274731/820323	13-31S-22E	22	.29	0	34.7
142	274912/814906	04-31S-25E	32	.21	15	21.6
143	274914/814607	01-31S-25E	32	.23	0	33
150	274942/815315	35-30S-24E	22	.14	20	--
152	275002/815850	35-30S-24E	17	.16	0	--
162	275032/814227	27-30S-26E	42	.24	0	27.9
165	275059/820904	30-30S-22E	18	.19	15	30.1
212	275433/814734	34-29S-25E	53	.23	10	--
256	275918/820719	04-29S-22E	22	.21	0	--

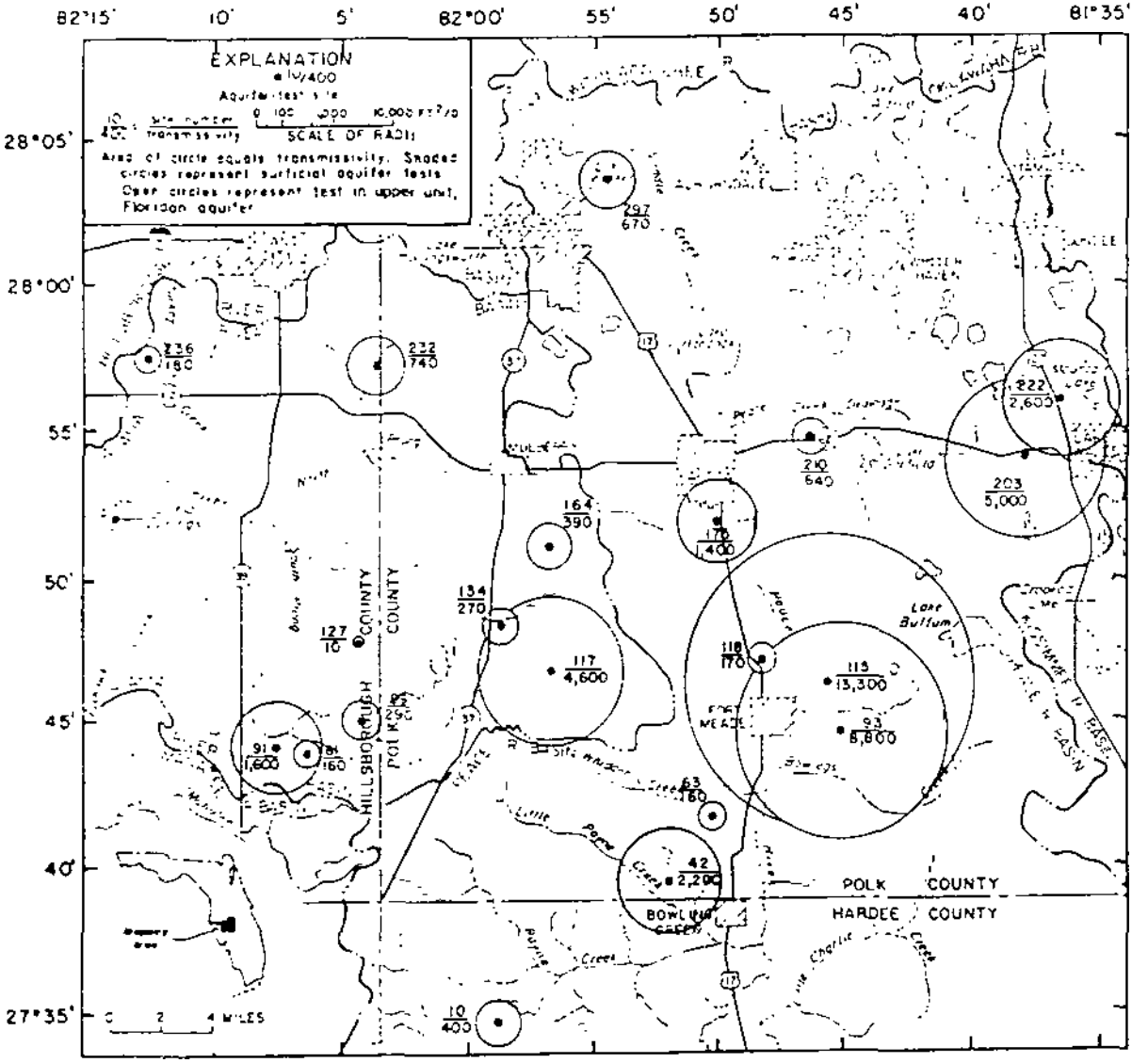


Figure 5 -- Transmissivity of the surficial aquifer and of the upper unit, Floridan aquifer, at test sites

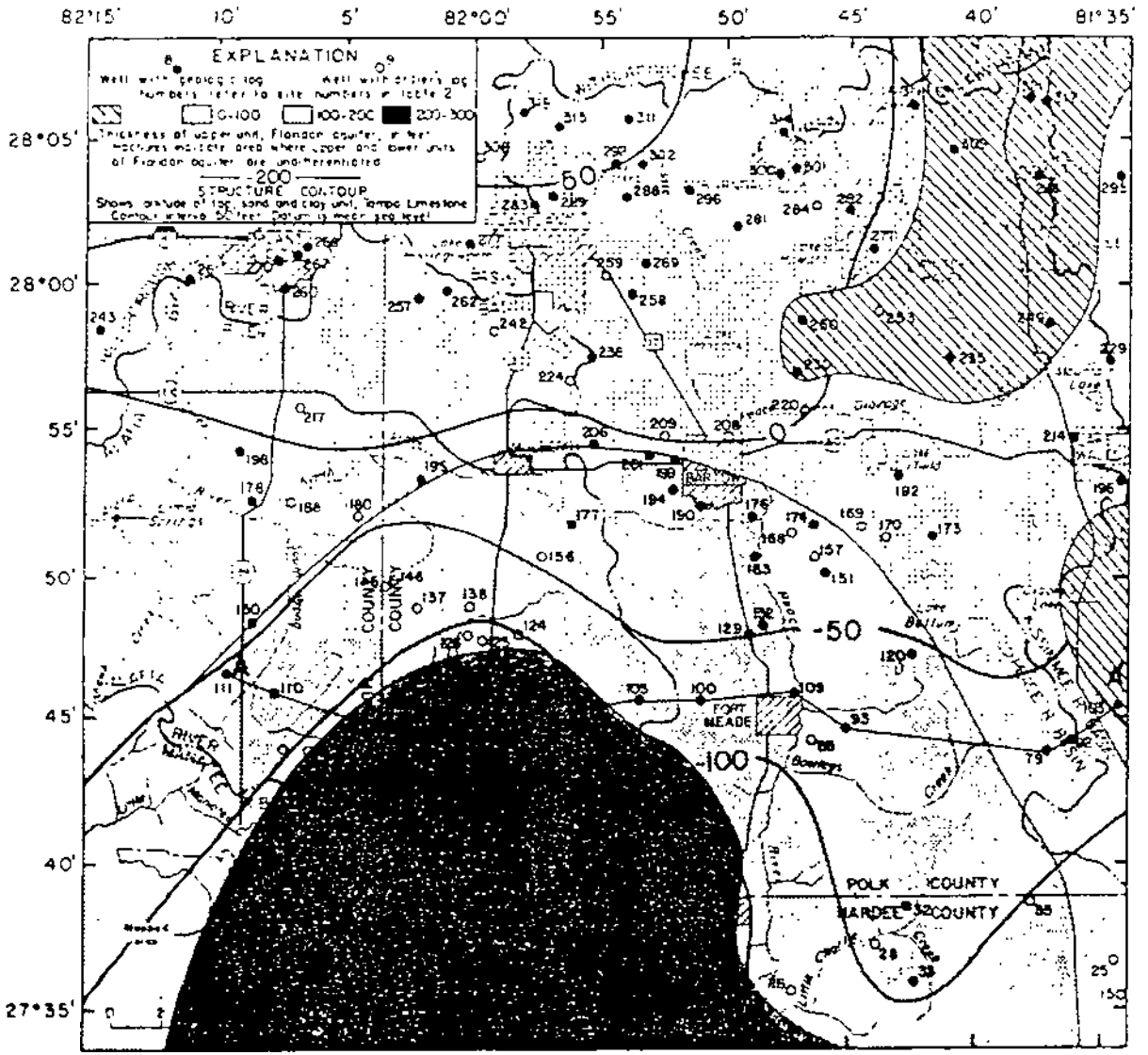


Figure 5 -- Altitude of the top of the sand and clay unit, Tampa Limestone, and thickness of the upper unit, Floridan aquifer

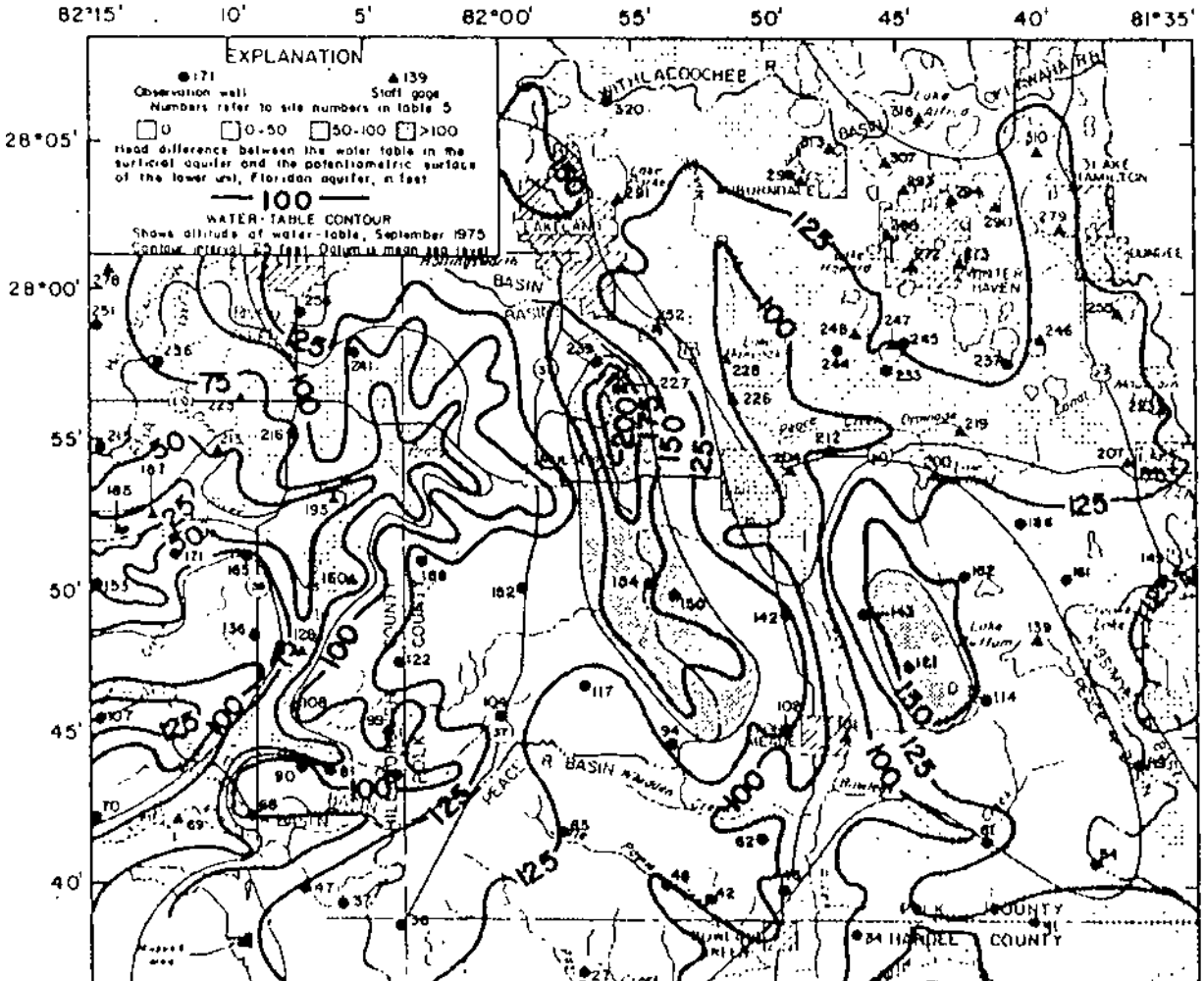


Figure 10 -- Altitude of the water table in the surficial aquifer and head difference between the water table and the potentiometric surface of the lower unit, Floridan aquifer, September 1975

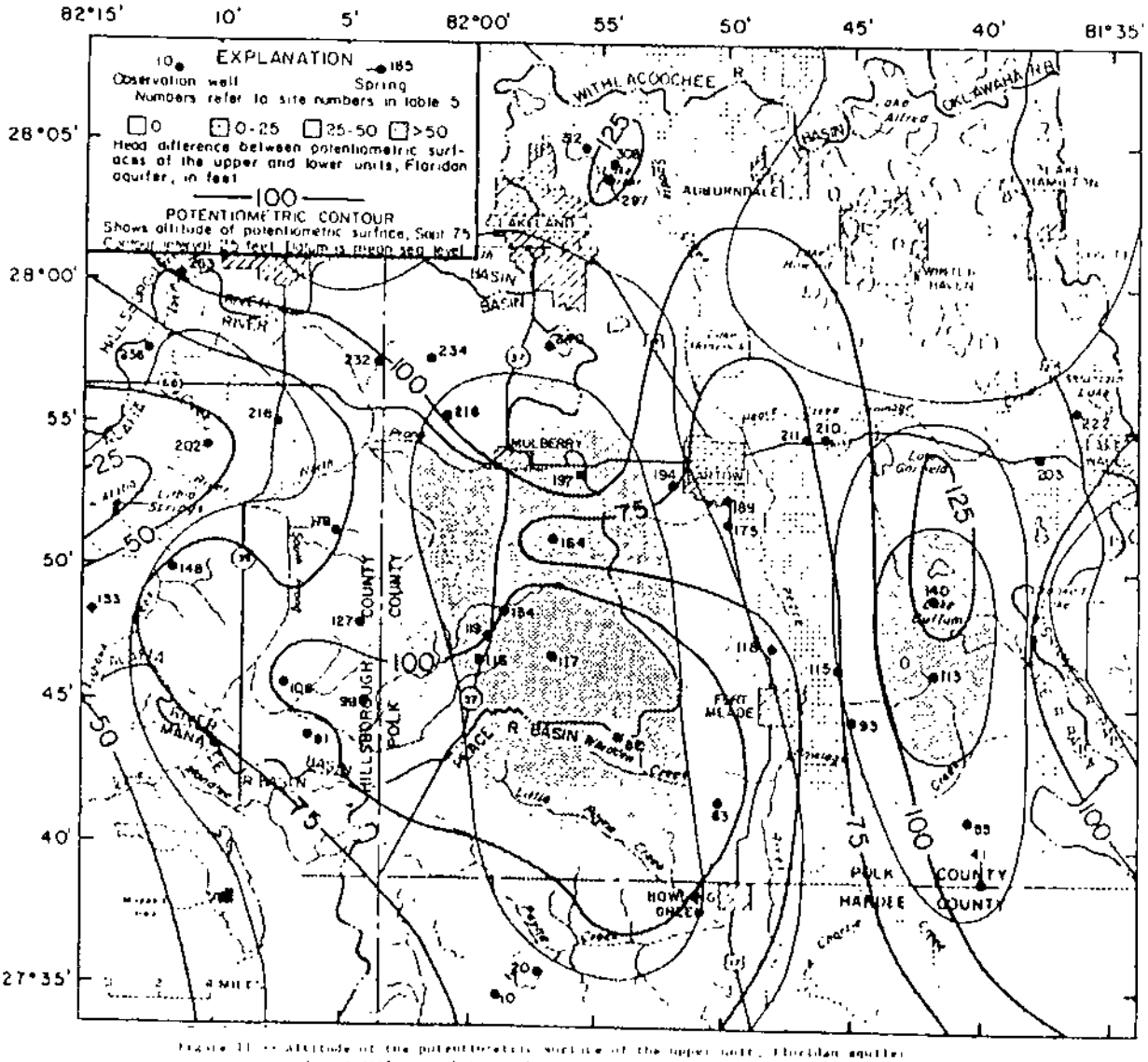


Figure 11 -- Altitude of the potentiometric surface of the upper unit, Floridan aquifer and head difference between the potentiometric surface of the upper unit and the potentiometric surface of the lower unit, Floridan aquifer, September 1975

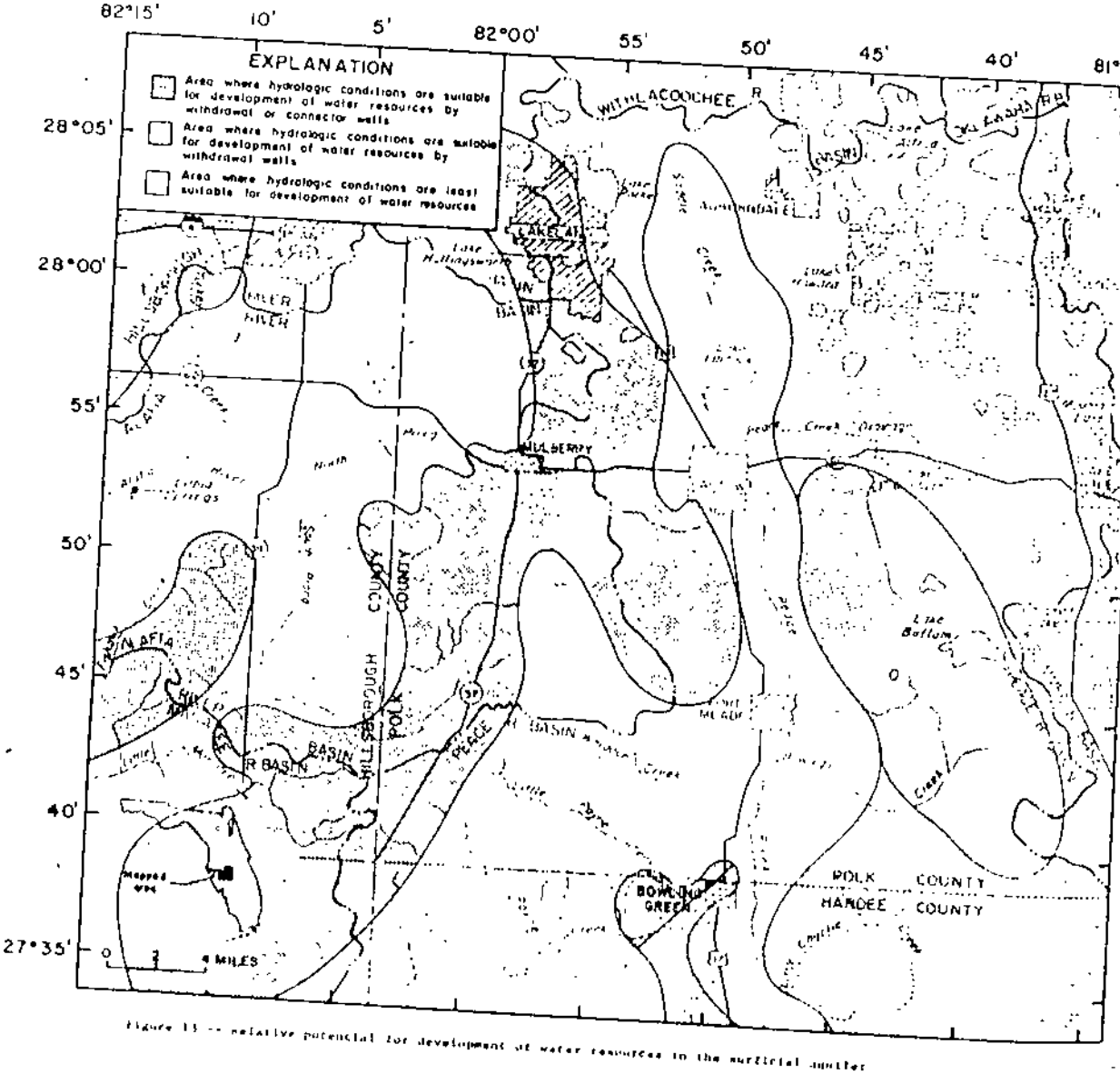


Figure 13 -- Relative potential for development of water resources in the surficial aquifer

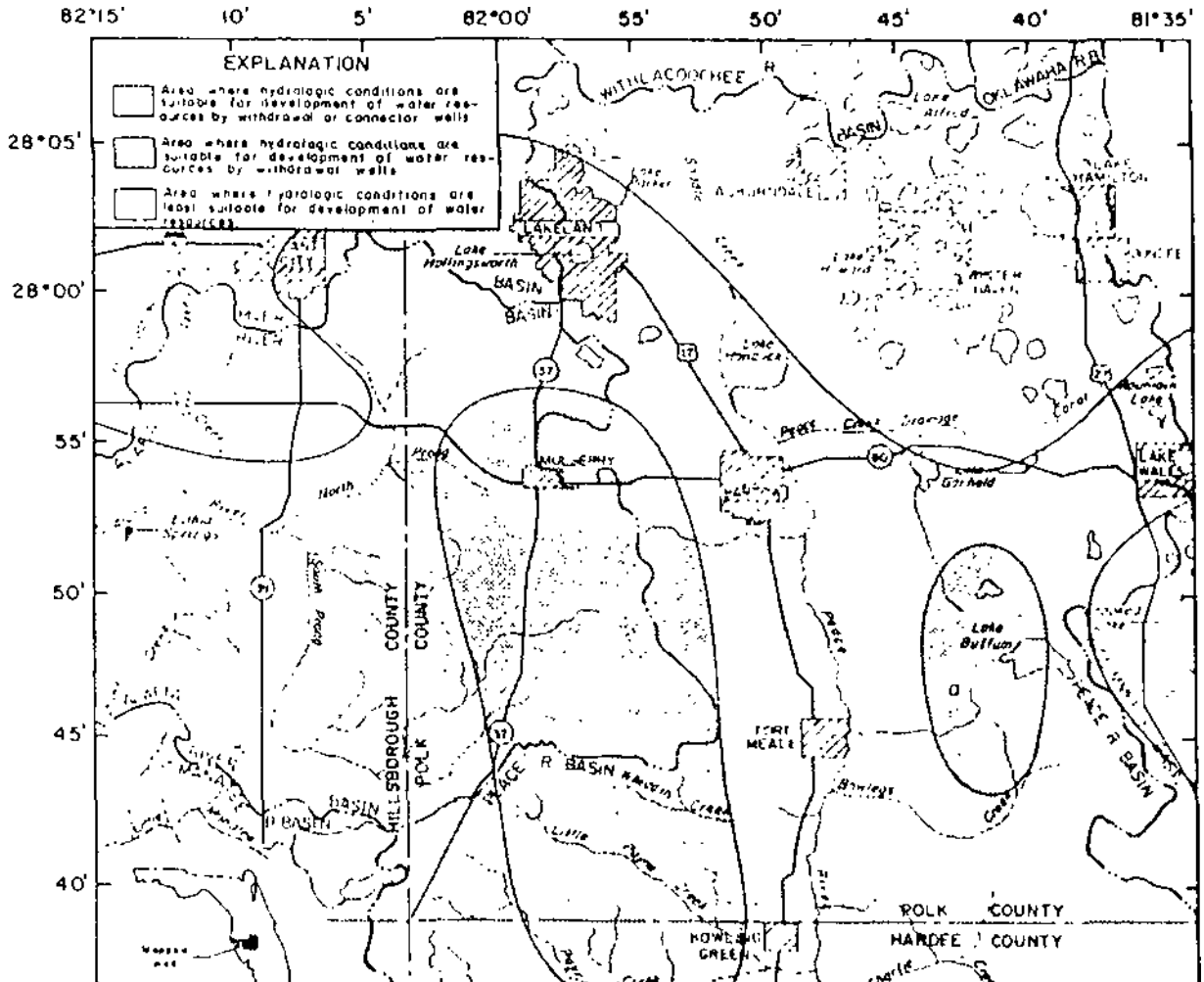


Figure 1. -- Relative potential for development of water resources in the upper unit, Floridan aquifer

WELL NUMBER.--275815081444201. Lake McLeod Shallow Well near Eagle Lake, FL.

LOCATION.--Lat 27°58'15", long 81°44'42", in SE¼SE¼ sec.7, T.29 S., R.26 E., Hydrologic Unit 03100101, at intersection Eagle Loop Road and Lake McLeod Road, and 1.0 mi (1.6 km) east of Eagle Lake.

AQUIFER.--Non-artesian sand aquifer of Pleistocene/Pliocene Age, Geologic Unit 111 MSSD.

WELL CHARACTERISTICS.--Drilled, observation, water-table well, diameter 1.25 in (3 cm), depth 26 ft (8 m), cased to 24 ft (7 m).

INSTRUMENTATION.--Tape measured. Measuring point: Top of casing, 2.50 ft (0.76 m) above land-surface datum.

DATUM.--Land-surface datum is 139.25 ft (42.44 m) National Geodetic Vertical Datum of 1929.

PERIOD OF RECORD.--May 1965 to current year (bimonthly). Records of water levels prior to January 1974 are available in files of the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 131.52 ft (40.09 m) NGVD, Sept. 12, 1973; lowest measured, 122.93 ft (37.47 m) NGVD, June 1, 1977.

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	ELEV-ATION ABOVE NGVD (FEET) (72020)	DATE	TIME	ELEV-ATION ABOVE NGVD (FEET) (72020)
OCT			MAY		
08...	0716	127.13	20...	1325	124.79
DEC			JUN		
11...	0715	127.13	09...	0845	124.51
FEB			AUG		
06...	0730	125.93	03...	1750	125.93
APR			SEP		
08...	0725	125.69	23...	1522	129.36

WELL NUMBER.--275840081391101. Rodgers Well near Waverly, FL.

LOCATION.--Lat 27°58'40", long 81°39'11", in SE¼NW¼ sec.7, T.29 S., R.27 E., Hydrologic Unit 03100101, 300 ft (90 m) south of State Highway 540, 1.3 mi (2.1 km) west of U. S. Highway 27, and 2.3 mi (3.7 km) west of Waverly.

AQUIFER.--Floridan aquifer of the Tertiary System, Geologic Unit 120 FLRD.

WELL CHARACTERISTICS.--Drilled, irrigation, artesian well, diameter 12 in (30 cm), depth 612 ft (187 m), cased to 91 ft (28 m).

INSTRUMENTATION.--Tape measured. Measuring point: Top of access hole in pump base, 1.00 ft (0.30 m) above land-surface datum.

DATUM.--Land-surface datum is 141.80 ft (43.22 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water levels affected by pumping of nearby irrigation wells.

PERIOD OF RECORD.--November 1958, 1971, 1972 (annually); January 1973 to September 1977 (quarterly); October 1977 to current year (monthly). Records of water levels prior to January 1974 are available in files of the Geological Survey. Prior to October 1977, published as Rogers Well near Waverly.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 120.53 ft (36.74 m) NGVD, Nov. 5, 1958; lowest measured, 96.64 ft (29.46 m) NGVD, May 13, 1981.

ELEVATION, IN FEET NGVD, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	ELEV-ATION ABOVE NGVD (FEET) (72020)	DATE	TIME	ELEV-ATION ABOVE NGVD (FEET) (72020)
OCT			JUN		
08...	0923	109.04	10...	1215	106.56
DEC			AUG		
11...	0805	111.61	04...	0935	110.54
FEB			SEP		
06...	0946	109.08	23...	1538	113.29
MAY					
13...	1830	96.64			
20...	1245	97.03			