EXECUTIVE SUMMARY - ROMP 33 / WRAP #6
"WATERBURY" / KIBLER AGRICULTURAL CORPORATION PROPERTY

MANATEE COUNTY / MANASOTA BASIN / PARCEL #21-020-029
Section 12 - Township 35S - Range 20E

October, 1992 Douglas H. Rappuhn, P.G.

I. SITE LOCATION

The ROMP 33 wellsite is located in central Manatee County, Florida, approximately 3 miles southeast of Lake Manatee Reservoir (near the settlement of Waterbury). From the intersection of I-75 and S.R. 64 (east of Bradenton), the wellsite can be found by proceeding approximately 12 miles east on S.R. 64 to Verna-Bethany Road; 1 mile south on Verna-Bethany Road to an unnamed dirt road leading east; and 0.7 mile east (through 2 locked gates) on the unnamed dirt road. The wellsite is about 175' south of the dirt road, in a grassy pasture (Figure 1).

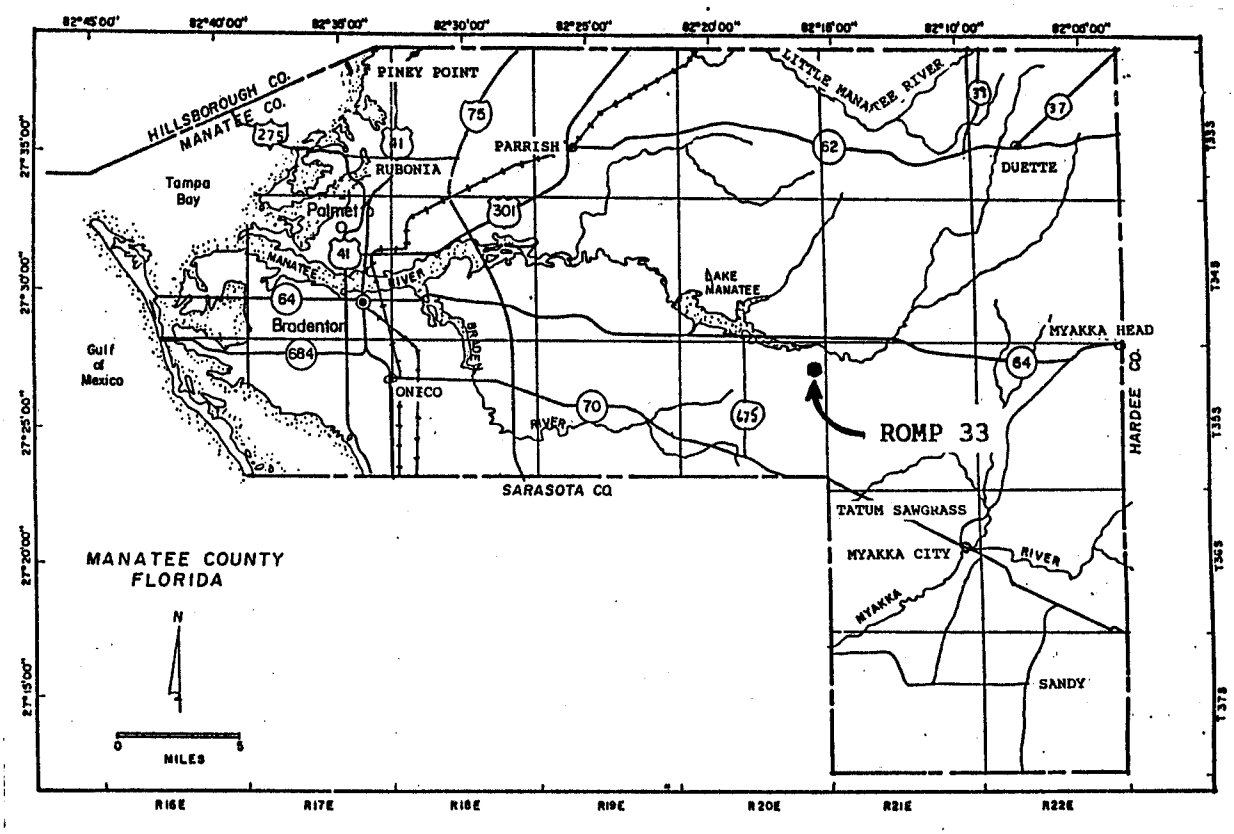
Four monitor wells were completed on the 50'X 50' permanent easement, situated approximately 50' west of an unnamed drainage creek. A 375'X 295' temporary construction easement encompassing the 50'X 50' parcel and accessway was provided by the Kibler Agricultural Corporation (Figure 2).

The ROMP 33 wellsite is located in the NE 1/4 of the NW 1/4 of the NE 1/4 of Section 12, Township 35 South, Range 20 East; at latitude 27°27'28" North, longitude 82°15'30" West. Land elevation at the site is approximately 75' NGVD.

II. WELLSITE OBJECTIVES AND PURPOSE OF MONITORS

Wellsite Objectives

The ROMP 33 wellsite was designed and constructed to fulfil objectives of Southwest Florida Water Management District (SWFWMD) / Resource Project Department Water Resource Assessment Project (WRAP). This assessment project focuses on the hydrology of, and



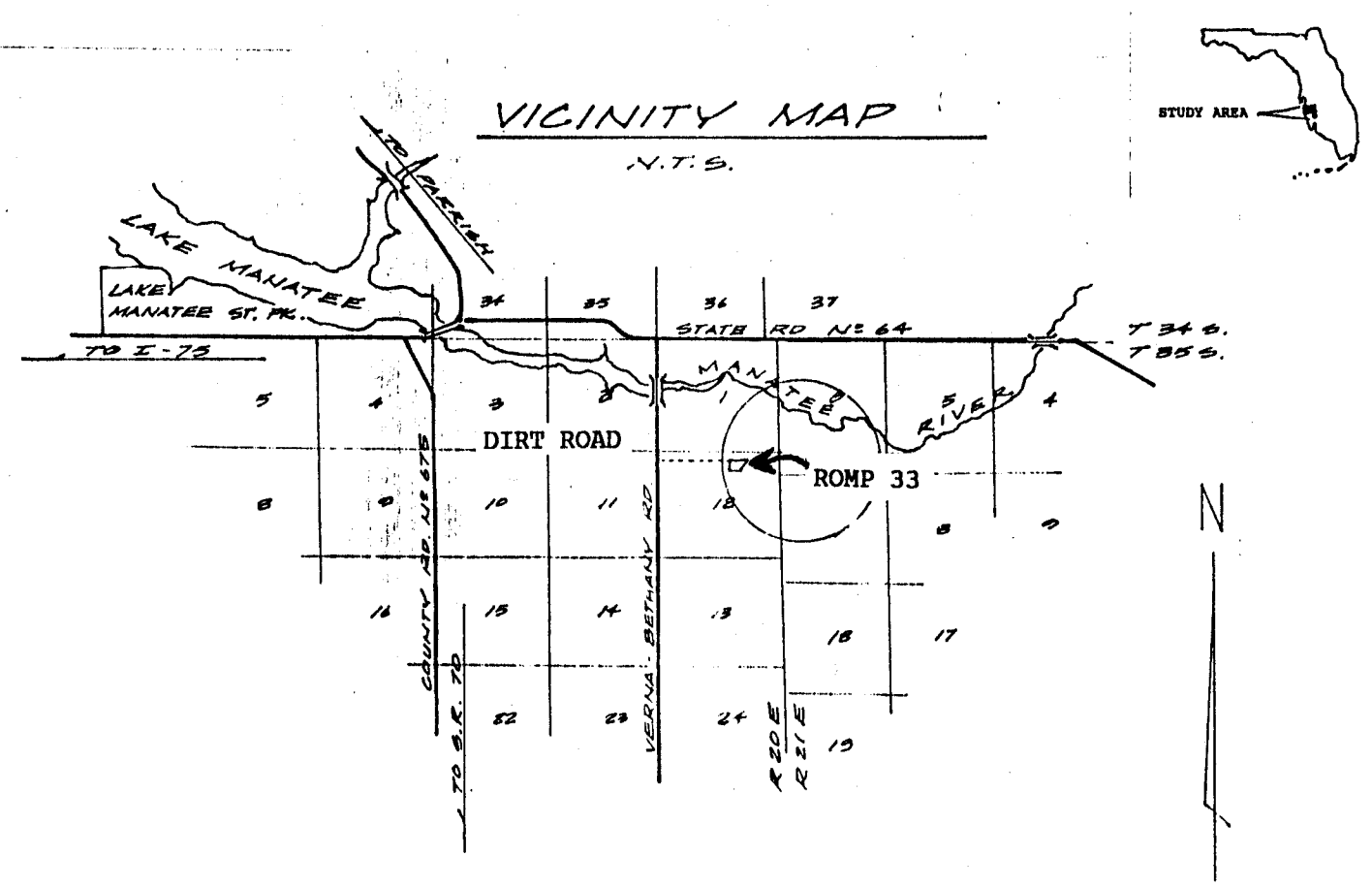


Figure 1 - Location map to ROMP 33 wellsite.

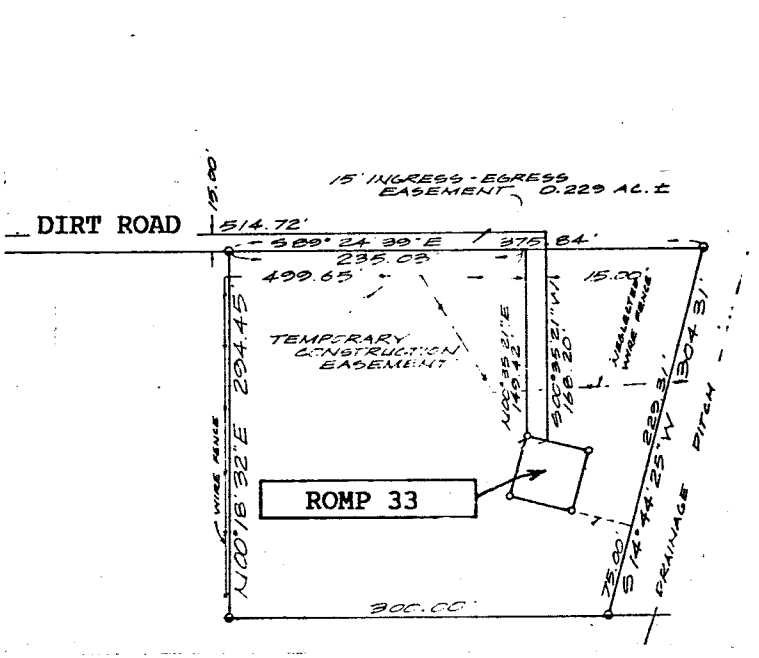
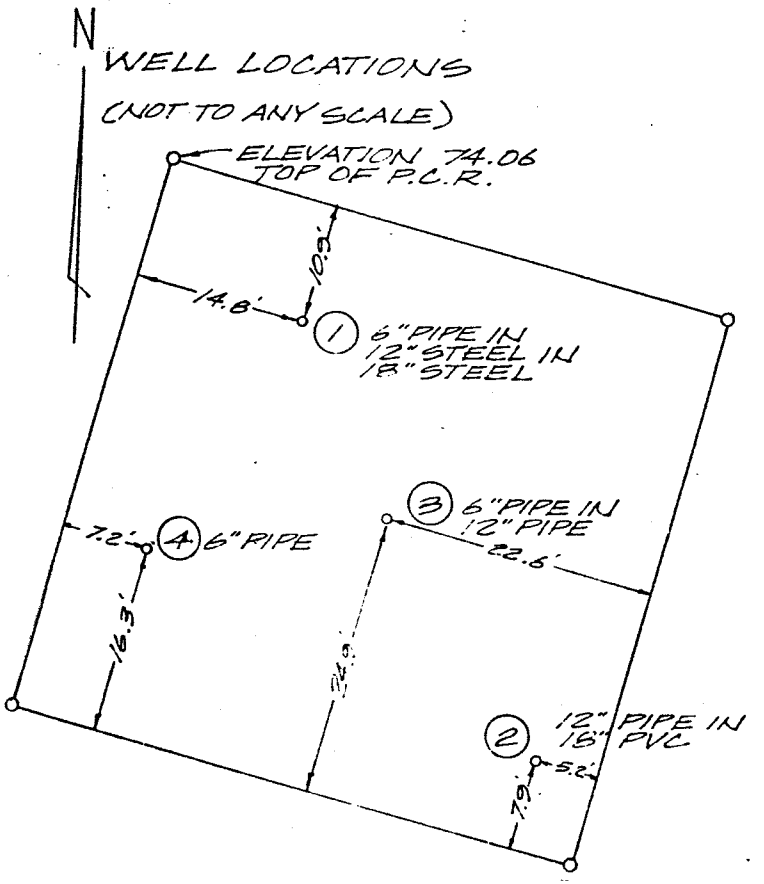


Figure 2 - ROMP 33 wellsite easement, access, and well array.



WELL ELEVATION INFORMATION

1. DEEP UPPER FLORIDAN
   ELEV. 78.68 TOP OF PVC, NOTCH ON NORTH SIDE
   75.02 NORTH SIDE OF 12" CASING
   74.6 GROUND ELEV.

2. SHALLOW UPPER FLORIDAN
   ELEV. 75.14 NORTH SIDE OF 18" PVC CASING
   73.8 GROUND ELEV.

3. INTERMEDIATE
   ELEV. 77.86 TOP OF PVC, NORTH SIDE
   74.69 NORTH SIDE OF 12" STEEL CASING
   74.3 GROUND ELEV.

4. SURFICIAL
   ELEV. 77.85 TOP OF PVC, NORTH SIDE
   74.89 NORTH SIDE, FITTING .5 ABOVE GROUND
   74.4 GROUND ELEV.

water consumption in the SWFWMD-declared Eastern Tampa Bay Water Use Caution Area (ETBWUCA, Figure 3). The site additionally was located so its well array may assume a role in the SWFWMD's Resource Data Department Regional Observation Monitor-well Program (ROMP) grid, a long-standing network of potentiometric monitors and groundwater quality monitoring stations.

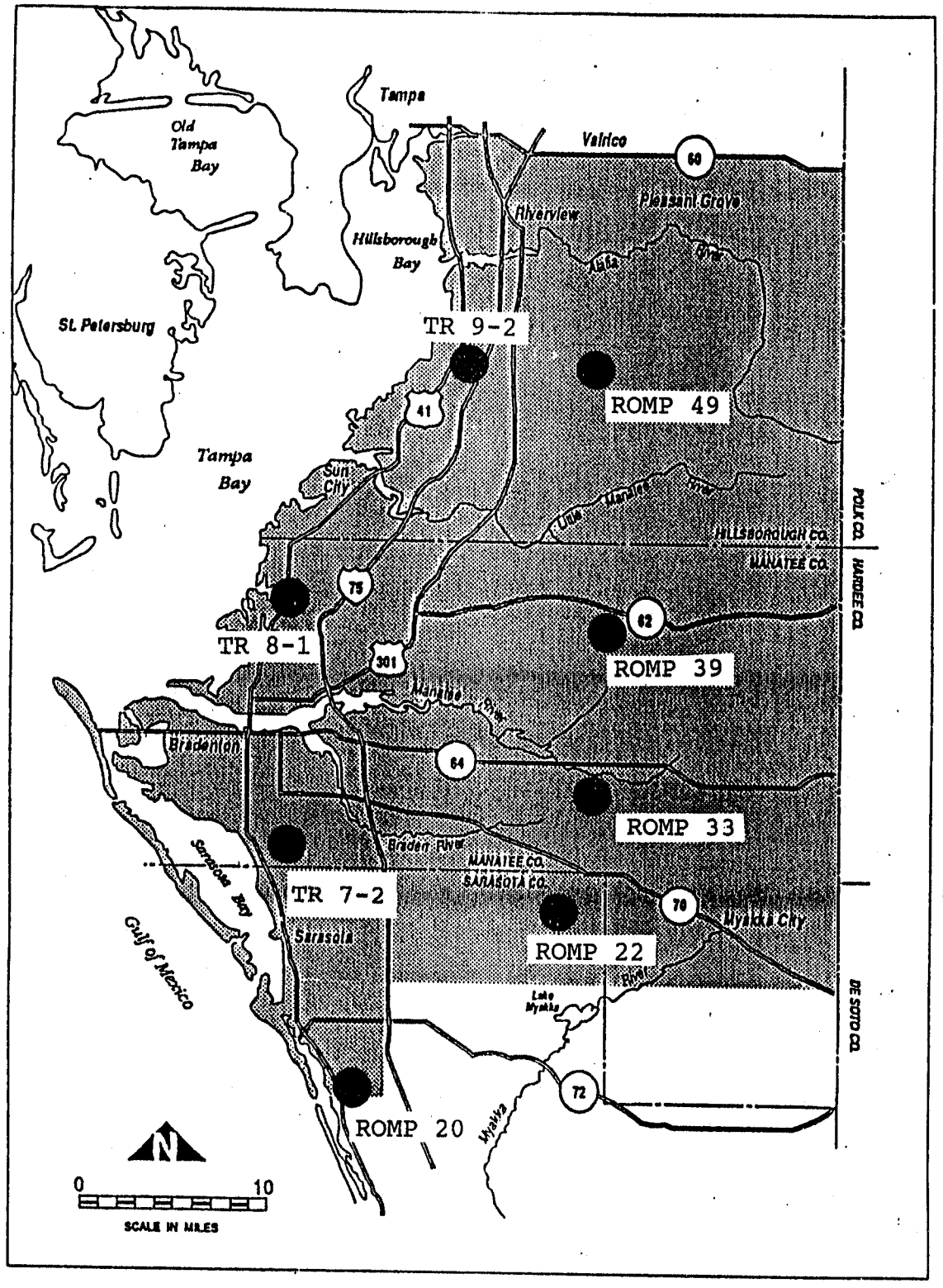
In response to the continued decline of groundwater levels in southern Hillsborough, Manatee, and northern Sarasota Counties, the SWFWMD Governing Board, in June 1989 declared the area a "Water Use Caution Area", setting in motion an intensive effort to investigate the continued downward potentiometric trend, tighten the data-gathering network, and derive a management plan for the region based on the concept of aquifer "safe yield". In May, 1989, record potentiometric lows were recorded in the Floridan aquifer system throughout the region. An almost 800 square mile area, encompassing south-central Hillsborough County and central and north-central Manatee County was found to register Floridan potentiometric levels less than mean sea level. An inland hydrologic "low", as described, is capable of reversing coastal groundwater flow regimes, inducing salt-water intrusion, and permitting deeper mineralized waters far inland to well-up and contaminate usable supplies.

In the past few years, exploratory drilling and/or hydrologic data collection efforts have been undertaken by the SWFWMD's Geohydrologic Data Section at 8 drillsites within the ETBWUCA (4 coastal sites, 4 inland sites) which as of this writing are in various stages of completion. Wellsite objectives vary with location, although a common goal of the inland sites (of which ROMP 33 is one) is to establish the extent of the transmissive Upper Floridan aquifer, delineate and characterize the hydrologic system present, and leave a network of wells capable of documenting future hydrologic trends.

Purpose of Monitors

Four permanent monitor wells were constructed at ROMP 33; the Surficial Aquifer System Monitor, Intermediate Aquifer System Monitor, Shallow Upper Floridan Aquifer Monitor, and Deep Upper Floridan Aquifer Monitor (Figure 4). The wells were used as appropriate for geophysical logging, and each has provided final water quality samples from the respective discreet aquifer monitored.

The Surficial Aquifer System Monitor will provide period of record water level data on the Surficial aquifer, and has registered the highest potentiometric level of all aquifers at ROMP 33. It was used to conduct a single well drawdown test within the Surficial aquifer. It may provide a period of record water quality station. although it will likely convey the influence of nearby, mounded, agricultural tailwater retention ponds, which could conceivably register water levels above land surface in the well, and skew natural trends in both water level and quality.



SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

EASTERN TAMPA BAY

Figure 3 - Location map of the Eastern Tampa Bay Water Use Caution Area, and ROMP / WRAP wellsites drilled by SWFWMD in support of the assessment project.

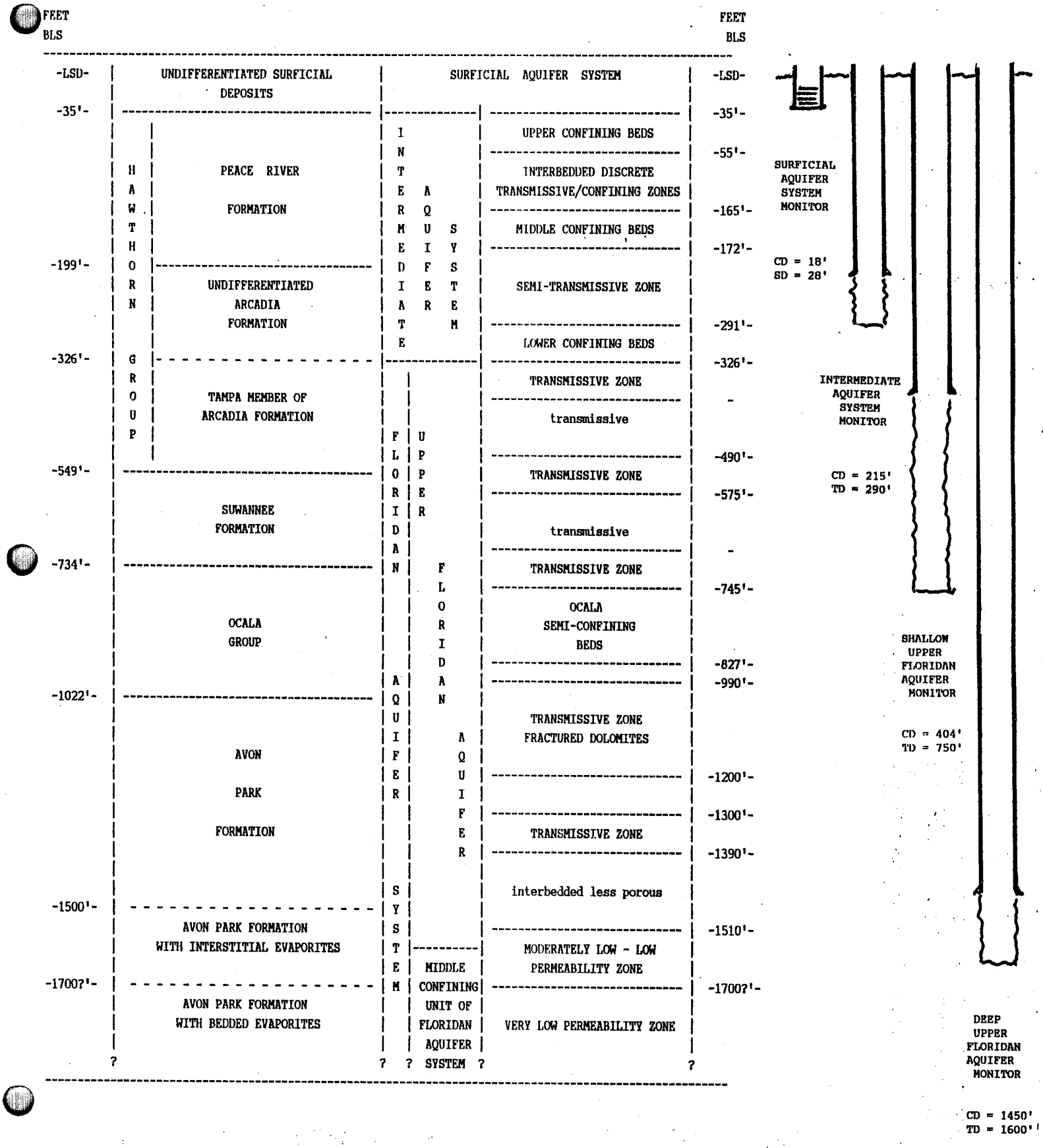


FIGURE 4 - Array of permanent wells at ROMP 33 wellsite.

The Intermediate Aquifer System Monitor will provide period of record water level data on the lower portion of the Intermediate aquifer system (Arcadia Formation). It has quantified a potentiometric regime between that of the Surficial and Floridan aquifers. Additionally, it was used to conduct a single well drawdown test within the Intermediate aquifer system, and will provide a period of record water quality station. Shallower clastic beds of discrete, higher potentiometric heads were noted during coring of the Peace River Formation, although permanent monitors were not constructed into these zones given their probable variability in lateral extent, and limited vertical extent.

The Shallow Upper Floridan Aquifer Monitor will provide period of record water level data on the upper transmissive zones (Tampa Member of the Arcadia Formation / Suwannee Formation) of the shallow Upper Floridan aquifer. The Floridan wells have registered the lowest head of the aquifers delineated at ROMP 33. The Shallow Upper Floridan well was used to conduct a single well drawdown test, as well as a 40 hour pump test. It will be added to SWFWMD's Ambient Ground-Water Quality Monitoring Program (AGWQMP) Saltwater Interface Monitoring Network of wells.

The Deep Upper Floridan Aquifer Monitor will provide period of record data on a deep zone below the highly transmissive Avon Park Formation dolomites. The wellbore is open to upper, slightly-anhydritic beds of dolomite, and will be added to AGWQMP's Saltwater Interface Monitoring Network of wells. Drilling of this well also provided exploratory lithologic and water quality data from 1000-1600' BLS.

III. GEOLOGY

PHYSIOGRAPHY

Manatee County is divided by White (1970) into three physiographic provinces (Figure 5), the Gulf Coastal Lowlands, DeSoto Plain, and Polk Upland. The ROMP 33 wellsite is located within the DeSoto Plain, near the subtle south-dipping frontal scarp of the Polk Upland. The wellsite is situated on an outlier of the Wicomico terrace, topographically separated from the main body of the Wicomico by the valley of the west-flowing Manatee River (Healy, 1975).

Surface elevations in Manatee County range from approximately 135' NGVD in the northeast (Polk Upland), to sea level along the western coast. The DeSoto Plain, a submarine plain formed during Wicomico sea level displays a conspicuous absence of relict shoreline features (White, 1970), and its surface relief appears to be instead a function of dissection of the valleys of the Manatee and Myakka Rivers.

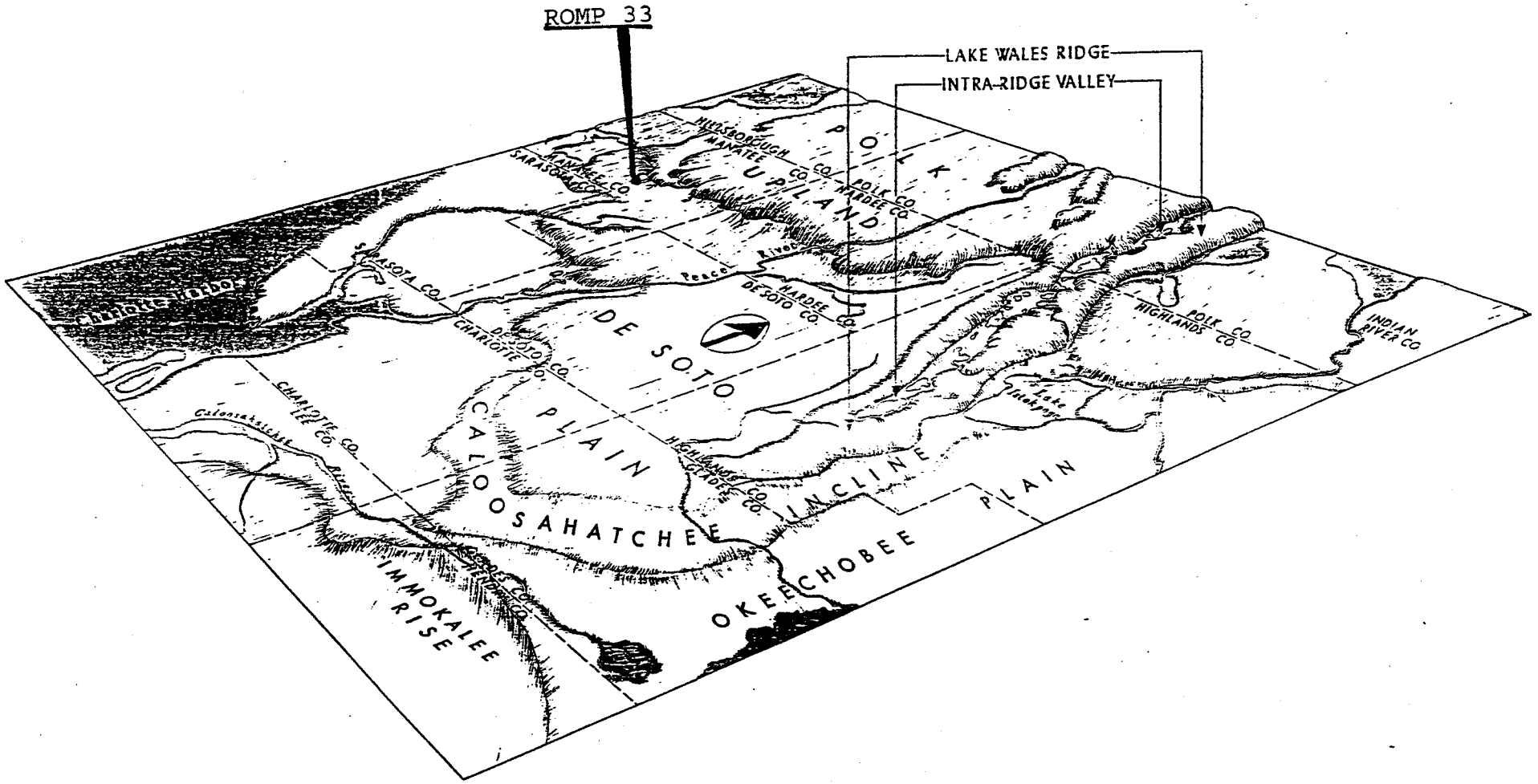


Figure 5 - Oblique topographic sketch of the physiographic provinces of southwestern Florida (White, 1970).

STRATIGRAPHY AND LITHOLOGY

Exploratory drilling at ROMP 33 was conducted to a depth of 1600', penetrating Holocene to Middle Eocene age formations. The most recent bedded deposits were probably laid down as marine terrace deposits within the past 1.5 million years, prior to the retreat of Gulf waters off the emergent landform that would become Florida. The deepest formation drilled, the Avon Park, is a near-shore marine deposit of the Claiborne Group (late Middle Eocene age, about 45 million years old) (Chen, 1965).In the Manatee County area, Tertiary units exist in a thickness of better than 5000', most of them carbonates (Chen, 1965).

Figure 6 denotes the hydrostratigraphy discerned at the ROMP 33 site. A synopsis of drilling procedures at ROMP 33 used is found under **"WELL DESIGN AND CONSTRUCTION"**. Detailed lithologic description of units encountered is available in the ROMP file of record and as Well "W-16784" in the Florida Geologic Information System.

Undifferentiated Surficial Deposits

In the region of ROMP 33, the Undifferentiated Surficial Deposits (the uppermost geologic unit drilled) were laid down during Pleistocene-Recent time (Healy, 1975). These deposits of sand and clayey sand extended from land surface to 35' BLS. Clay content was generally low (10%, but ranged to 30%), and phosphatic sand accounted for up to 5% (usually about 1%) of the unit. Iron staining was common in many of the uppermost beds. Bed thickness in this unit showed a fair amount of variability as was noted during the construction of other wells onsite.

The Undifferentiated Surficial Deposits unconformably overlie the sediments of the Hawthorn Group / Peace River Formation. A basal bed of coarse grained quartz sand (at 27' BLS) was included in the surficials due to its low clay and phosphate content, although Scott (1988) notes that leaching of the phosphate and clays in the upper Peace River Formation may occur, obscuring the Surficial Deposits / Peace River contact.

Peace River Formation

At ROMP 33, the contact zone between the Undifferentiated Surficial Deposits and the Peace River Formation was differentiated on the basis of the downward transition to clay concentrations averaging 25%, phosphatic sand concentrations to 15%, and the presence (as high as 39.5' BLS) of bedded (sandy) clay. The Peace River here consists predominantly of interbedded clays, phosphatic, quartz-sandy clays, and phosphatic/quartz sands, all of variable lateral continuity. Scott (1988) indicates an age of Early/Middle Miocene, to as recent as Pliocene for deposition of Peace River sediments.

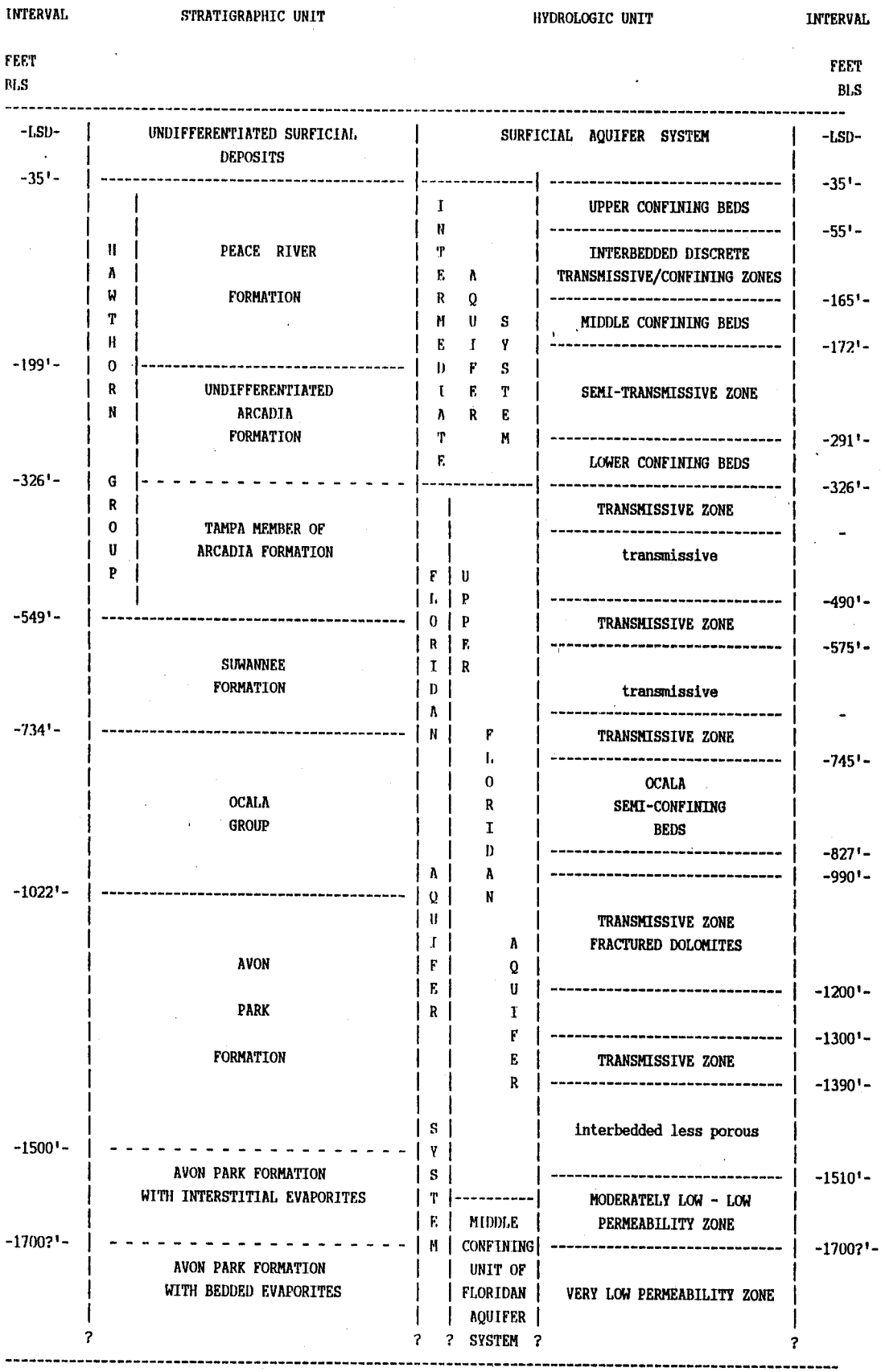


Figure 6 - Hydrostratigraphy at ROMP 33.

Core samples of the Peace River Formation (35-199' BLS) from ROMP 33 included numerous beds of water-yielding quartz sand, tightly sandwiched between layers of quartz-sandy (10-40%) clay. As further detailed under **"HYDROGEOLOGY AND WATER QUALITY"**, the sequence of these confined sand beds registered a step-down of potentiometric levels (4-6' head differential per zone) as the corehole was deepened and the upper sands cased-off, reflecting strong confinement between these porous beds.

Considerable variety was seen in the lowermost Peace River sediments, including two 4-5' beds of a coarse wacke of dolomitic shell fragments, dolomitic clasts, and phosphatic/quartz sands (at 165', 172' BLS); thin beds of sandy dolomitic calcilutite (at 175', 188' BLS); and calcareous clay.

The Peace River Formation (largely siliciclastic sediments) unconformably overlies the Arcadia Formation (largely carbonates) of the Hawthorn Group (Scott, 1988). Although dolomitic calcilutite beds were noted at 175' and 188' BLS, they were grouped with the Peace River Formation due to the intervening 8.5' thick clay bed at 189'. A thin ledge of calcilutite at 198' BLS was also included in the Peace River due to the contrasting, altered texture and appearance of sediments below it.

(Undifferentiated) Arcadia Formation

The contact between the Peace River Formation and underlying (Undifferentiated) Arcadia Formation was established based on the downward transition from predominantly phosphatic siliciclastics to a regime of phosphatic silty/dolomitic carbonates. Further, the uppermost beds at 198.7' were extremely altered, indicating possible subaerial exposure, or other weathering/erosional or solutional process, producing a brecciated (desiccation/shrinkage cracks, plus infill?) horizon. The zone also showed a distinct secondary mineralization (dolomitization or silicification) often associated with the infilling of secondary porosity commonly developed at unconformities. Scott (1988) makes reference to "rubble zones" or "dolostone hardgrounds" which may apply to these horizons. An age of late Early Miocene to Early Miocene has been suggested for the Arcadia Formation (Scott, 1988).

At ROMP 33, the (Undifferentiated) Arcadia Formation (199-326' BLS) consists almost entirely of variations of phosphatic/quartz-sandy (often clayey) dolomitic calcilutite. Few beds in this unit were better than moderately indurated, and the monitor well completed into these carbonates routinely pumped turbid water. Phosphatic sands constituted 2-8% of the described beds, with an average of about 3%. Phosphatic gravels were noted in horizons, and quartz sand and disseminated clay were very common.

Due to grain size and mineralogy, porosities were quite low (described as 15-22%) throughout the unit, except within the top 30-35', where some of the beds contained moldic porosity. The

lowermost 35' of the Arcadia Formation was described as having an average 11% porosity (dolomitic calcilutite, clay, dolostone, and chert), and appears to provide the zone of lower confinement forming the base of the Intermediate Aquifer System.

Tampa Member of the Arcadia Formation

The contact between the (Undifferentiated) Arcadia Formation and the underlying Tampa Member of the Arcadia Formation at ROMP 33 is marked by the presence of approximately 11' of phosphatic/quartz sand, grouped here as part of the Tampa Member. It may be equally appropriate to group the sands with the lower (Undifferentiated) Arcadia since Scott (1988) divides the Undifferentiated Arcadia Formation from the Tampa Member principally on a stratigraphically upward increase in phosphate grain content. The sands at 326-337' BLS contain 5-7% phosphatic sand, compared to the 0-7% (average 1-3%) in the uppermost Tampa at ROMP 33. The 326-337' BLS interval of sands (none were collected as core, but instead were flushed to the surface as cuttings following core runs) may otherwise represent a reworked, weathered residuum of sandy carbonates of the Tampa Member.

Approximate age of the Tampa continues to be debated, with some authors considering the unit to be as old as Late Oligocene, while others place the unit close to the boundary of the Oligocene and Miocene (Scott, 1988).

At ROMP 33 the Tampa Member (326-549' BLS) is characterized by yellowish-gray to light orange, quartz-sandy, microcrystalline to fine grained limestone. It was quite common to see quartz sand comprise 15-30% of some limestone beds (to 45% in others; apparent algal mat structures), and two sand beds were described at 340' and 524.5' BLS.

There were also beds of the Tampa that were not extremely sandy. They tended to be well indurated, fine grained, dolomitic limestones (i.e. at 460' BLS); rubbly beds; or reworked beds of sorted foraminiferal hash (variably from 474-524' BLS). Two thin chert lenses were described (424' and 467' BLS).

Porosity in the Tampa Member was described as high (25-35%) throughout much of the unit. Porosity in many of the most porous beds was quite often intergranular rather than moldic, especially in the upper Tampa. Moldic porosity was more frequent in the lower, better indurated beds.

The contact with the underlying Suwannee Formation is somewhat vague due to sporadic core recovery through the 536-549' BLS zone. A thin sand bed at 524' BLS contained interstitial green clay (common in some parts of south Florida at the top of the Suwannee), but several more feet of quite sandy carbonate lay below the clayey bed. The intervals at 530-536.5' and 539-544' BLS showed moderate-high recrystallization, and contained chert (not uncommon to many

solutioned contact zones or weathered horizons). Alternately, angular-subangular grains (to 2 mm) of opalescent, blue-gray chert were noted at 530-536.5' and 539-544' BLS. Their coarse shape seems inappropriate for a secondary mineral deposit, and may reflect original deposition, or deposition by infilling an existing lithic framework. Further, miliolids, common in the upper Suwannee, were noted in the 539-544' BLS zone.

Since many of the described attributes may be related to post-depositional erosion, desiccation, or reworking, the Tampa Member/Suwannee Formation contact was placed at 549' BLS, where lower beds consistently reflected the typical light orange, non-sandy, biogenic character of the Suwannee Formation.

Suwannee Formation

The Suwannee Formation, of Oligocene age, appears to be unconformably overlain by the Tampa Member of the Arcadia Formation (Scott, 1988). At the ROMP 33 site, the Suwannee is found at 549-734' BLS. The unit is a granular, often somewhat chalky, fossiliferous (molluscs, miliolids, foraminifera, echinoids) calcarenite, which is dolomitic in its lower portion (684-734' BLS). Unit porosity is extremely high (described as 28-45%) due to the abundance of fossil molds in an otherwise granular stone.

There is a conspicuous lack of quartz sand in the Suwannee Formation, consistent with its description as a carbonate bank deposit laid down prior to the Miocene influx of siliciclastics from the north (Scott, 1988). Trace amounts of pyrite were found in a thin bed of recrystallized skeletal packstone at 549' BLS, and trace amounts of drusy quartz were found at 695' BLS in the dolomitic zone.

The dolomitic zone appears to be a series of slightly dolomitized beds of calcarenite and calcilutite. Original rock textures and features seem to have been preserved, but the stone itself is better indurated than similar looking beds higher in the Suwannee. Masses of crystalline dolomite were not noted in this unit, and it appears that much of the original porosity has been retained.

Ocala Group

The unconformable contact (Chen, 1965) between the Suwannee Formation and the underlying sediments of the late Eocene Ocala Group was marked at 734' BLS at ROMP 33 by the downward progression into massive beds of light orange/yellowish gray, very fine grained calcarenite, containing the index foraminiferid Lepidocyclina. The Ocala Group ranged between 734-1022' BLS. Although the Ocala is stratigraphically divisible (where present) into the Crystal River, Williston, and Inglis Formations (descending order), for the purposes of this report it will be discussed as an upper calcareous unit (734-932' BLS), and a lower dolomite (932-1022' BLS).

At ROMP 33, the Ocala calcareous unit is most appropriately described as a chalky, fossiliferous (foraminifera, molluscs), grainy calcilutite to silty (very fine grained) calcarenite. Induration is somewhat poor, and there is a distinct lack of accessory minerals or quartz sand. Porosity is somewhat low (described as 15-25%) and is largely intergranular (some moldic). Very fine grain size and moderate sorting reduce this units permeability, except where large Lepidocyclina and Nummulites (foraminiferids) molds are concentrated.

Although no core was retrieved from 914-932' BLS (the first Ocala dolomite was encountered at 932' BLS), cuttings from that interval, and relative ease of coring indicate the zone to be similar to the overlying calcareous material described.

The 932-1022' BLS interval was composed of dark yellowish brown, very hard, very well indurated dolomitized calcarenite. The sucrosic dolomite bore striking textural and faunal resemblance to the lower part of the calcareous unit of the Ocala, including numerous molds of Lepidocyclina and Nummulites. One difference was the presence of low concentrations (up to 3%) of disseminated organic specks in the dolomite. Primary porosity dropped off substantially in the recrystallized dolomite (described typically as 3-8%, except for the uppermost 5', which was dominated by foraminiferid molds).

Geophysical and borehole video services (on a permanent ROMP borehole onsite, about 200' away) indicated substantial fracturing of the dolomites below 1000' (further enhanced by the reverse air drilling process, plucking angular blocks off the borehole wall). Therefore, secondary (fracture) porosity may provide for substantially more porosity than indicated in the Lithologic Well Log Printout.

Avon Park Formation

The Avon Park Formation, of Middle Eocene age is unconformably overlain by sediments of the Ocala Group (Chen, 1965). At the ROMP 33 site, the Avon Park ranged from 1022-1600+' BLS, and was the deepest stratigraphic unit penetrated. The contact between the Ocala Group and the Avon Park Formation was indicated by the downward progression from hard recrystallized foraminiferid dolomite to organic, muddy laminated dolosilt. The carbonaceous nature of upper portions of this unit (evidencing near-shore environment of deposition) typically contrasts with the indicated offshore environment of deposition of the Ocala Group (although the fraction of organics in the lower Ocala at ROMP 33 seems odd).

Coring of the Avon Park Formation continued at ROMP 33 until a depth of 1089' BLS, where corehole limitations were reached, given the shallower-set temporary casing. Deeper exploratory drilling was accomplished using the SWFWMD's Speedstar 22M rig, employing

reverse air circulation and tri-cone bit, providing cuttings for examination.

To 1600' BLS, the Avon Park Formation consisted of predominantly dark yellow-brown, hard, recrystallized (highly fractured 1000-1200' BLS) dolomite. However, there were frequent beds of moderately hard, fine grained calcarenite, 5-25' thick, and the bottom 35' of the hole was moderately hard, dolomitic calcilutite.

The Avon Park dolomites above 1089' BLS were described as having very low to moderately high porosity (intergranular, moldic, fracture), with the 1055-1074' BLS zone apparently brittle and porous (poor core recovery). As with the lower Ocala dolomites, geophysical logs and borehole video services identified strong secondary (fracture) porosity to 1200' BLS. From cuttings, the lower dolomites appeared to be dark to light brown, frequently organic streaked or speckled, and granular to completely crystalline. Echinoid (Neolaganum) fossils were often preserved in the dolomite.

Anhydrite was noted in concentrations of up to 2% in cuttings of dolomite and dolomitic calcilutite from 1500-1580' BLS. A translucent to white evaporite mineral, it appeared to exist as vug-fill.

The calcarenite beds in the upper Avon Park (1074-1089' BLS) were granular, somewhat chalky, and very fossiliferous (foraminiferids, (i.e. Dictyoconus), molluscs, and at 1080' BLS, riddled with rootlet molds of marine or near-shore plants). Deeper calcareous beds also contained echinoids and miliolids, and were often dolomitic. The lowermost 35' of the exploratory drilling terminated in slightly granular dolomitic calcilutite containing some mollusc molds, organics, and small amounts of anhydrite.

Correlation with a Grace/Manatee Wellfield boring 5 miles to the northeast indicates that bedded anhydrite/gypsum might be encountered in the ROMP 33 vicinity by 1700' BLS. At the Grace site, trace amounts of anhydrite were noted at 1615' BLS (LSD = 75' +/-25'), with the uppermost of many anhydrite beds at 1675' BLS.

IV. HYDROGEOLOGY AND WATER QUALITY

A hydrogeologic system composed of three aquifers was delineated at ROMP 33: the Surficial aquifer system, Intermediate aquifer system, and the Floridan aquifer system, which includes the Upper Floridan aquifer (Figure 6). In this report, wells open discreetly to all or part of the noted aquifers reflect the name of the aquifer monitored (albeit modified by "shallow ", "deep", "upper", or "lower" to hydrologically distinguish monitored zones).

The aquifers are differentiated fundamentally by potentiometric head regime. Head differences are quite distinct in the vicinity of ROMP 33, an indicator of competent confining beds between gross

water-yielding units. One unit, the Intermediate aquifer system, actually showed several distinct potentiometric regimes, consistent with its interbedded sand and clay lithology.

A function of aquifer confinement can be separate hydrochemical regimes. This is also seen at ROMP 33, but not dramatically so.

SURFICIAL AQUIFER SYSTEM

At ROMP 33 the vertical extent of the Surficial aquifer system (LSD-35' BLS) appears to exactly coincide with that of the Undifferentiated Surficial Deposits. The sands and clayey (approximately 10%) sands of the Undifferentiated Surficial Deposits overlie an upper sequence of Peace River Formation clayey (25%) sands and bedded, sandy clay extending downward to the next permeable sand bed at 55' BLS. During coring at ROMP 33, a nearby "temporary water supply well", completed by the CME rig provided routine measurement of Surficial aquifer water levels for comparison to water levels measured during shallow coring.

Water Level

During late summer and early fall, 1990, the Surficial aquifer water level ranged from .5- 3.5' BLS. Water level in the temporary Surficial well rose to its highest during, and immediately after Tropical Storm Marco passed along Manatee County on 10/11/90, with much associated rainfall. The agricultural tailwater retention ponds located to the south of ROMP 33 are elevated with respect to the surface of the drillpad, and impounded a tremendous amount of runoff during the storm, nearly saturating the surficial deposits at the wellsite. Retained water in the pond system may continue to affect registered water level in the Surficial Aquifer Monitor.

The Surficial aquifer system is unconfined and the water levels respond to local and basinal rainfall and irrigation. In the area of ROMP 33, the Surficial aquifer is believed to flow towards, and discharge to the drainage creek in gradients proportional to topographic and/or subconfiner drop-off. Near the perched waters of the tailwater retention pond, gradients are assumed to steepen accordingly.

Water Quality

More than successively deeper aquifers, the water quality in the Surficial aquifer system is a function of the composition and solubility of the upper sediments contacted by rainfall and percolating waters. Since the sediments of the Surficial aquifer are composed primarily of siliciclastics of low solubility, and the contained water has had a relatively brief residence time, the concentration of dissolved chemical species may be quite low, as was the case in water sampled from the purged, completed Surficial

Aquifer Monitor (Figure 7). Only iron, easily leached in an acidic environment, but still prevalent, is found in substantial concentration, typical in many shallow aquifers. The low pH of the Surficial sample was consistent with the lack of alkaline sediments, and the presence of shallow accumulations of organic material, which can acidify groundwater.

Oddly, the single water sample salvaged from the CME rig's 24' auger hole tested at very different concentrations of major ions (Worksheet WWA-CORE.WK1, ROMP 33 File of Record), thus showing considerable variation in the Surficial aquifer, or perhaps (since sample was retrieved from inside of auger flights) showing contamination off auger flights.

INTERMEDIATE AQUIFER SYSTEM

The Intermediate aquifer system (35- 325.5' BLS) at ROMP 33 was found to be multi-layered, a function of the alternating lithologies of siliciclastic beds present in the Peace River Formation. The entire Intermediate aquifer system is contained within the sands and clays of the Peace River Formation and underlying clayey carbonates of the Undifferentiated Arcadia Formation of the Hawthorn Group (35- 326' BLS).

The Intermediate aquifer system includes all water-yielding units and confining units between the overlying Surficial aquifer system and the underlying Floridan aquifer system (Southeastern Geological Society Ad Hoc Committee on Floridan Hydrostratigraphic Units Definition, 1984). At the ROMP 33 site, these water-yielding units consist of discontinuous sands, moldic calcilutite, and very mildly-transmissive clayey dolomitic calcilutite. The Intermediate system contains confining beds that are composed of clay, sandy clay, and low-porosity calcilutite.

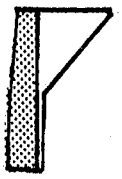
Potentiometric

At the ROMP 33 site, the Intermediate aquifer system can be differentiated potentiometrically into an upper and lower unit. Upper confined sand beds (scattered between 55 - 165' BLS) of disparate potentiometric levels were noted, and here collectively considered the upper Intermediate aquifer system. Cooperative SWFWMD / United States Geological Survey maps of the Potentiometric Surfaces of the Intermediate Aquifer System, West-central Florida (Mularoni, 1992; Mularoni and Knochenmus, 1991; etc.) indicate the lack of data points for denoting a distinct upper Intermediate unit (there termed the Tamiami-Upper Hawthorn aquifer) in south-central Manatee County (Figure 8). The distinct, thin layering of confined disparate zones at ROMP 33 would preclude an easy fit of the data as mapped. (No permanent monitors were completed into the thin sand beds given the probable lack of sand bed lateral continuity.)

Sample SURFICIAL WELL @ 20'

TempC = 25.0
TDS = 126.0
HARD = 92.0
pH = 6.7
COND = 220.0
DENS = 1.0

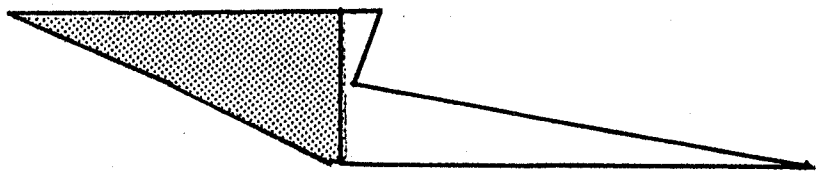
	mg/l	mmole/l	meq/l	% meq/l
Na+	10.0	0.4350	0.4350	18.9
K +	1.0	0.0256	0.0256	1.1
Ca++	17.0	0.4242	0.8483	36.9
Mg++	12.0	0.4936	0.9872	43.0
Cl-	16.0	0.4513	0.4513	20.8
SO4--	19.0	0.1978	0.3956	18.3
HCO3-	80.5	1.3193	1.3193	60.9
CO3--	0.0	0.0000	0.0000	0.0
SiO2	3.3	0.0549	0.0000	0.0



Sample INTERMEDIATE WELL @ 280'

TempC = 24.0
TDS = 265.0
HARD = 130.0
pH = 8.2
COND = 428.0
DENS = 1.0

	mg/l	mmole/l	meq/l	% meq/l
Na+	30.0	1.3049	1.3049	28.9
K +	24.0	0.6138	0.6138	13.6
Ca++	24.0	0.5988	1.1976	26.5
Mg++	17.0	0.6992	1.3985	31.0
Cl-	15.0	0.4231	0.4231	9.2
SO4--	1.0	0.0104	0.0208	0.5
HCO3-	253.0	4.1465	4.1465	90.3
CO3--	0.0	0.0000	0.0000	0.0
SiO2	24.5	0.4077	0.0000	0.0



Sample SHALLOW UPPER FLORIDAN @ 670'

TempC = 24.5
TDS = 333.0
HARD = 230.0
pH = 7.9
COND = 515.0
DENS = 1.0

	mg/l	mmole/l	meq/l	% meq/l
Na+	14.0	0.6089	0.6089	11.5
K +	3.0	0.0767	0.0767	1.5
Ca++	54.0	1.3473	2.6946	51.1
Mg++	23.0	0.9460	1.8921	35.9
Cl-	14.0	0.3949	0.3949	7.3
SO4--	88.0	0.9161	1.8322	34.0
HCO3-	193.0	3.1631	3.1631	58.7
CO3--	0.0	0.0000	0.0000	0.0
SiO2	10.9	0.1814	0.0000	0.0

Sample DEEP UPPER FLORIDAN @ 1585'

TempC = 26.5
TDS = 2210.0
HARD = 1660.0
pH = 7.5
COND = 2333.0
DENS = 1.0

	mg/l	mmole/l	meq/l	% meq/l
Na+	13.0	0.5654	0.5654	1.7
K +	3.0	0.0767	0.0767	0.2
Ca++	440.0	10.9780	21.9561	65.1
Mg++	135.0	5.5528	11.1056	33.0
Cl-	17.0	0.4795	0.4795	1.5
SO4--	1400.0	14.5742	29.1484	90.3
HCO3-	161.0	2.6387	2.6387	8.2
CO3--	0.0	0.0000	0.0000	0.0
SiO2	9.1	0.1514	0.0000	0.0

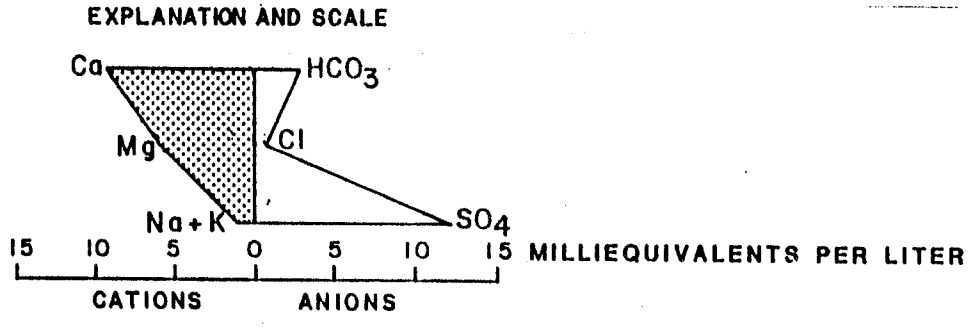


Figure 7 - Hydrochemical plots for thief-sampled water from well-purged, completed ROMP 33 wells, February, 5, 1992.

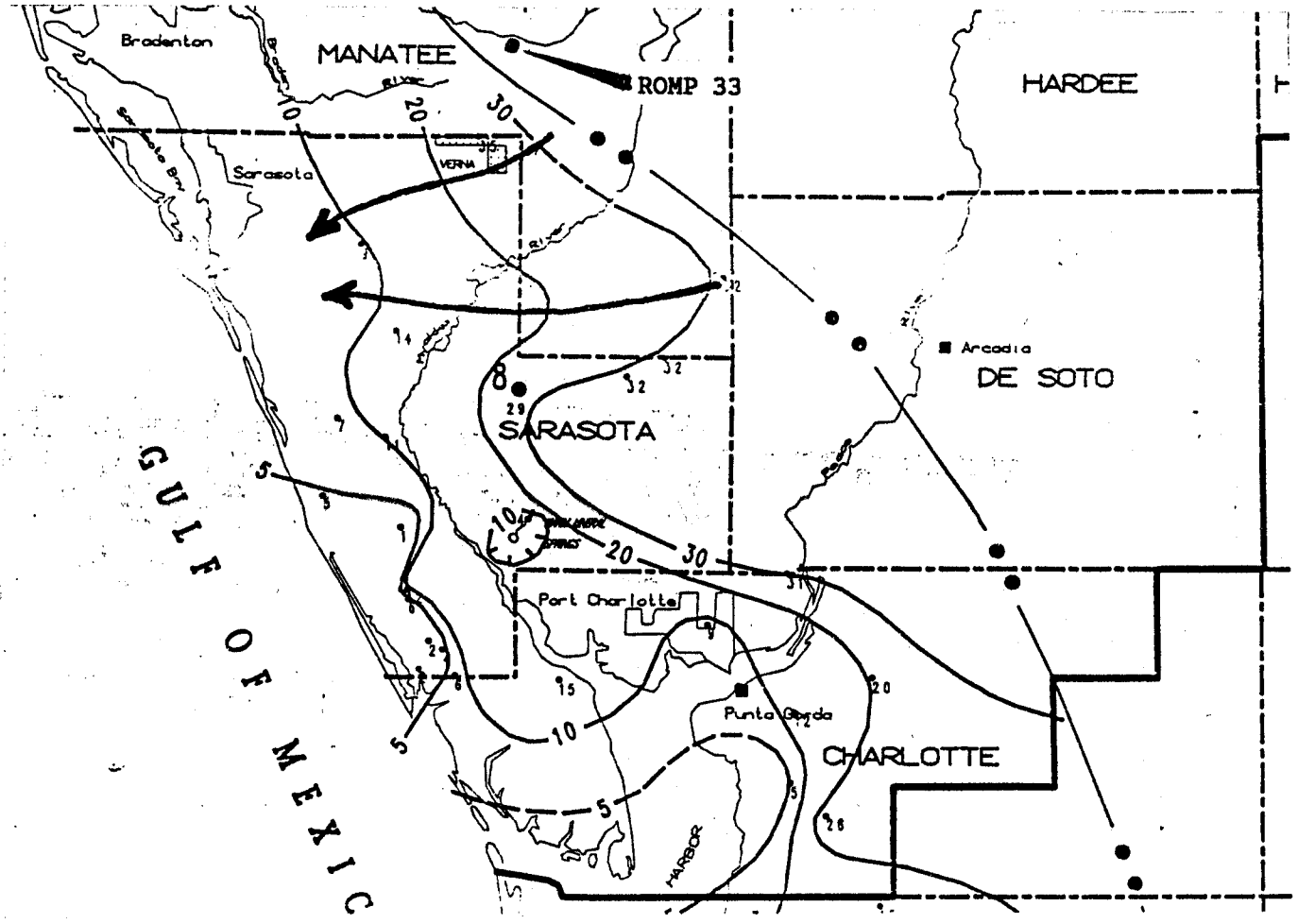


Figure 8 - Potentiometric surface of the Tamiami - upper Hawthorn aquifer, and regional flow path in ROMP 33 vicinity, May, 1991 (after Mularoni, 1992).

Groundwater flow in the "combined" Intermediate aquifer is generally southwestward (Mularoni, 1992), off a potentiometric high located near the "Four Corners" area of Hillsborough, Polk, Manatee, and Hardee Counties (Figure 9). This potentiometric high is also a topographic high, associated with Sunderland terrace deposits. Terraces may commonly contain beds of well-sorted siliciclastics, providing a topographically-elevated region with excellent groundwater recharge to shallow artesian systems (Healy, 1975). Additional recharge in the ROMP 33 vicinity is likely derived slowly through downward leakance from the Surficial aquifer and the stratified water-yielding sand beds of the Peace River Formation.

Seasonal potentiometric variation may range 10-20', dropping in the drier winter and spring in probable response to downward leakage when the Floridan aquifer is stressed rather than direct pumpage from the Intermediate. Additionally, poor well construction practices over the years may have left untold numbers of wells in the area open to both the Intermediate and Floridan aquifer systems. In the area shown in Figure 10 (Duerr, Hunn, Lewelling, and Trommer, 1988), a wellbore open to both the Intermediate and Floridan aquifers would effectively continuously dewater the Intermediate aquifer system while providing modest recharge to the Floridan aquifer.

During shallow coring (less than 200' BLS), to effectively seal-off heaving sands from much of the upper drill-string, temporary 4" HW casing was advanced routinely after penetrating a short depth below permeable sand deposits. Since coring was accomplished using plain water as a drilling fluid, this presented the opportunity to record potentiometric levels in the isolated sand beds before they were cased-off. Therefore, the stepping-down (6.64' BLS @ 89' BLS; 13.25' BLS @ 109' BLS; 17.18' BLS @ 139', 169' BLS; 22.54 BLS @ 179' BLS...recorded over 7 days) of potentiometric levels through the bulk of the interbedded Peace River Formation was recorded (Figure 11). Some sandy beds were either competent enough to not require immediate casing-off, or encountered early enough below the new 4" casing seat to not present an immediate threat to continued coring, and were therefore not potentiometrically quantified as were others.

Four inch (4") temporary casing was eventually set to 171' BLS for the remainder of coring within the Intermediate aquifer system (325.5' BLS). Worksheet WWA-CORE.WK1 (ROMP 33 File of Record)tracks water levels by corehole depth, and indicates 1-2' oscillations in measured corehole water level while drilling over the next 7 days, to 309' BLS. These may reflect a certain amount of background change, but it is likely they were influenced by the amount of idle time between actively airlifting the well to remove cuttings and time allowed for full water level recovery following cessation of discharge. Those differences aside, the potentiometric level of the Intermediate aquifer seemed to remain fairly stable through the lithologically consistent phosphatic / quartz sandy (often clayey) dolomitic calcilutite.

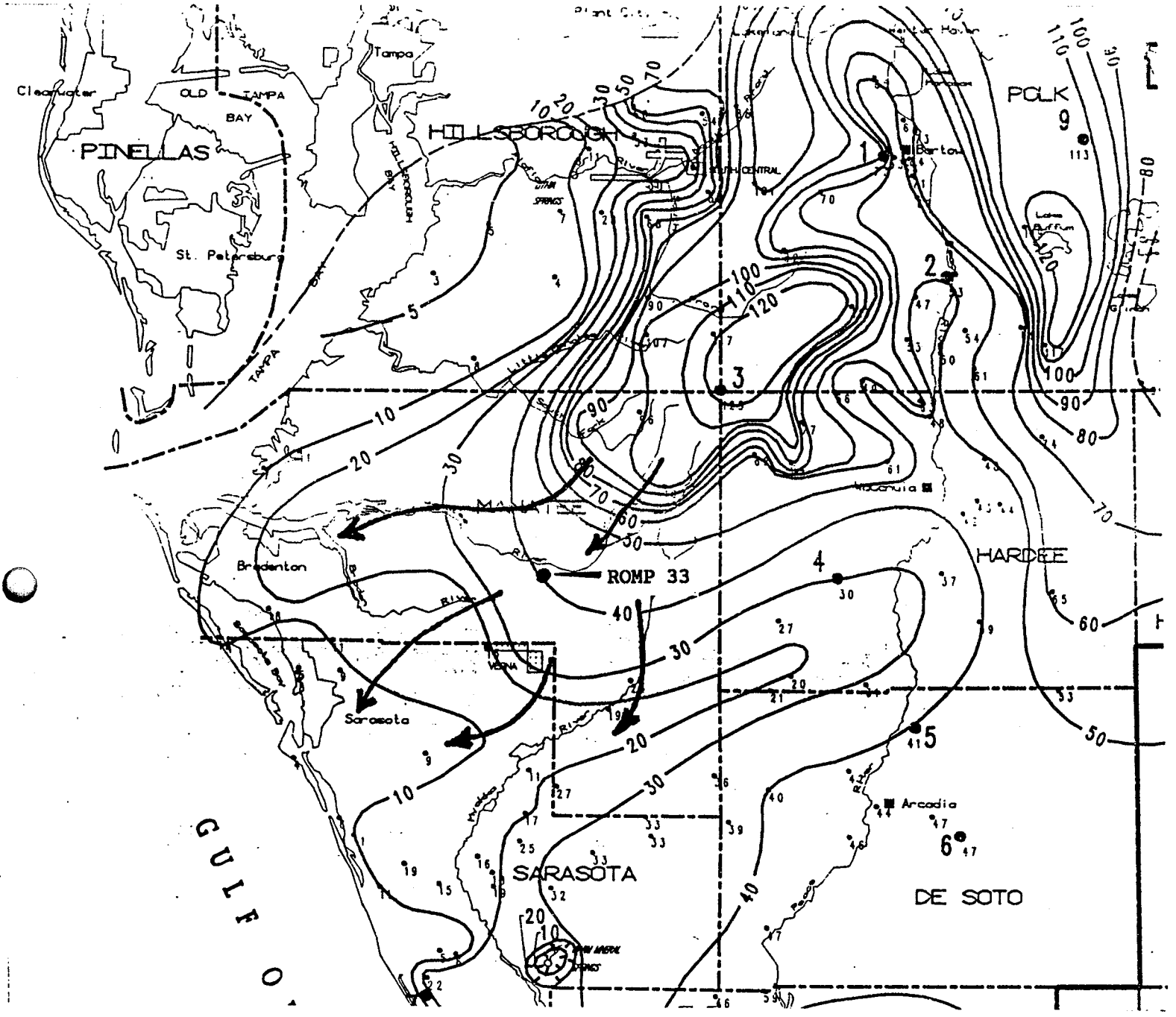


Figure 9 - Composite potentiometric surface of the Intermediate aquifer system, and regional flow path in ROMP 33 vicinity, May, 1991 (after Mularoni, 1992).

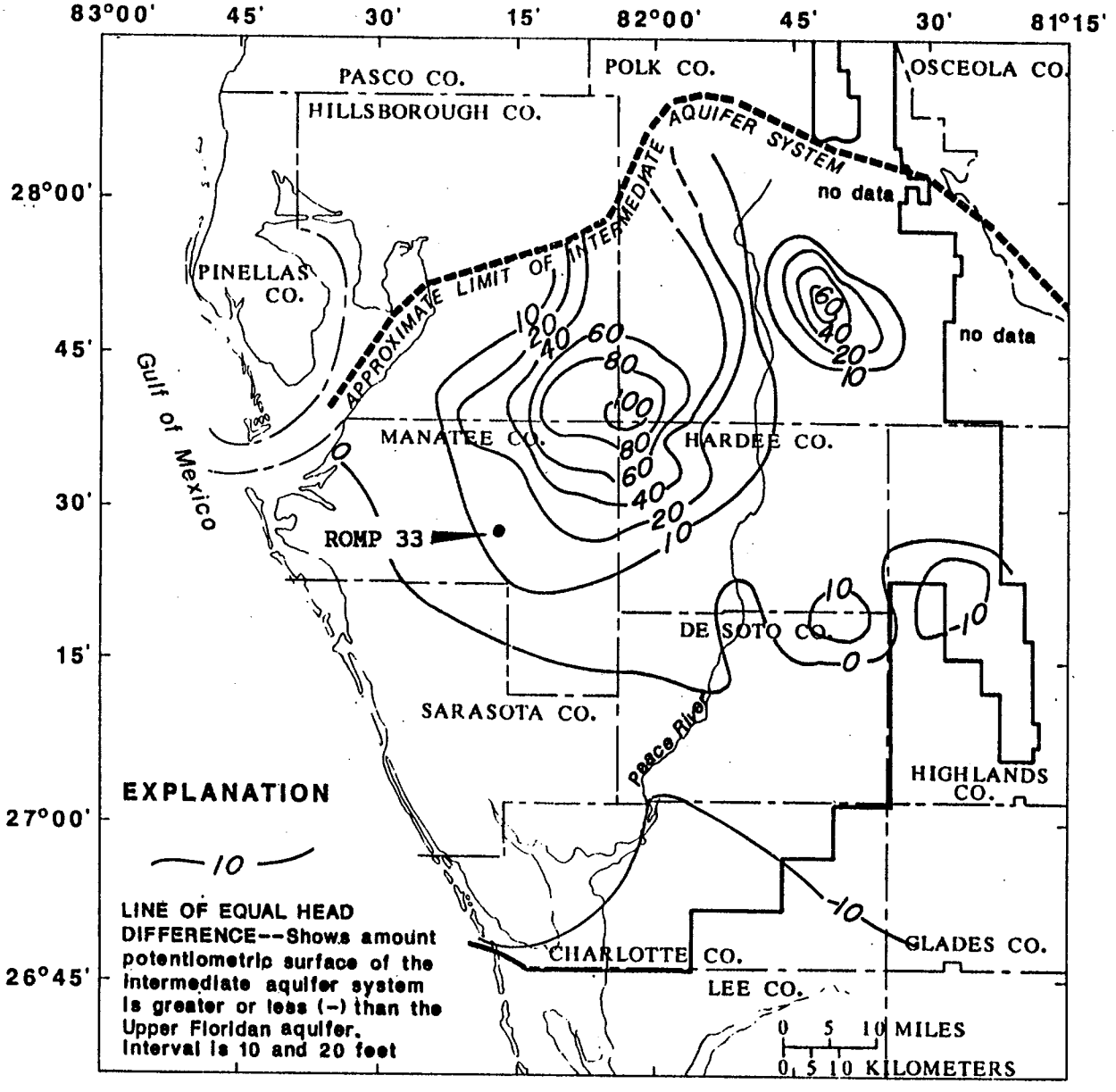


Figure 10 - Head difference between the potentiometric surfaces of the Intermediate aquifer system and the underlying Upper Floridan aquifer, May, 1986 (Duerr, Hunn, Lewelling, and Trommer, 1988).

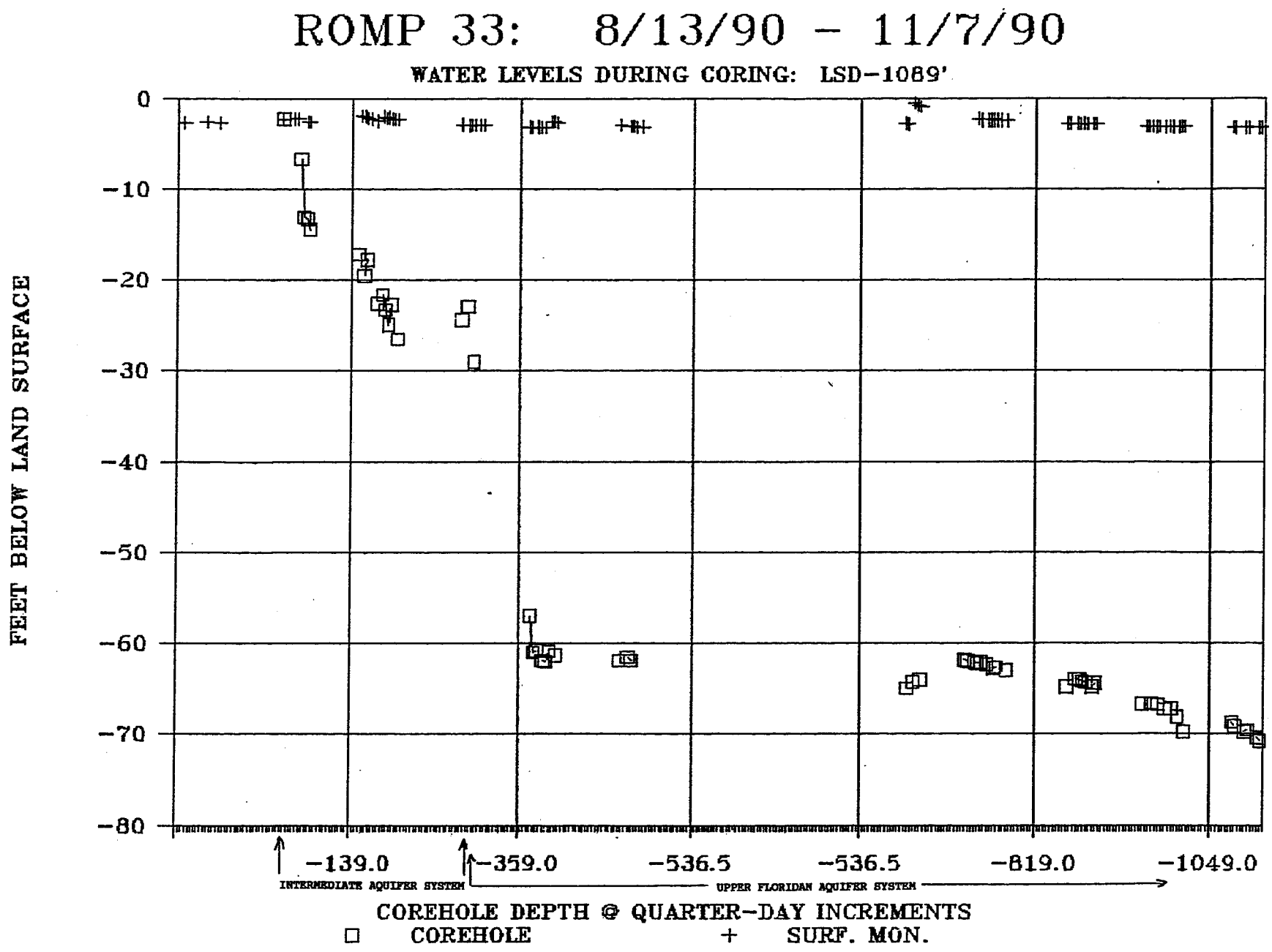


Figure 11 - Measured water level in corehole as it was deepened. Depth in feet below land surface, water levels measured each 1/4 day as appropriate/available. Depth may repeat on X-axis if drilling is inactive (i.e. status, overnight).

The lowermost 35' of the Arcadia Formation showed a distinct drop in average porosity from the described 15-22% range for most of the formation to a described average of about 11%. Lithologically, the unit progressed downward into dolomitic carbonates and clay, and lesser chert. These beds appeared to provide the lower confinement for the Intermediate aquifer system, since the corehole water level taken at 349' BLS (23' into the Tampa Member of the Arcadia) shows the start of a significant downdrop to Floridan potentiometric levels.

Water Quality

Water quality in the Intermediate aquifer system is quite good at ROMP 33. As analyzed by the SWFWMD Laboratory, water samples collected during coring of the Intermediate never exceeded 10 mg/l sulfate (Figure 12), and only twice entered the 25-50 mg/l range for chloride (sampled in sandy beds at 109' and 149' BLS; Figure 13). Bicarbonate, expressed as a function of total alkalinity, provides the greatest concentration of cation milliequivalents through the Intermediate (Figure 14). Plots of total dissolved solids concentration (Figure 15), and fluid conductivity (Figure 16), correlate well with the referenced plots.

Sodium concentration, in the 22-24 mg/l range in the Intermediate, rose to 31 mg/l at 389' BLS in the Floridan aquifer, and continued to fall off to the 10 mg/l range with depth (Figure 17). Concentration of other major anions as sampled while coring the Intermediate aquifer are plotted on Figures 17 and 18.

In a sample taken from the well-purged, completed Intermediate Aquifer System Monitor, although the potassium concentration seems aberrantly high, the fluid plots as a sodium bicarbonate-type water (Figure 7). Interestingly, a high silica concentration was analyzed (24.5 mg/l), although the wellbore is open to only the carbonates of the (Undifferentiated) Arcadia Formation.

UPPER FLORIDAN AQUIFER

The top of the Upper Floridan aquifer is defined as the top of the vertically persistant carbonate units, below which no substantial clay confining beds occur (Mahon, 1989). At the ROMP 33 site, the Upper Floridan aquifer includes the Tampa Member of the Arcadia Formation, Suwannee Formation, Ocala Group, and Avon Park Formation (Figure 6). There appears to exist no permeable beds of any consequence of the (Undifferentiated) Arcadia Formation at ROMP 33 that, under natural conditions, readily transmit viable flow (other than leakance) to the Floridan.

At ROMP 33, the top of the Upper Floridan is approximately 326' BLS, and the base of the Upper Floridan / top of the middle confining unit of the Floridan aquifer is assumed to be approximately 1700' BLS. The base of the Upper Floridan is defined

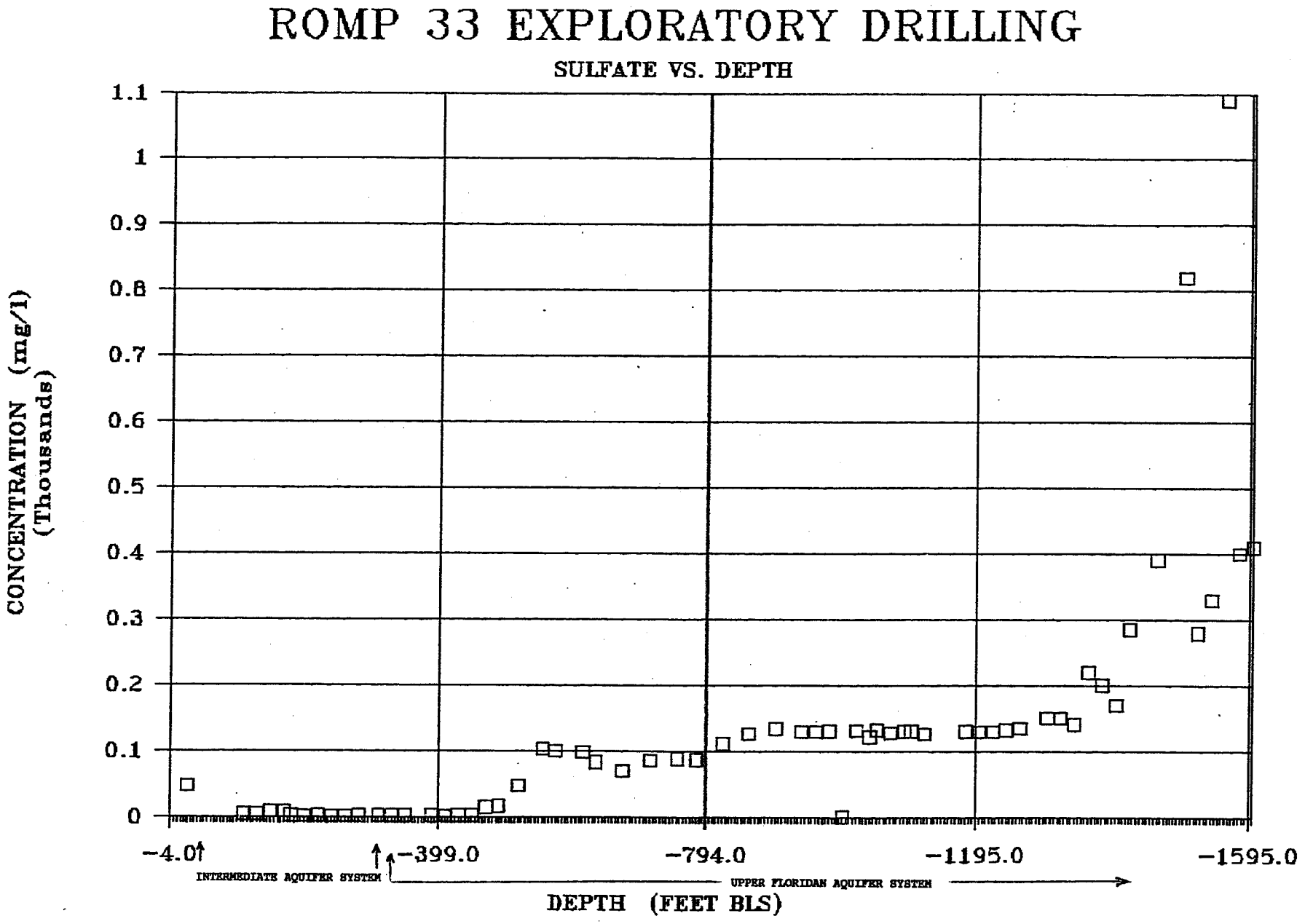


Figure 12 - ROMP 33 exploratory drilling sampling profile (sulfate concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-10/91).

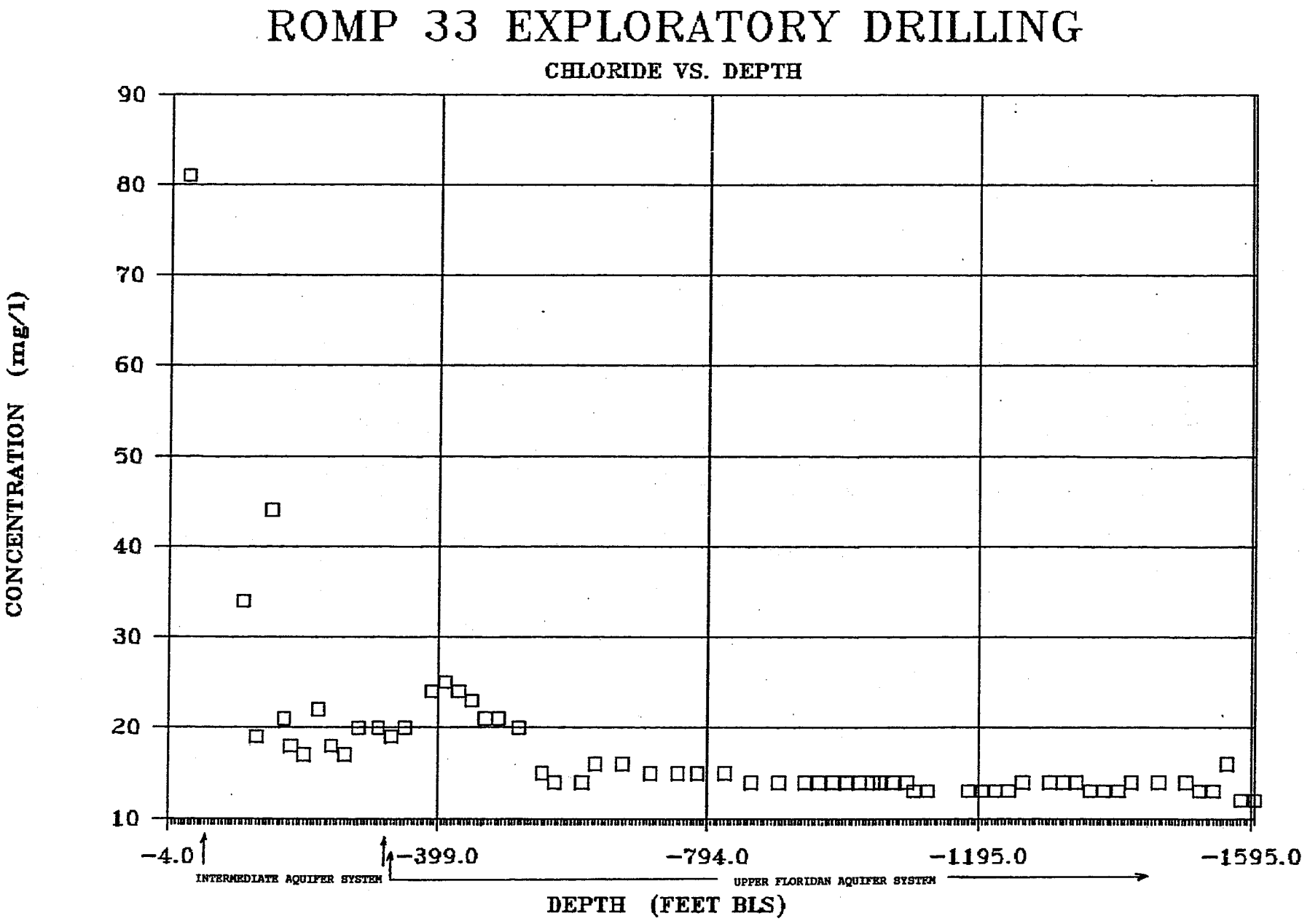


Figure 13 - ROMP 33 exploratory drilling sampling profile (chloride concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-10/91).

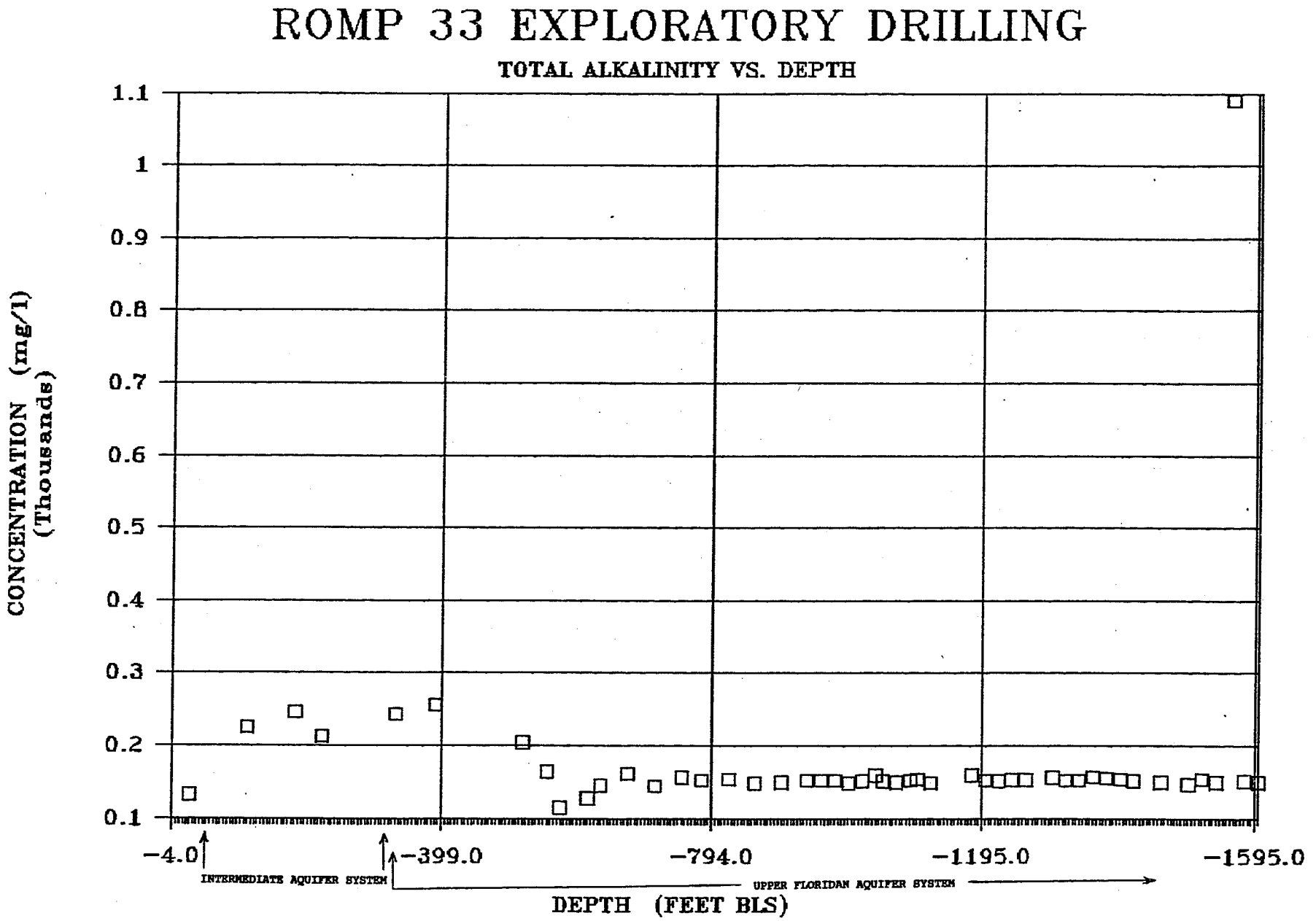


Figure 14 - ROMP 33 exploratory drilling sampling profile (total alkalinity concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-10/91).

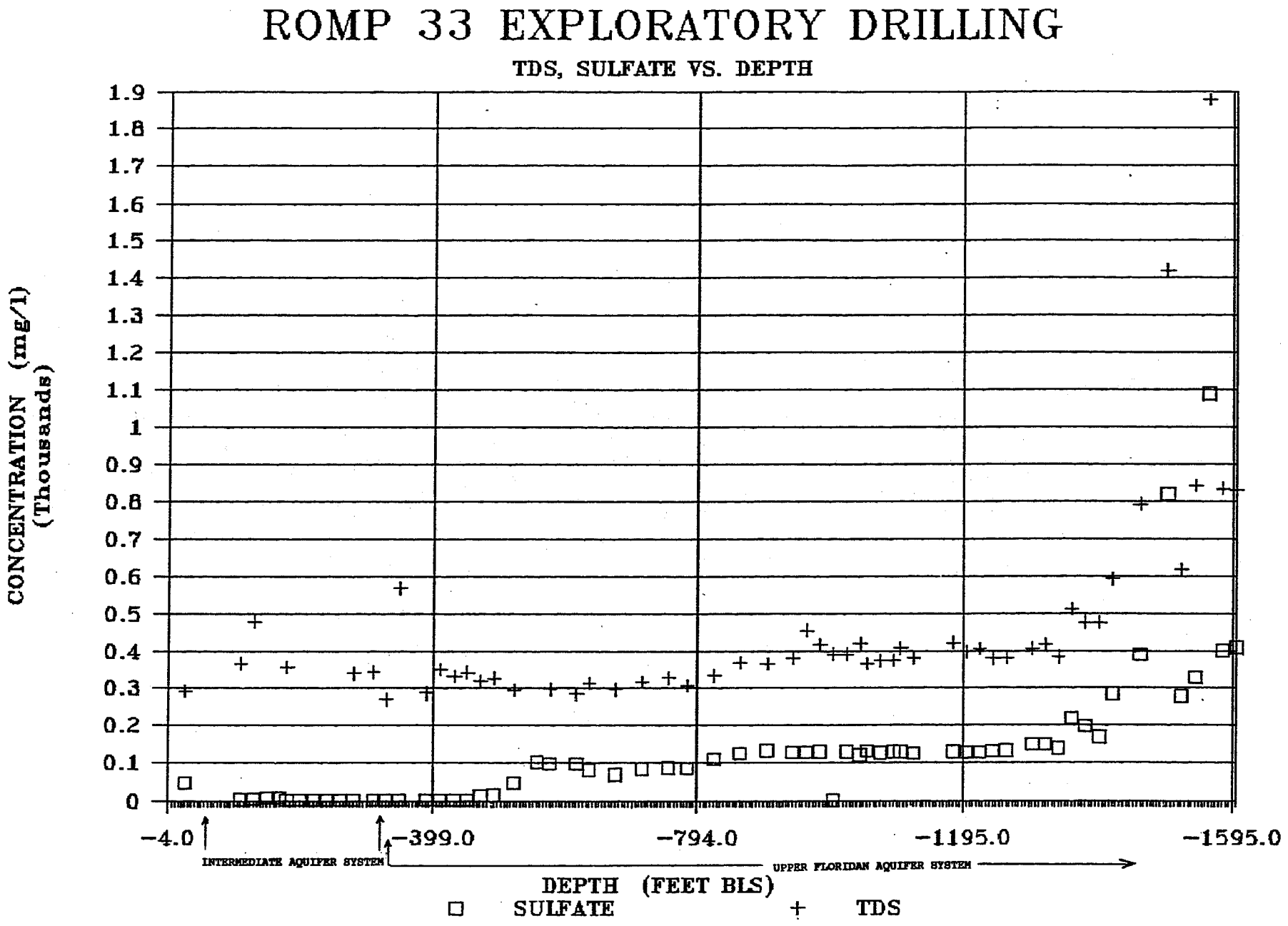


Figure 15 - ROMP 33 exploratory drilling sampling profile (total dissolved solids, sulfate concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-10/91).

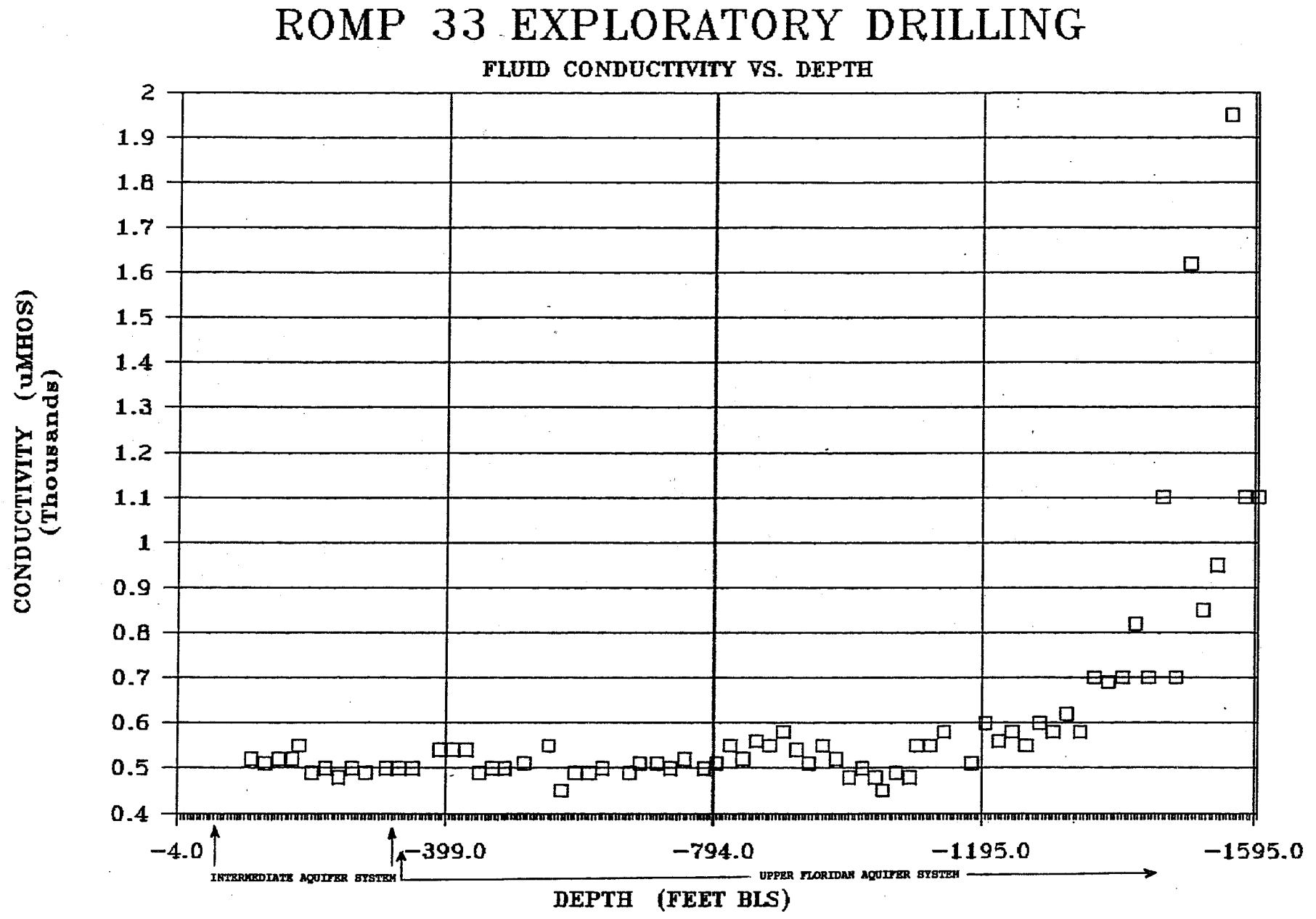


Figure 16 - ROMP 33 exploratory drilling sampling profile (fluid conductivity concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/[illegible]10/91).

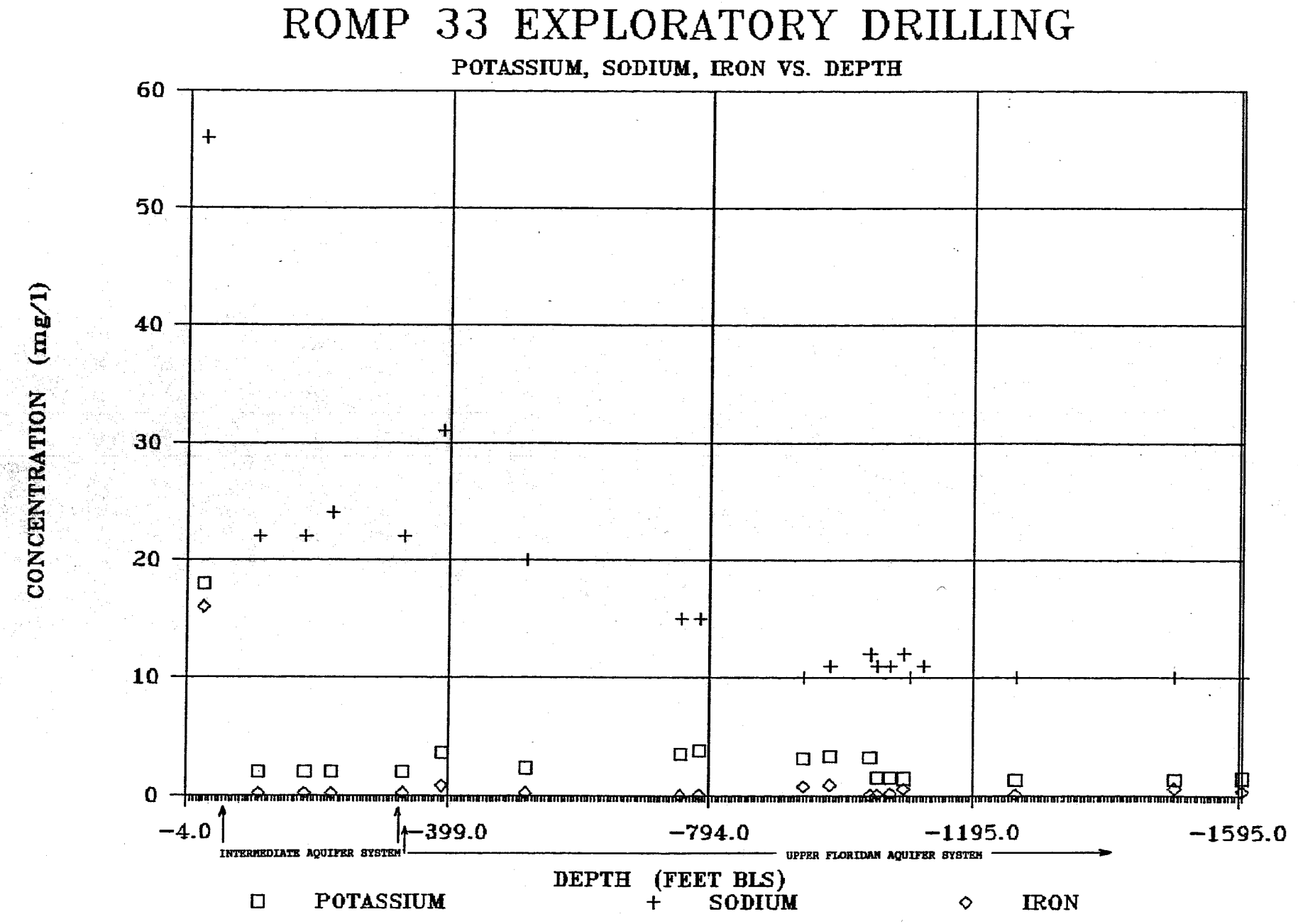


Figure 17 - ROMP 33 exploratory drilling sampling profile (potassium, sodium, iron concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-[illegible]91).

ROMP 33 EXPLORATORY DRILLING

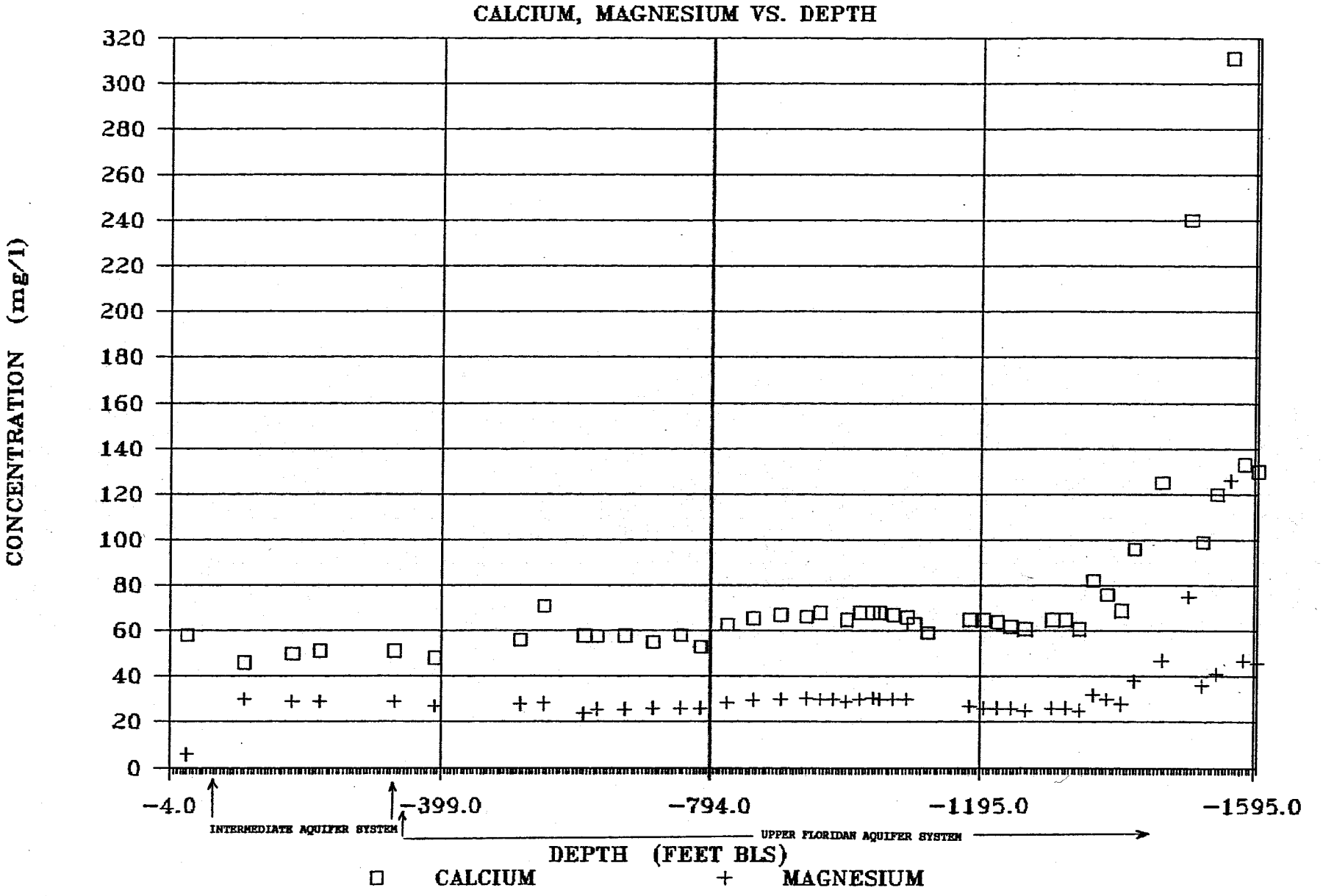


Figure 18 - ROMP 33 exploratory drilling sampling profile (calcium, magnesium concentration); (LSD - 1089' cored 8/90-11/90; 1100 - 1600' drilled 9/91-10/91).

as the first occurrence of vertically persistent, low permeability intergranular evaporites in the lower Avon Park Formation (Mahon, 1989). Exploratory drilling at ROMP 33 penetrated to 1600' BLS, encountering anhydrite to approximately 2% (based on drill cutting description 1500-1600' BLS). Borehole video logging the wellbore did not visually substantiate higher probable percentages of the soluable sulfate mineral, although as discussed under "**Water Quality**", water in this zone was appreciably more mineralized than that above.

Three highly permeable zones within the Upper Floridan aquifer system are suggested from surrounding ROMP and other wellsites. These zones generally occur at or near geologic formation contacts due to the development of enhanced secondary porosity. The zones are separated by beds of relatively lower permeability, which may be in themselves relatively permeable, creating vertically extensive production zones.

At ROMP 33, the uppermost regionally permeable zone is found at the top of the Upper Floridan aquifer / top of the Tampa Member of the Arcadia Formation at 326' BLS. Much of the Tampa Member appears permeable (intergranular, and developed moldic and vugular porosity), although the zone near the contact between the Tampa Member and the Suwannee Formation is a strongly permeable zone, and may actually encompass much of the lower Tampa Member. A zone near 650', and also near the Suwannee Formation / Ocala Group contact are suggested from a pumped-well flowmeter log as being somewhat productive. The deepest, most transmissive zone encountered at ROMP 33 was within the fractured dolomite beds of the lower Ocala Group, and upper Avon Park Formation, from 990-1200' BLS, transmissivity of which on a regional scale has been estimated at up to 700,000 ft^2/d (Kelley, 1988).

Potentiometric

The Floridan aquifer is the principally used aquifer in most of western coastal Florida and many other parts of the state. Groundwater flow in the Upper Floridan aquifer appears to have been severely disrupted by the effects of combined pumping and prolonged drought conditions in the vicinity of ROMP 33, and north to south-central Hillsborough County. Figure 19 indicates groundwater flow due north from the wellsite area (May, 1991), into a large potentiometric depression in a region that would under natural hydrologic conditions suggest a west-southwestward flowing regime. Seasonal potentiometric fluctuations can range substantially greater than the 30' suggested by wet season/dry season mapping of the Upper Floridan potentiometric surface, completely reversing regional groundwater flow paths on a biannual basis.

Recharge to the Floridan aquifer in the ROMP 33 area is derived from potentiometrically upgradient regions in the vicinity of the Green Swamp during most times of the year, although an emergent potentiometric high, near south central DeSoto County may provide

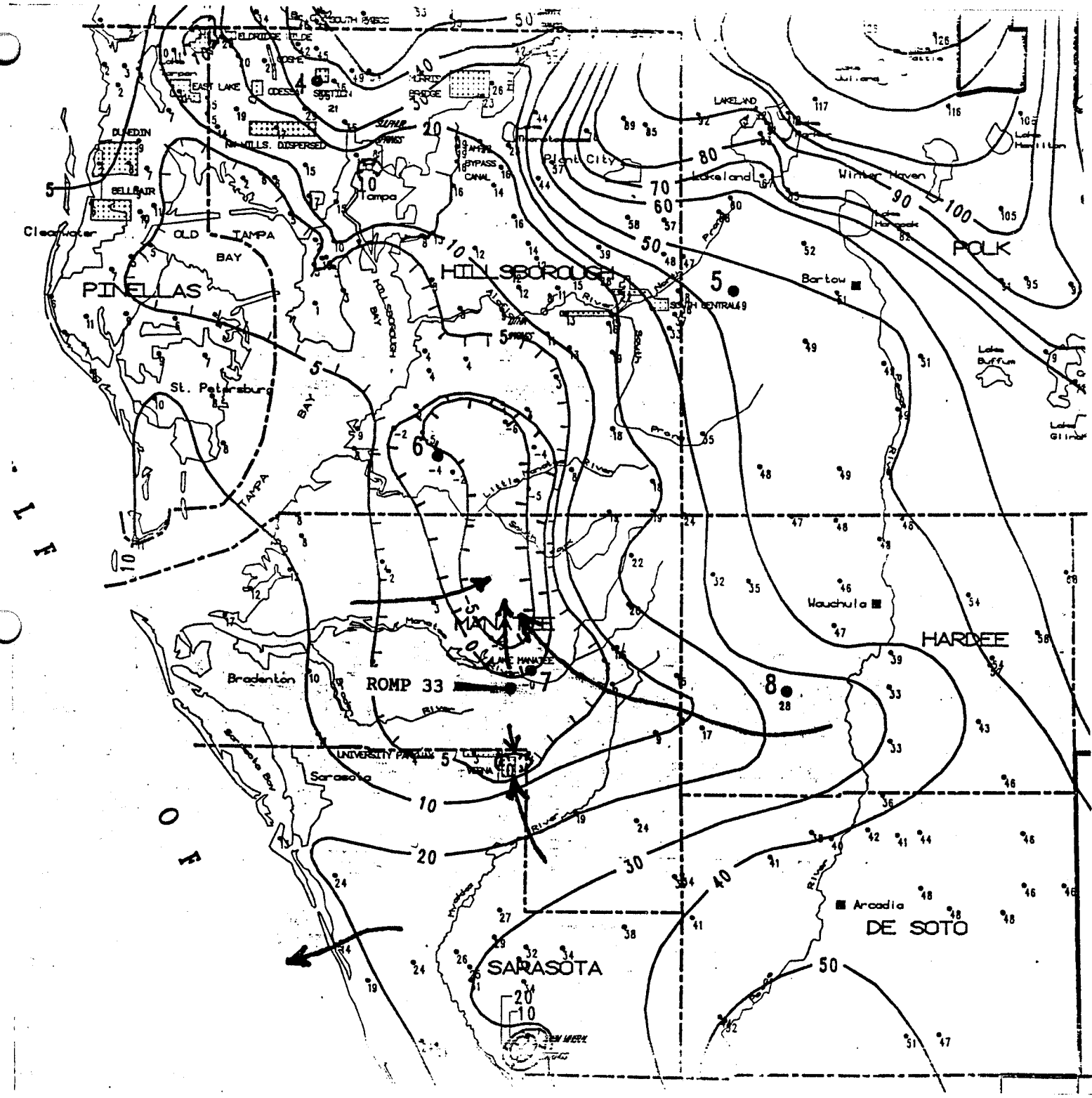


Figure 19 - Potentiometric surface of the Upper Floridan aquifer, and regional flow path in ROMP 33 vicinity, May, 1991 (after Mularoni, 1992).

recharge during drier periods. Additionally, downward leakance from the Intermediate aquifer system is likely.

A very distinct transition to a lower head regime was noted as coring proceeded out the (Undifferentiated) Arcadia Formation and into the Tampa Member of the Arcadia. At the depth of 349' BLS, a 6' drop (to 29' BLS) in potentiometric head was noted, after coring the 309-349' BLS interval that morning (the 326-337' BLS interval contained beds of somewhat phosphatic quartz sand). At the cored depth of 349' BLS, 155' of the Intermediate aquifer system was open (via annular space around the rods) to the wellbore, versus 23' of the Upper Floridan aquifer open to the bore. Upon reaching 359' BLS, it was decided to ream the borehole and reset the 4" temporary casing into the Tampa at 353.5' BLS. On coring to 369.5' BLS out of the new casing point, and letting water level stabilize, a corehole water level of 57' BLS was recorded. This incorporated the majority of the potentiometric decline (to 60-62' BLS) registered during coring in the shallow Upper Floridan.

During coring, potentiometric levels in the corehole declined the entire time coring proceeded through the Ocala Group sediments. Rather than an effect associated with the bottoming-out into a still lower potentiometric regime, Figure 20 shows this to be a regional decline, likely associated with irrigation pumping due to the prevailing dry weather. Although the Ocala Group sediments may offer some degree of semi-confinement when an overlying or underlying unit is stressed, the Upper Floridan aquifer at the ROMP 33 site appears to respond potentiometrically as a contiguous unit.

Both the Tampa Member of the Arcadia Formation and the Suwannee Formation displayed ample average porosity (25-35% and 28-45% respectively) to suggest a moderately transmissive unit, although pumping the 12" diameter Shallow Upper Floridan Monitor at 785/875 gpm produced about 75' of drawdown.

Uppermost Ocala Group beds above 745' BLS were described with porosity up to 30%, and those beds between 745-827' BLS as having about 20-22% porosity. Below 827' BLS, to the top of the Ocala dolomites (932' BLS), porosity averages about 28%. Although the dolomite of the lower Ocala was described with a very small percentage of porosity, geophysical and borehole video logging note the presence of a strongly fractured zone from about 990-1200' BLS, that is likely the deepest major transmissive zone in the Upper Floridan. Lithologic samples collected below 1089' BLS were drill cuttings, making porosity estimates difficult. A sonic porosity log run on the completed well suggests moderate porosity below 1300' with interbedded less-porous zones between 1390-1510' BLS.

Water Quality

Hydrochemically, there does exist some variability in shallow and deep Upper Floridan waters. Water sampling during coring demonstrated a gentle but significant rise in sulfate concentration

(from about 15 mg/l, to 100 mg/l near the top of the Suwannee Formation; Figure 12). At the same depth, chloride concentration showed a subtle drop from 25 mg/l to 15 mg/l (Figure 13).

Another gentle rise in sulfate concentration occurs from 1350-1460' BLS, when sulfate concentration kicks from 140 to 390 mg/l, before showing a sharp, somewhat erratic rise (to 1400 mg/l, from thief sample in the purged Deep Upper Floridan Aquifer Monitor) from 1500-1600' BLS, in association with the uppermost occurrence of low concentrations of anhydrite.

Bicarbonate, expressed as a function of total alkalinity, generally follows a curve similar to that of chloride concentration through the Upper Floridan aquifer, although registers an isolated peak (aberrant?) value of 1090 mg/l at 1560' BLS, where sulfate concentration is also quite high (Figure 14). Plots of total dissolved solids concentration (Figure 15), and fluid conductivity (Figure 16) correlate the transition from bicarbonate as the dominant cation milliequivalent concentration in most of the shallow Upper Floridan aquifer, to the dominance of the sulfate cation in the deeper portions of the Upper Floridan.

Calcium and magnesium concentrations both rose rather sharply in the deeper portions of the Upper Floridan (Figure 18), while potassium, sodium, and iron levels decreased mildly (Figure 17).

In samples taken from the well-purged, completed Shallow Upper Floridan Aquifer Monitor, and Deep Upper Floridan Monitor, the samples denote the transition from the shallower mild, calcium-magnesium bicarbonate-type water to the deeper strongly calcium-magnesium sulfate type (Figure 7). This transition reflects the suggested deep-circulated flow path for the deep Upper Floridan waters through the lower gypsiferous dolomites of the Floridan middle confining unit.

V. AQUIFER TESTS

(This section to be added; contains text, Figures 21 - 26, and Tables 1 - 3).

VI. GEOPHYSICAL LOGS

Several arrays of geophysical logs were run at ROMP 33 on different dates, and at different stages of well construction. All permanent wells except the Surficial Aquifer System Monitor were logged in the "as-built" stage, as well as when appropriate during phases of construction. Also, the Shallow Upper Floridan Aquifer Monitor was flowmeter-logged during a pump test and step-drawdown test conducted in June, 1992.

Most logs were run with SWFWMD digital equipment, and are archieved in the ROMP 33 File of Record, and are also electronically stored

REGIONAL POTENTIOMETRIC TRENDS

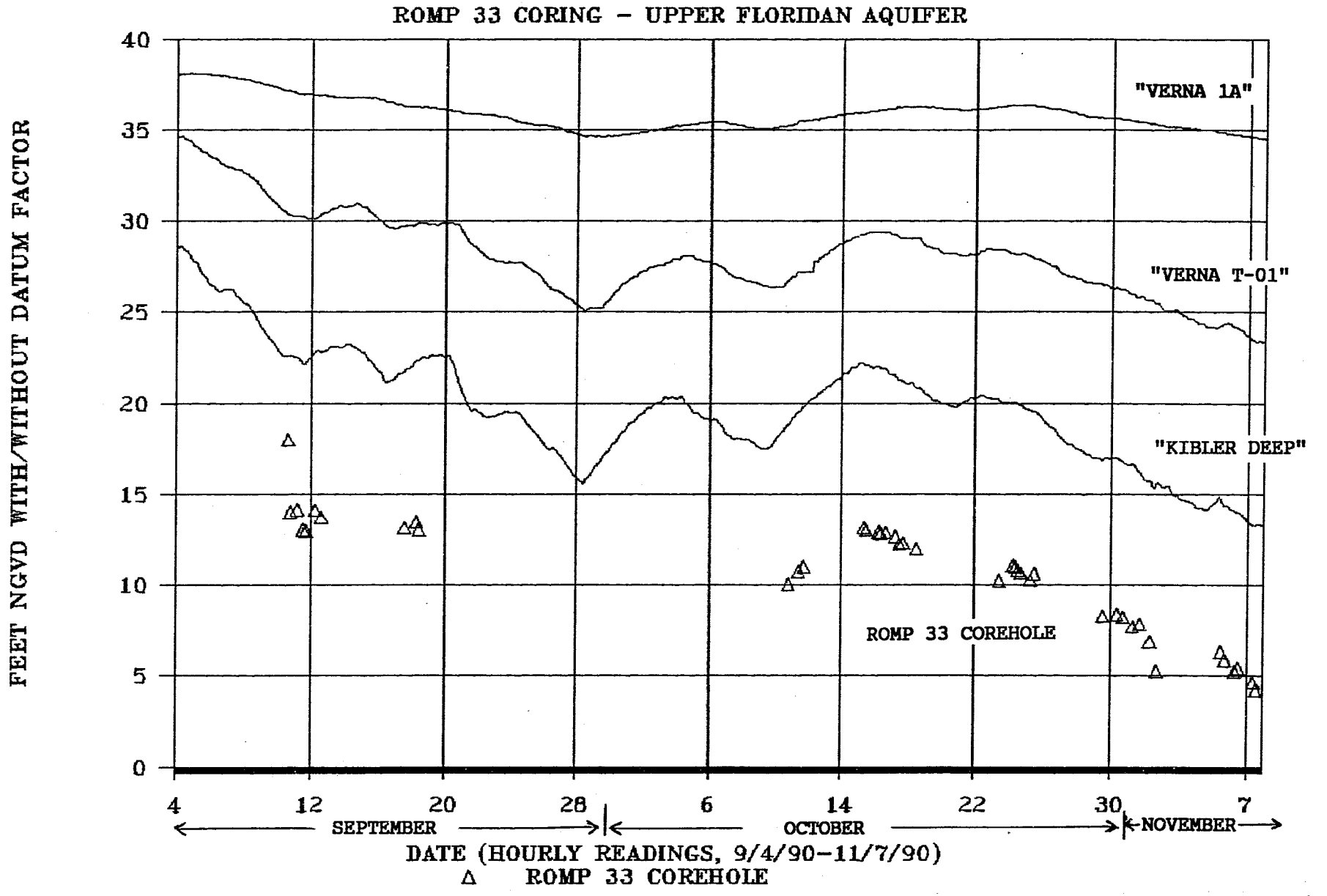


Figure 20 - Potentiometric comparison of corehole water levels as measured during drill-out, to existing regional monitors.

and retrievable via Century Geophysical Corporation "Personal Compu-log" software. Additionally, analog plots were run by USGS staff on the original ROMP 33 corehole (November, 1990) in lieu of the SWFWMD equipment, due to availability.

The SWFWMD's borehole video logging unit was used to record "as-built" video logs on all four permanent monitors following construction. Additionally, prior to installation of the 6" casing on the ROMP 33 Deep Upper Floridan Aquifer Monitor, while the borehole was open between 780 - 1600' (T.D.), attempts were made to video log to 1600'. Maximum depth reached was approximately 1100' BLS due to the rugosity of the borehole wall, but the 990 - 1100' footage provides an excellent portrayal of a borehole drilled through fractured dolomite, plucked-out by reverse-air circulation.

VII. WELL DESIGN AND CONSTRUCTION

Initial drilling and water quality sampling at ROMP 33 began in August, 1990. The SWFWMD's CME 75 rig (Lloyd Johnson, Senior Driller) was used to construct a temporary water supply well and a 1089' exploratory corehole, at which depth coring ceased in favor of later exploratory tri-cone drilling. Construction of four permanent wells (Surficial Aquifer System Monitor, Intermediate Aquifer System Monitor, Shallow Upper Floridan Aquifer Monitor, and Deep Upper Floridan Aquifer Monitor) followed the 1990 coring. The SWFWMD's Speedstar 22M rig (Tom Toy, Senior Well Driller) was used for construction of the array of permanent monitors (Figure 4), as well as deep exploratory drilling in excess of cored depth.

Auger Hole / Temporary Water Supply Well

Construction of the temporary water supply well (completed into the Surficial aquifer system) was initiated with exploratory hollow stem auger/split spoon drilling from LSD to 9' BLS. From 9-24' BLS, lithologic samples were collected off the blades of the auger flights rotated into the ground ,then extracted straight out. A 13.5" bit was used to ream the existing hole and drill out (mud rotary) down to 44' BLS, collecting cuttings for examination. The temporary supply well was completed by installation of 40' of 6" PVC .030" slot wellscreen (-3.5-43.5' BLS) and bottom cap, coupled to 5" of 6" PVC Sch 40 casing (+1.5-3.5' BLS). Graded silica sand (6-20) was emplaced into the annular space from -44-3.5' BLS, with the remaining annulus to LSD cemented. The well was developed by airlifting, and at the time of installation, the water table was approximately 3' BLS. Construction was completed in August, 1990 (Manatee County Well Permit #90-388). Constructed on the temporary easement parcel, and being of no continued value to the SWFWMD or property owner, this well was plugged, after the permanent well array was completed, by District staff in July, 1992.

Exploratory Corehole / Proposed Shallow Upper Floridan Aquifer Test Observation Well

The majority of exploratory lithologic and water quality samples were collected from the exploratory corehole. It was positioned to allow for use as a shallow Upper Floridan aquifer test observation well after eventual partial-backplugging, following coring. Construction of this well was initiated after the auger hole, and began with drilling a 15.5" nominal borehole (mud rotary) to 53' BLS. Fifty two feet (52') of 10" PVC (+1-51' BLS) was set and cemented by tremie grouting. Temporarily emplaced 4" HW steel casing was rotated into place at 54' BLS initially, and wireline coring (3") commenced to 89'. The coring was accomplished using plain water as the drilling fluid, allowing routine potentiometric profiling and thief sampling during the course of coring. The 4" steel was pulled, the corehole reamed (5 5/8", mud rotary), and the 4" steel set deeper to allow further coring 5 other times during the course of coring, to provide control over extent of borehole in hydraulic communication with the active corehole, and to seal off caving zones (typically sands). After coring to 536.5', the LSD-493' BLS zone was reamed with a 9.5" bit and 490' of 6" pvc was set and cemented. The 490-538' BLS zone was reamed with a 5 5/8" bit and 538' of 4" steel was set for the remainder of all coring (to 1089' BLS). The corehole was backplugged with neat cement grout (silica sand used to bridge past porous zones) to the depth of 721' BLS at the end of all coring.

A rupture was noted in the set 6" pvc at 115' BLS, and although the use of the 4" steel casing allowed continued coring, use of this well as a water supply for drilling of the permanent monitors caused substantial backfilling of the corehole. When subsequent attempts to re-enter the lower section of the severed casing with rods failed, the hole was plugged back from the rupture and abandoned.

Surficial Aquifer System Monitor

The Surficial Aquifer System Monitor (Figure 27) was designed and constructed to monitor fluctuations in the water table. The construction of the Surficial Aquifer System Monitor was initiated by drilling a 11.5" nominal borehole (mud rotary) to 30' BLS. A 2' section of 6" PVC tailpipe, and bottom cap (28-30' BLS), coupled to 10' of 6" PVC wellscreen (.030" slot; 18-28' BLS), coupled to 21' of 6" PVC Sch 40 casing (+3-18' BLS) was installed in the drill-hole. The 7-30' BLS annulus about the wellscreen was sandpacked with 6-20 graded silica sand. Cement grout was then issued into the annulus from 7'-LSD. The well was developed by pumping. At the time of installation, the water table was approximately 3.5' BLS. Construction was completed in April, 1991. (Manatee County Well Permit #91-181).

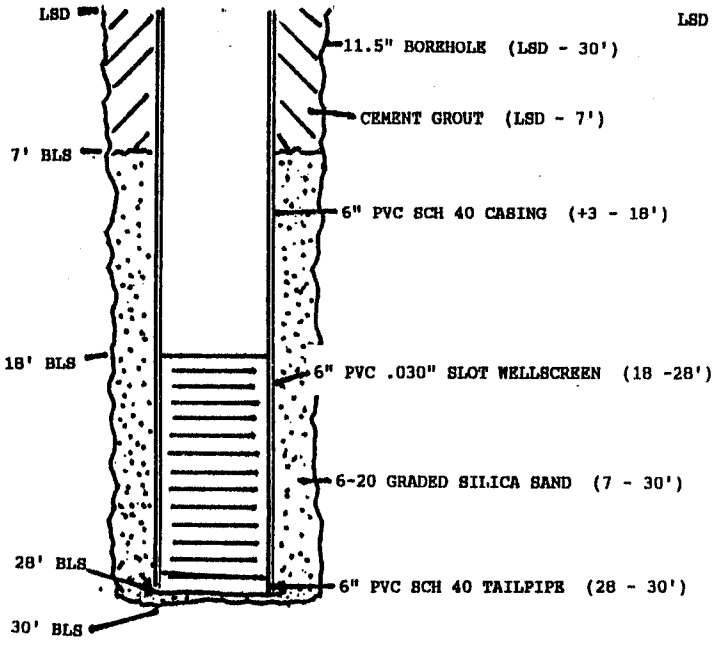


Figure 27 - "As-built" construction of Surficial Aquifer System Monitor.

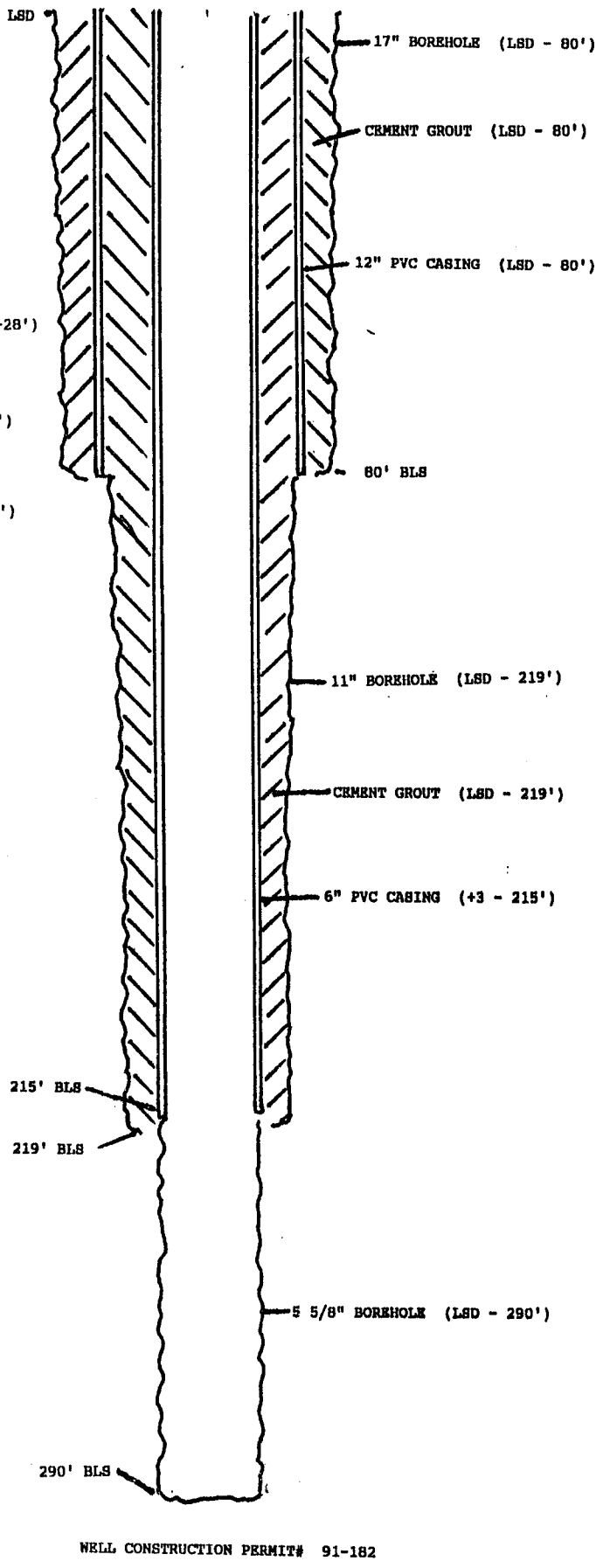


Figure 28 - "As-built" construction of Intermediate Aquifer System Monitor.

Intermediate Aquifer System Monitor

The (lower) Intermediate Aquifer System Monitor (Figure 28) was designed and constructed to monitor potentiometric fluctuation in the vertically persistent carbonates of the lower Intermediate aquifer system (Undifferentiated Arcadia Formation).

The construction of the (lower) Intermediate Aquifer System Monitor was initiated by drilling a 17" nominal borehole (mud rotary) to 80' BLS. Eighty feet (80') of 12" PVC casing (LSD-80' BLS) was set and cemented by pressure grouting. An 11" nominal borehole was drilled (mud rotary) to 219' BLS, and 216' of 6" PVC casing (+1-215' BLS)was set and cemented by pressure grouting. A 5 5/8" nominal borehole was drilled out of the 6" casing to a total depth of 290' BLS. The well was developed by reverse and direct air pumping. At the time of installation, the potentiometric level in the well was approximately 32' BLS. Construction was completed in April, 1991. (Manatee County Well Permit #91-182).

Shallow Upper Floridan Aquifer Monitor

The Shallow Upper Floridan Aquifer Monitor (Figure 29) was designed and constructed to monitor potentiometric fluctuations in the productive mid-to-lower Tampa Member of the Arcadia Formation and the Suwannee Formation. It also was configured to allow being pumped by a vertical turbine pump for aquifer testing.

The construction of the Shallow Upper Floridan Aquifer Monitor was initiated by drilling a 22" nominal borehole (mud rotary) to 100' BLS. One hundred feet (100') of 18" PVC casing (+1-99' BLS) was set and cemented by pressure grouting. A 17" nominal borehole was drilled (mud rotary) to 410' BLS. Four hundred six feet (406') of 12" PVC Sch 80 casing (+2-404' BLS) was set and cemented by pressure and tremie grouting. An 11" nominal borehole (mud rotary) was drilled out of the 12" casing to a total depth of 750' BLS, and the well developed by airlifting. At the time of installation, the potentiometric level in the well was approximately 77' BLS. Construction was completed in May, 1991. Manatee County Well Permit #91-183).

Deep Upper Floridan Aquifer Monitor

The Deep Upper Floridan Aquifer Monitor (Figure 30) was designed and constructed to provide exploratory detail below the 1089' core depth reached by the CME rig, as well as provide a deep, limited-bore well for water sampling, open to the uppermost beds of dolostone containing vugular or intergranular anhydrite. It may also function as a potentiometric monitor to provide water levels from the Avon Park Formation below the transmissive beds of fractured dolomite.

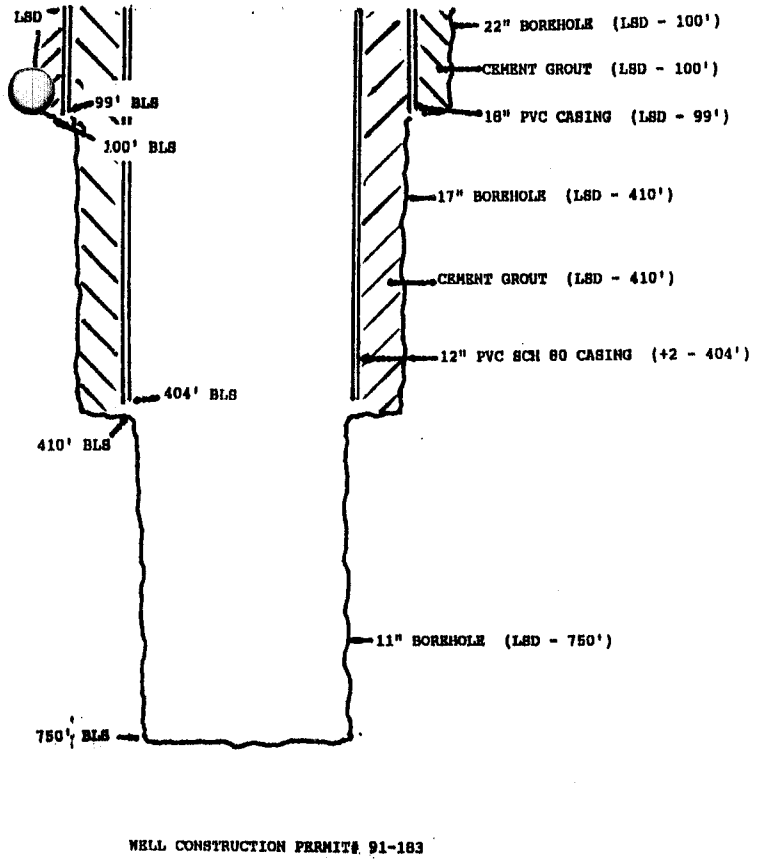


Figure 29 - "As-built" construction of Shallow Upper Floridan Aquifer Monitor.

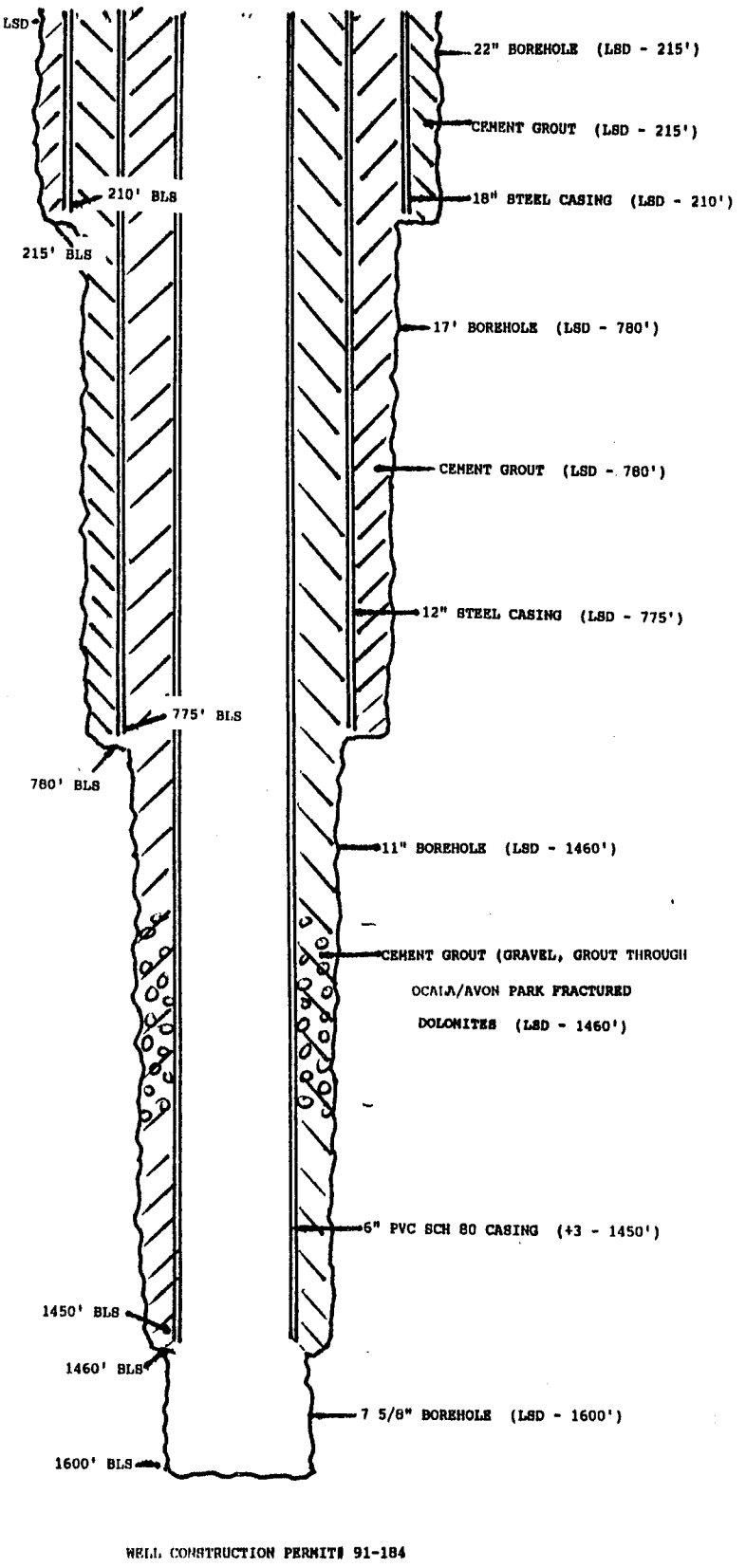


Figure 30 - "As-built" construction of Deep Upper Floridan Aquifer Monitor.

The construction of the Deep Upper Floridan Aquifer Monitor was initiated by drilling a 22" nominal borehole (mud rotary) to 215' BLS. Two hundred eleven feet (211') of 18" steel casing (+1-210' BLS) was set and cemented by pressure grouting. A 9.5" nominal borehole was drilled to 780' (mud rotary), and later opened to 17" nominal diameter (mud rotary). Seven hundred seventy seven feet of 12" steel casing (+2-775') was set and cemented by pressure and tremie grouting. An 11" nominal borehole (initially mud rotary, then reverse air) was drilled out of the 12" casing to 1260' BLS, then a 7 5/8" borehole was drilled (reverse air) from 1260' to a total depth of 1600' BLS (cuttings and water quality samples were collected from 1000-1600' BLS to profile hydrogeologic parameters to maximum depth). The borehole was reamed to 11" diameter to 1460' BLS, and two cement plugs were dropped down the wellbore to seal below 1460' BLS. Fourteen hundred fifty feet (1450') of 6" PVC Sch 80 casing (tipped with a Halliburton float shoe) was set in the well, with initial pressure grouting performed by Halliburton Services. The fractured dolomite between 1000-1200' BLS proved difficult to grout, and numerous batches of neat cement grout were tremied into the annulus around the 6" casing between loads of limestone gravel, silica sand, and gel to effectively seal that portion of the annulus before the remaining upper annulus could be grouted to land surface. The float shoe was drilled out, and the existing 1450-1600' BLS open bore cleared out (reverse air) using a 5 5/8" bit. At the time of installation, the potentiometric level in the well was approximately 75' BLS. Construction was completed in January, 1992. (Manatee County Well Permit #91-184).

Additionally, an initial attempt at a Deep Upper Floridan Aquifer Monitor proved problematic at the site. After drilling a 22" nominal hole to 80' BLS (mud rotary), 80' of 18" PVC casing was set and cemented. A 17" nominal hole was drilled (mud rotary) out of the 18" casing to 535' BLS, and was continued as a 9" nominal hole (mud rotary) from 535-780' BLS. Sand and clay squeezed repetitively into the borehole near the base of the 18" PVC. One hundred forty five feet (145') of 16" steel (LSD-145'BLS) was washed into place, clearing for each joint with a 15" bit. Using the 15" bit, the hole was washed to 540' BLS (drilled ledge), and there was an attempt to set 540' of 12" PVC casing. Problems were had with couplings parting and the hole becoming blocked. The attempted well was abandoned and cemented back to surface.

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LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-16784 COUNTY - MANATEE
TOTAL DEPTH: 01600 FT. LOCATION: T.35S R.20E S.12 AB
SAMPLES - NONE LAT = 27D 27M 28S
LON = 82D 15M 30S
COMPLETION DATE: 14/01/92 ELEVATION: 75 FT
OTHER TYPES OF LOGS AVAILABLE - CALIPER, GAMMA, ELECTRIC, TEMPERATURE, OTHER

OWNER/DRILLER:SWFWMD ROMP 33 / "WATERBURY" (KIBLER PROPERTY)

WORKED BY:DOUG RAPPUHN (SWFWMD GEOLOGIST). LLOYD JOHNSON, J.P. MEADORS (SWFWMD DRILLERS), WIRELINE CORING: 64-1089'. TOM TOY, JOHN SCHICKEDANZ (SWFWMD DRILLERS), MONITOR CONSTRUCTION AND DEEP CUTTING COLLECTION TO 1600'.

THIS SAMPLE DESCRIPTION IS A COMPOSITE OF THREE CLOSELY-SPACED BORINGS: (A) HOLLOW-STEM AUGER SAMPLES: 0-9'; AUGER BLADE SAMPLES: 9-24'; MUD ROTARY CUTTINGS: 24-64' (8/90); (B) WIRELINE CORE: 64-1089' (8/90-11/90); (C) REVERSE-AIR ROTARY CUTTINGS: 1000-1600' (9/91-10/91). WIRELINE CORING ACCOMPLISHED USING PLAIN WATER AS DRILLING FLUID, ALLOWING ROUTINE POTENTIOMETRIC PROFILING AND THIEF SAMPLING DURING THE COURSE OF CORING. REVERSE-AIR CUTTINGS OVERLAPPED WITH DEEPER CORE TO CORRELATE LITHOLOGY. DETAILED INFORMATION AVAILABLE FROM SWFWMD GEOHYDROLOGIC DATA SECTION.

COMPLETED SITE CONSISTS OF THE FOLLOWING POTENTIOMETRIC MONITORS:
SURFICIAL AQUIFER MONITOR: CD = 18'; SD = 28'.
(SURFICIAL AQUIFER: LSD-35').
(LOWER) INTERMEDIATE AQUIFER MONITOR: CD = 215'; TD = 290'.
(INTERMEDIATE AQUIFER SYSTEM: 35-325.5').
SHALLOW UPPER FLORIDAN AQUIFER MONITOR: CD = 404'; TD = 750'.
DEEP UPPER FLORIDAN AQUIFER MONITOR: CD = 1450'; TD = 1600'.
(UPPER FLORIDAN AQUIFER SYSTEM: 325.5-1600'+).

.0	-	35.0	090UDSC	UNDIFFERENTIATED SAND AND CLAY
35.0	-	198.7	122PCRV	PEACE RIVER FM.
198.7	-	549.0	122ARCA	ARCADIA FM.
326.0	-	539.0	122TAMP	TAMPA MEMBER OF ARCADIA FM.
539.0	-	734.0	123SWNN	SUWANNEE LIMESTONE
734.0	-	1022.0	124OCAL	OCALA GROUP
1022.0	-	.	124AVPK	AVON PARK FM.

0 - 2.5 SAND; LIGHT GRAY TO BROWNISH GRAY
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY
ACCESSORY MINERALS: PLANT REMAINS-02%
OTHER FEATURES: SUCROSIC, UNWASHED SAMPLE
TOP .5 FOOT CONTAINS PEAT AND ROOTS. COLOR LIGHTENS TOWARD BASE.

2.5- 4 SAND; VERY LIGHT ORANGE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN-02%, PHOSPHATIC SAND-01%
OTHER FEATURES: SUCROSIC, UNWASHED SAMPLE
STREAKS OF IRON STAINING NEAR BASE. WATER TABLE AT 3'.

4 - 6 SAND; VERY LIGHT ORANGE TO GRAYISH ORANGE
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: CLAY-30%, IRON STAIN-03%
PHOSPHATIC SAND-01%
OTHER FEATURES: MUDDY, UNWASHED SAMPLE
CLAY CONTENT DECREASES TOWARD BASE.

6 - 9 SAND; WHITE TO LIGHT YELLOWISH ORANGE
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-10%, IRON STAIN-01%
PHOSPHATIC SAND-01%
OTHER FEATURES: SUCROSIC, UNWASHED SAMPLE
UPPER .5 FOOT IS WHITE AND UNCONSOLIDATED.

9 - 15 SAND; GRAYISH BROWN
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-02%
OTHER FEATURES: UNWASHED SAMPLE

15 - 24 SAND; GRAYISH BROWN TO DARK YELLOWISH BROWN
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-08%, PHOSPHATIC SAND-01%
OTHER FEATURES: UNWASHED SAMPLE
FOSSILS: ORGANICS
VERY DARK COLOR (ORGANIC/CLAY) COATED SAND. CLAY CONTENT
AND SHADE INCREASE TOWARD BASE.

24 - 27 SAND; GRAYISH BROWN
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-05%, PHOSPHATIC SAND-01%

27 - 35 SAND; GRAYISH BROWN
35% POROSITY: INTERGRANULAR
GRAIN SIZE: COARSE; RANGE: FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; HIGH SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, CLAY-05%
OTHER FEATURES: SPECKLED
BOTTOM OF UNDIFFERENTIATED SURFICIAL DEPOSITS.

35 - 36.5 SAND; GRAYISH BROWN TO MODERATE DARK GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: COARSE; RANGE: FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; HIGH SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-25%, PHOSPHATIC SAND-15%
OTHER FEATURES: PARTINGS, SPECKLED, VARIEGATED
TOP OF PEACE RIVER FM. INTERBEDS OF DARK GREEN CLAY WASHED FROM CUTTINGS. MARKED INCREASE IN PHOSPHATE SANDS. COARSE QUARTZ SAND COMMON.

36.5- 39.5 SAND; DARK GREENISH GRAY TO DARK GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRANULE
ROUNDNESS: ROUNDED TO SUB-ANGULAR; HIGH SPHERICITY
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-25%, PHOSPHATIC SAND-15%
OTHER FEATURES: VARIEGATED, PARTINGS
INTERBEDS OF CLAYS AND SOME FINES WASHED FROM CUTTINGS.

39.5- 42 CLAY; OLIVE GRAY
10% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-08%
PHOSPHATIC GRAVEL-02%
OTHER FEATURES: PLASTIC, VARIEGATED, GRANULAR
FOSSILS: VERTEBRATE
PEBBLY (PHOSPHATE, QUARTZ) CLAY. MOST CLAY WASHED FROM CUTTINGS. QUARTZ SAND BED AT 42'. ORAL GRINDING PLATES (RAY) PRESENT.

42 - 55 CLAY; OLIVE GRAY
07% POROSITY: LOW PERMEABILITY; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: STREAKED
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC GRAVEL-08%
PHOSPHATIC SAND-03%
PHOSPHATE BONE FRAGMENTS OR CLASTS (TO 2CM) COMMON. MOST CLAY WASHED FROM CUTTINGS.

55 - 68.5 SAND; DARK GREENISH GRAY TO GREENISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, NODULAR
ACCESSORY MINERALS: CLAY-15%, PHOSPHATIC SAND-15%
OTHER FEATURES: SPECKLED, VARIEGATED
INTERBEDDED PHOSPHATIC/QUARTZ SANDS AND CLAYEY PHOSPHATIC/QUARTZ SANDS. DISSEMINATED CLAY AND NUMEROUS CLAY BLEBS (1-4 CM) IN 65-68.5 INTERVAL. BEGIN CORING AT 64'.

68.5- 75 CLAY; DARK GREENISH GRAY
14% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-10%
OTHER FEATURES: MUDDY
INTERBEDDED CLEAN CLAY, THIN PARTINGS OF CLEAN PHOSPHATIC/QUARTZ SAND, AND (68.5-71') SANDY CLAY.

75 - 79 NO SAMPLES
PROBABLY EXTREMELY SANDY.

79 - 89 CLAY; DARK GREENISH GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-07%
OTHER FEATURES: VARIEGATED, PLASTIC, PARTINGS
INTERBEDDED CLEAN CLAY AND 6-12" BEDS OF PHOSPHATIC QUARTZ SAND.

89 - 89.5 CLAY; DARK GREENISH GRAY TO YELLOWISH GRAY
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CALCILUTITE- %, QUARTZ SAND-30%
PHOSPHATIC SAND-05%
OTHER FEATURES: CALCAREOUS, PLASTIC, PARTINGS
CALCAREOUS CLAY; SANDS.

89.5- 94 CLAY; OLIVE GRAY TO DARK GREENISH GRAY
15% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC SAND-05%
OTHER FEATURES: PARTINGS, PLASTIC
FOSSILS: SHARKS TEETH
INTERBEDDED CLEAN CLAY, SANDY CLAY, AND PARTINGS OF CLEAN
PHOSPHATIC QUARTZ SAND.

94 - 96.5 SAND; OLIVE GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CLAY-45%, PHOSPHATIC SAND-05%
OTHER FEATURES: PARTINGS
PHOSPHATIC QUARTZ SAND AND THIN BEDS OF CLEAN CLAY.

96.5- 99 NO SAMPLES
PROBABLY SIMILAR TO SANDS OF PREVIOUS INTERVAL.

99 - 104 SAND; OLIVE GRAY
25% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-07%
OTHER FEATURES: SUCROSIC
FOSSILS: SHARKS TEETH

104 - 108.6 SAND; OLIVE GRAY
25% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, CLAY-03%
OTHER FEATURES: SPECKLED

108.6- 108.8 CLAY; DARK GREENISH GRAY TO GREENISH BLACK
12% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, DOLOMITE-10%
PHOSPHATIC SAND-03%
OTHER FEATURES: VARIEGATED
FOSSILS: SHARKS TEETH
BASAL SANDY CLAY CONTAINING ROUNDED DOLOMITIC CLASTS.

108.8- 124 CLAY; LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC SAND-06%
CALCILUTITE- %
OTHER FEATURES: CALCAREOUS, PARTINGS, SPECKLED, GRANULAR
FOSSILS: SHARKS TEETH
INTERBEDDED CALCAREOUS CLAYSTONE (MARLY) AND SANDY CLAY.
MANY THIN PARTINGS OF PHOSPHATIC/QUARTZ SAND.

124 - 129 CLAY; YELLOWISH GRAY TO GREENISH GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-10%, PHOSPHATIC SAND-02%
CALCILUTITE- %
OTHER FEATURES: PARTINGS, CALCAREOUS
RELATIVELY CLEAN, SLIGHTLY CALCAREOUS CLAY. THIN PARTINGS
OF PHOSPHATIC/QUARTZ SANDS.

129 - 131 NO SAMPLES
PROBABLY FINE PHOSPHATIC/QUARTZ SANDS.

131 - 134 CLAY; YELLOWISH GRAY TO GREENISH GRAY
08% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-10%, PHOSPHATIC SAND-02%
CALCILUTITE- %
OTHER FEATURES: PARTINGS, CALCAREOUS
RELATIVELY CLEAN, SLIGHTLY CALCAREOUS CLAY. THIN PARTINGS
OF PHOSPHATIC/QUARTZ SANDS.

134 - 137 NO SAMPLES
PROBABLY FINE PHOSPHATIC/QUARTZ SANDS.

137 - 145 CLAY; DARK GREENISH GRAY TO VERY LIGHT GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-40%, PHOSPHATIC SAND-06%
CALCILUTITE- %
OTHER FEATURES: PARTINGS, CALCAREOUS, GRANULAR
INTERBEDDED VERY SANDY CALCAREOUS CLAY AND CLEAN CLAY.
UNIT BECOMES MORE CALCAREOUS TOWARDS BASE.

145 - 163 SAND; LIGHT GRAY TO MODERATE DARK GRAY
28% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; HIGH SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, CLAY-05%
OTHER FEATURES: SUCROSIC, SPECKLED
NO CORE RECOVERY - SAMPLE DESCRIBED FROM FLUSHED CUTTINGS.

163 - 164.5 CALCILUTITE; LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-08%, PHOSPHATIC SAND-03%
DOLOMITE- %
OTHER FEATURES: DOLOMITIC, PARTINGS, SPECKLED, CHALKY
DOLOMITIC CALCILUTITE WITH PHOSPHATIC/QUARTZ SAND PARTINGS.

164.5- 169 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: COARSE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED, CROSS-BEDDED
ACCESSORY MINERALS: QUARTZ SAND-40%, CLAY-15%
PHOSPHATIC SAND-10%
OTHER FEATURES: GRANULAR, SPECKLED, DOLOMITIC, PARTINGS
FOSSILS: MOLLUSKS
COARSE WACKE OF QUARTZ AND PHOSPHATIC SANDS, AND DOLOMITIC
SHELL FRAGMENTS AND CLASTS.

169 - 171.5 NO SAMPLES
REAMED TO RE-SEAT TEMPORARY CASING.

171.5- 175 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: COARSE; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED, CROSS-BEDDED, INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-40%, PHOSPHATIC SAND-10%
CALCILUTITE- %
OTHER FEATURES: GRANULAR, SPECKLED, DOLOMITIC, PARTINGS
FOSSILS: MOLLUSKS
COARSE SHELLY (40%) WACKE OF PHOSPHATIC/QUARTZ SANDS AND DOLOMITIC SHELL FRAGMENTS. POORLY INDURATED BEDS RUBBELIZED DURING CORING. THIN INTERBEDS OF DOLOMITIC CALCILUTITE.

175 - 180 CALCILUTITE; LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, CROSS-BEDDED
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-03%
DOLOMITE- %
OTHER FEATURES: DOLOMITIC, PARTINGS, CHALKY
FOSSILS: MOLLUSKS
DOLOMITIC CALCILUTITE. MOST SAND IS CONFINED TO PARTINGS AND INFILL.

180 - 188 SANDSTONE; LIGHT OLIVE GRAY TO OLIVE GRAY
28% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: GRADED BEDDING, CROSS-BEDDED LAMINATED, FISSILE
ACCESSORY MINERALS: QUARTZ SAND-60%, PHOSPHATIC SAND-20% CLAY-20%
OTHER FEATURES: PARTINGS, SPECKLED, CALCAREOUS
FINING-UPWARD SEQUENCE OF PHOSPHATIC/QUARTZ SANDS.

188 - 189.5 CALCILUTITE; LIGHT OLIVE GRAY
07% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC SAND-02% CLAY-02%, DOLOMITE- %
OTHER FEATURES: DOLOMITIC, PARTINGS, CHALKY
DENSE DOLOMITIC CALCILUTITE. MINOR SANDY PARTINGS.

189.5- 198 CLAY; OLIVE GRAY TO LIGHT OLIVE GRAY
05% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-12%, PHOSPHATIC SAND-03%
OTHER FEATURES: PARTINGS, PLASTIC, CALCAREOUS
UNIT IS SANDIEST TOWARDS TOP (TO 30%). LOWER SECTION IS CLEAN CLAY WITH VERY THIN SANDY PARTINGS.

198 - 198.7 CALCILUTITE; YELLOWISH GRAY
14% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
ACCESSORY MINERALS: CLAY-25%, PHOSPHATIC SAND-02%
OTHER FEATURES: MUDDY
BOTTOM OF PEACE RIVER FM.

198.7- 201 LIMESTONE; VERY LIGHT GRAY TO DARK GRAY
20% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: CHERT-25%, PHOSPHATIC GRAVEL-05%
PHOSPHATIC SAND-03%
OTHER FEATURES: VARIEGATED, WEATHERED
FOSSILS: MOLLUSKS, CORAL, WORM TRACES, SHARKS TEETH
DESSICATED AND ALTERED TOP OF THE ARCADIA FM. INFILL CONSISTS OF WEATHERED CLASTS AND PHOSPHATIC CALCILUTITE. PARTIALLY SILICIFIED (DOLOMITIZED?).

201 - 207.5 CALCILUTITE; WHITE TO YELLOWISH GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELETAL, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, CLAY-12%
PHOSPHATIC SAND-03%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS
CLAY PORTION IS DISSEMINATED AND MOLD-FILL.

207.5- 213.5 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
08% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: CLAY-05%, PHOSPHATIC SAND-02%
DOLOMITE- %
OTHER FEATURES: DOLOMITIC, CHALKY
VARIABLY CLAYEY. MINOR PHOSPHATIC PARTINGS, CLAY BLEBS.

213.5- 228 LIMESTONE; YELLOWISH GRAY TO OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, CROSS-BEDDED
GRADED BEDDING
ACCESSORY MINERALS: CLAY-18%, PHOSPHATIC SAND-03%
QUARTZ SAND-01%, DOLOMITE- %
OTHER FEATURES: DOLOMITIC, CHALKY, PARTINGS, VARIEGATED
INTERBEDDED CLAYEY/DOLOMITIC CALCILUTITE AND GRADED
CROSSBED SEQUENCES OF CALCAREOUS CLAY AND PHOSPHATIC
CALCILUTITE.

228 - 231.7 CALCILUTITE; YELLOWISH GRAY
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELTAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-04%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA
ARCHAIAS AT 229'?

231.7- 238.6 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT GRAY
22% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-06%
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS

238.6- 244 CALCILUTITE; VERY LIGHT GRAY TO YELLOWISH GRAY
15% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, DOLOMITE- %
OTHER FEATURES: VARIEGATED, DOLOMITIC
FOSSILS: MOLLUSKS, ECHINOID, CORAL
VARIABLY DOLOMITIC AND WELL-INDURATED; EUHEDRAL DOLOMITE XL (3MM) IN VUG AT 243.5'.

244 - 251 CALCILUTITE; YELLOWISH GRAY TO VERY LIGHT GRAY
22% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-03%, QUARTZ SAND-02%
DOLOMITE- %
OTHER FEATURES: CHALKY, DOLOMITIC, PARTINGS
FOSSILS: FOSSIL MOLDS
UP TO 10% QUARTZ, 8% PHOSPHATE IN THIN BEDS.

251 - 252.5 CALCILUTITE; LIGHT GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-10%, PHOSPHATIC SAND-05%
DOLOMITE- %
OTHER FEATURES: CHALKY, SPECKLED

252.5- 258.8 CALCILUTITE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-04%, QUARTZ SAND-02%
OTHER FEATURES: CHALKY
THIN QUARTZ-SANDY (50%) BED AT 253.5'.

258.8- 265.5 CALCILUTITE; YELLOWISH GRAY
20% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-02%
PHOSPHATIC GRAVEL-02%, CHERT-02%, QUARTZ SAND-01%
OTHER FEATURES: CHALKY
LOWER HALF OF UNIT CONTAINS ANGULAR PHOSPHATIC CLASTS (1-5 CM). SOME SANDY INTERVALS. 1" CHERT LENS AT 260'.

265.5- 269 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
CLAY MATRIX
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED
ACCESSORY MINERALS: CLAY-30%, QUARTZ SAND-05%
PHOSPHATIC SAND-04%, PHOSPHATIC GRAVEL-03%
OTHER FEATURES: DOLOMITIC, CHALKY
DOLOMITIC AND/OR CLAYEY CALCILUTITE (VARIABLY PHOSPHATIC/QUARTZ SANDY) INTERFINGERED WITH SANDY CALCAREOUS CLAY.

269 - 273.8 CALCILUTITE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
18% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: CLAY-40%, PHOSPHATIC SAND-08%
QUARTZ SAND-08%
OTHER FEATURES: CHALKY, VARIEGATED, PARTINGS
THINLY BEDDED CLAYEY CALCILUTITE AND CALCAREOUS CLAY; BOTH PHOSPHATIC/QUARTZ SANDY.

273.8- 281 LIMESTONE; YELLOWISH GRAY TO MODERATE DARK GRAY
18% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: DOLOMITE- %, PHOSPHATIC SAND-07%
QUARTZ SAND-05%, CHERT-03%
OTHER FEATURES: VARIEGATED, DOLOMITIC
FOSSILS: MOLLUSKS
IRREGULARLY INTERFINGERED/INFILLED DOLOMITIC SANDY CALCILUTITE AND DOLOMITIC CHERTY VERY-SANDY CALCILUTITE.

281 - 290 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
14% POROSITY: FRACTURE, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: DOLOMITE- %, PHOSPHATIC GRAVEL-05%
CLAY-05%, PHOSPHATIC SAND-03%
OTHER FEATURES: DOLOMITIC, VARIEGATED
DOLOMITIC CALCILUTITE WITH NUMEROUS PHOSPHATIC CLASTS.
UNIT CONTAINS MANY SANDY-CLAY INFILLED FRACTURES, BURROWS OR SHRINKAGE CRACKS.

290 - 292.2 CHERT; DARK YELLOWISH BROWN
02% POROSITY, GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT
ACCESSORY MINERALS: CALCILUTITE-25%

292.2- 298.4 CLAY; DARK GREENISH GRAY TO YELLOWISH GRAY
06% POROSITY: LOW PERMEABILITY, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: PLASTIC, PARTINGS
BEDDED OLIVE CLAY CONTAINING BED OF SLIGHTLY CLAYEY, LIGHT CALCILUTITE.

298.4- 304.2 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: DOLOMITIC, CHALKY
BOTTOM .2' CONTAINS UP TO 20% ANGULAR-ROUNDED PHOSPHATIC CLASTS, GRADING UPWARD INTO 1' OF CLAYEY CALCILUTITE.

304.2- 305.2 SILT; YELLOWISH GRAY
16% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: CLAY-30%, CALCILUTITE-30%
PHOSPHATIC SAND-02%
OTHER FEATURES: CALCAREOUS
CAPPED WITH .5" BAND OF OLIVE CLAY CONTAINING 1 CM LITHIC CLASTS.

305.2- 309.2 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %, PHOSPHATIC SAND-01%
OTHER FEATURES: DOLOMITIC, CHALKY

309.2- 312 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
CLAY MATRIX
ACCESSORY MINERALS: DOLOMITE- %, CLAY-15%
PHOSPHATIC SAND-07%, QUARTZ SAND-01%
OTHER FEATURES: DOLOMITIC, CHALKY, SPECKLED

312 - 317 CALCILUTITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %, CLAY-15%
PHOSPHATIC SAND-02%
OTHER FEATURES: CHALKY

317 - 319 CLAY; LIGHT OLIVE GRAY TO OLIVE GRAY
18% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, LAMINATED
ACCESSORY MINERALS: CALCILUTITE-40%, QUARTZ SAND-12%
PHOSPHATIC SAND-06%
OTHER FEATURES: CHALKY, GRANULAR, PARTINGS
THINLY BEDDED; VARIABLY CALCILUTITIC.

319 - 323 CALCILUTITE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
CLAY MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE- %, CLAY-18%
PHOSPHATIC SAND-03%
OTHER FEATURES: DOLOMITIC, CHALKY
INTERBEDS OF VERY CLAYEY CALCILUTITE.

323 - 325.5 DOLOSTONE; LIGHT OLIVE GRAY
07% POROSITY: LOW PERMEABILITY; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED
ACCESSORY MINERALS: CALCILUTITE-15%, PHOSPHATIC SAND-04%
LIMESTONE-03%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: CALCAREOUS, VARIEGATED
FOSSILS: FOSSIL FRAGMENTS
SOME IRREGULAR INCLUSIONS OF SANDY AND GRAVEL-BEARING
CALCILUTITE AND WAXY CLAY.

325.5- 326 LIMESTONE; LIGHT OLIVE GRAY TO MODERATE LIGHT GRAY
25% POROSITY: INTERGRANULAR, MOLDIC, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-40%, DOLOMITE-05%
PHOSPHATIC SAND-02%
OTHER FEATURES: GRANULAR, VARIEGATED
FOSSILS: FOSSIL MOLDS
BOTOM OF UNDIFFERENTIATED ARCADIA FM.

326 - 334 SAND; LIGHT GRAY
35% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, IRON STAIN-01%
TOP OF TAMPA MEMBER OF ARCADIA FM. NO CORE RECOVERY -
SAMPLE DESCRIBED FROM FLUSHED CUTTINGS. 5% CALCAREOUS
SAND.

334 - 337 SAND; WHITE
33% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-05%
OTHER FEATURES: CALCAREOUS
SAND CONTAINS 20% CALCAREOUS FRAGMENTS (SAND-SIZED). NO
CORE RECOVERY - SAMPLE DESCRIBED FROM FLUSHED CUTTINGS.

337 - 340 LIMESTONE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-45%, PHOSPHATIC SAND-01%
OTHER FEATURES: GRANULAR, SUCROSIC, PARTINGS
FOSSILS: ALGAE
EXTREMELY SANDY LIMESTONE. SOME PARTINGS OF PURE QUARTZ SAND. SOME MAT STRUCTURES.

340 - 346 SAND; WHITE
33% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MEDIUM SPHERICITY; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-03%
OTHER FEATURES: CALCAREOUS

346 - 348 SANDSTONE; VERY LIGHT ORANGE
33% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; HIGH SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SILICIC CEMENT
ACCESSORY MINERALS: CALCILUTITE-25%, PHOSPHATIC SAND-02%
OTHER FEATURES: CALCAREOUS, GRANULAR, SUCROSIC, FROSTED

348 - 361 LIMESTONE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-45%
OTHER FEATURES: GRANULAR, PARTINGS, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
CONTAINS IRREGULAR SANDY MASSES OF DENSE DOLOMITIC LIMESTONE.

361 - 368.8 LIMESTONE; YELLOWISH GRAY
33% POROSITY: MOLDIC, INTRAGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: DOLOMITE-15%, PHOSPHATIC SAND-07%
OTHER FEATURES: DOLOMITIC, VARIEGATED
FOSSILS: MOLLUSKS
RUBBLY UNIT. UPPER 1' SHOWS SLUMP STUCTURES.

368.8- 376.6 LIMESTONE; YELLOWISH GRAY
27% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ SAND-30%, DOLOMITE-10%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: ALGAE, MOLLUSKS, BENTHIC FORAMINIFERA
VARIABLY LAMINATED WITH ALGAL MATS, DOLOMITIC HORIZONS.
SORITIES.

376.6- 385.5 LIMESTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-20%, DOLOMITE-10%
OTHER FEATURES: DOLOMITIC
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA
HARD, SLIGHTLY DOLOMITIC LIMESTONE WITH NUMEROUS GASTROPOD
BIVALVE MOLDS. CRYSTAL CALCITE IN SOME MOLDS.

385.5- 388.5 LIMESTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE-25%, QUARTZ SAND-15%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: ALGAE
ALGAL MATS. DISSEMINATED DOLOMITE.

388.5- 393 LIMESTONE; YELLOWISH GRAY
27% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: QUARTZ SAND-38%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: PARTINGS, GRANULAR
QUARTZ SAND PARTINGS AND INTERBEDS.

393 - 397.5 LIMESTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-35%, PHOSPHATIC SAND-01%
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: WORM TRACES, FOSSIL FRAGMENTS

397.5- 407 LIMESTONE; YELLOWISH GRAY TO DARK GRAY
22% POROSITY: MOLDIC
GRAIN TYPE: CALCILUTITE; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-30%, DOLOMITE-25%
PHOSPHATIC SAND-01%
OTHER FEATURES: DOLOMITIC
FOSSILS: MOLLUSKS, CORAL
POROUS CREAM-COLORED SANDY CALCILUTITE AND DENSE GRAY SANDY
DOLOMITIC LIMESTONE.

407 - 414.5 LIMESTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-45%, PHOSPHATIC SAND-01%
OTHER FEATURES: GRANULAR, CHALKY, PARTINGS
FOSSILS: MOLLUSKS, WORM TRACES, FOSSIL FRAGMENTS
SANDY TO EXTREMELY SANDY. SLUMP STRUCTURES. MINOR
EUHEDRAL QUARTZ IN MOLDS.

414.5- 421 LIMESTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
ACCESSORY MINERALS: QUARTZ SAND-40%
OTHER FEATURES: GRANULAR, SUCROSIC, CHALKY

421 - 424.2 LIMESTONE; YELLOWISH GRAY TO GRAYISH YELLOW
28% POROSITY: FRACTURE, MOLDIC, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, MOTTLED
ACCESSORY MINERALS: DOLOMITE-15%, CLAY-03%
PHOSPHATIC SAND-01%
OTHER FEATURES: DOLOMITIC, VARIEGATED
FOSSILS: MOLLUSKS
SECONDARY DRUSY CALCITE ON SOME SURFACES.

424.2- 426 CHERT; OLIVE GRAY
05% POROSITY: MOLDIC; GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT
ACCESSORY MINERALS: LIMESTONE-20%
OTHER FEATURES: VARIEGATED
FOSSILS: MOLLUSKS
CONTAINS LIMESTONE CLASTS, INTERFINGERS, AND/OR
FRACTURE-FILL.

426 - 439 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BRECCIATED, NODULAR
ACCESSORY MINERALS: QUARTZ SAND-15%, DOLOMITE-10%
FOSSILS: MOLLUSKS
UNIT IS VARIABLY QUARTZ-SANDY, SLIGHTLY DOLOMITIC, OR
RELATIVELY PURE LIMESTONE. SOME BRECCIATED ZONES.

439 - 459.8 LIMESTONE; YELLOWISH GRAY
22% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-10%, QUARTZ SAND-10%
PHOSPHATIC SAND-01%
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS
SLIGHTLY DOLOMITIC CALCARENITE AND VARIABLY SANDY
CALCILUTITE.

459.8- 460 LIMESTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: FRACTURE
GRAIN TYPE: CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, STREAKED
ACCESSORY MINERALS: DOLOMITE-45%
OTHER FEATURES: DOLOMITIC, VARIEGATED
THIN (1/4") HORIZON OF CALCAREOUS CLAY AT BASE.

460 - 464 LIMESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
18% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-25%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: DOLOMITIC, PARTINGS
FOSSILS: WORM TRACES
RELATIVELY PURE FINE-GRAINED CALCARENITE, AND HARD DENSE
DOLOMITIC LIMESTONE.

464 - 467 NO SAMPLES

467 - 467.3 LIMESTONE; WHITE
POROSITY: MOLDIC, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO GRANULE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: ORGANICS, FOSSIL FRAGMENTS
BROWN ORGANIC OR BONE FRAGMENTS. RUBBLY.

467.3- 469 CHERT; DARK YELLOWISH BROWN TO LIGHT GRAY
05% POROSITY: VUGULAR; GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: LIMESTONE-08%
THIN HORIZON OF DOLOMITIC LIMESTONE NEAR BASE.

469 - 474 NO SAMPLES
NO CORE RECOVERY. CHERT FRAGMENTS BLOCK BIT DURING 5' RUN.

474 - 484.5 CALCARENITE; VERY LIGHT ORANGE
28% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, WORM TRACES, MOLLUSKS
VERY FINE GRAINED CALCARENITE AND FOSSILIFEROUS PACKSTONE
(MAINLY ARCHAIAS TESTS).

484.5- 489 NO SAMPLES
FLUSHED CUTTINGS FINE FRAGMENTS OF LIMESTONE, QUARTZ SAND
AND PHOSPHATIC SAND.

489 - 497 CALCARENITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, FRACTURE, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, PELLET
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
TRACE OF SLICKENSIDES AT 493.7'.

497 - 504 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-10%
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, CORAL
BEDS OF RECRYSTALLIZED CORAL AND PARTLY RECRYSTALLIZED
MOLLUSK HASH IN VERY FINE GRAINED CALCARENITE.

504 - 513.5 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-10%
OTHER FEATURES: GRANULAR, CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
CONTAINS BEDS OF FORAM (ARCHAIAS) HASH, AND VARIABLE
AMOUNTS OF RECRYSTALLIZED CALCITE.

513.5- 521 CALCILUTITE; YELLOWISH GRAY TO WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC, SKELTAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: CLAY-10%, CALCITE-03%
OTHER FEATURES: MUDDY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS
INTERBEDS OF CALCILUTITIC PASTE AND HARD FORAMINIERFAL
CALCARENITE (ARCHAIAS). SOME RECRYSTALLIZED CALCITE IN THE
CALCARENITE.

521 - 524.5 CALCARENITE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CLAY-05%
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, SPICULES

524.5- 526.5 SAND; LIGHT OLIVE GRAY TO GREENISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, CALCILUTITE MATRIX
ACCESSORY MINERALS: CLAY-35%, CALCILUTITE-15%
OTHER FEATURES: CALCAREOUS, MUDDY
VERY FINE QUARTZ SAND WITH ABUNDANT INTERSTITIAL PALE
OLIVE-GREEN CALCAREOUS CLAY.

526.5- 528.8 CALCILUTITE; YELLOWISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-40%, CLAY-05%

528.8- 530 CALCARENITE; YELLOWISH GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-18%, CLAY-03%

530 - 536.5 CALCARENITE; YELLOWISH GRAY
24% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: BIOGENIC, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CLAY-02%, QUARTZ SAND-02%, CHERT-02%
FOSSILS: MOLLUSKS
DENSE HARD VERY FINE GRAINED CALCARENITE. MUCH OF MATRIX IS RECRYSTALLIZED. SECONDARY CALCITIC FRACTURE/BURROW-FILL. CONTAINS ANGULAR-SUBANGULAR GRAINS OF OPALESCENT BLUE-GRAY CHERT.

536.5- 539 NO SAMPLES
LOST FOOTAGE WHEN OVERDRILLED HOLE TO REAM FOR NEW CASING SEAT.

539 - 544 LIMESTONE; LIGHT OLIVE GRAY TO YELLOWISH GRAY
20% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-40%, CHERT-04%
OTHER FEATURES: PARTINGS, GRANULAR
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, MILIOLIDS
MOST CRUMBLED DURING CORING. VARIABLY RECRYSTALLIZED PACKSTONE AND DENSE RECRYSTALLIZED CALCARENITE. FORAM FRAGMENTS AND GRAINS (.5 - 2MM) OF OPALESCENT BLUE-GRAY CHERT. THIS ZONE MARKS TRANSITION TO SUWANNEE-DOMINANT LITHOLOGY. BOTTOM OF TAMPA MEMBER OF ARCADIA FORMATION.

544 - 549 NO SAMPLES
UNIT CRUMBLED ON CORING. CORE RUBBLE IS A MIXTURE OF TAN CHERT, PALE ORANGE CALCARENITE, AND PALE ORANGE-GRAY RECRYSTALLIZED CALCARENITE.

549 - 551 CALCARENITE; VERY LIGHT ORANGE TO GRAYISH ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-15%, PYRITE-01%
OTHER FEATURES: GRANULAR, SUCROSIC, PARTINGS
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, MILIOLIDS
FOSSIL FRAGMENTS
RECRYSTALLIZED SKELETAL PACKSTONE. MILLIOLIDS COMMON. VARIABLY BRECCIATED AND MOTTLED. TOP OF SUWANNEE FORMATION AT 549'.

551 - 557.5 CALCARENITE; VERY LIGHT ORANGE
28% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, MILIOLIDS, CORAL
VERY PURE CHALKY LIMESTONE. SORITES, ARCHAIAS (?). SOME VUGS AND BURROWS COATED WITH DRUSY BROWN CALCITE.

557.5- 564 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELTAL CAST, BIOGENIC, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, MILIOLIDS
WORM TRACES
SORITES.

564 - 570 CALCARENITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELTAL CAST
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
VARIABLY FRIABLE

570 - 574 NO SAMPLES
PROBABLY POORLY CEMENTED, FRIABLE CHALKY CALCARENITE.

574 - 596 CALCARENITE; VERY LIGHT ORANGE
28% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, SPICULES
CHALKY BUT PERMEABLE. CALCIFIED BURROW SURFACE AT 580.

596 - 599 CALCARENITE; VERY LIGHT ORANGE
40% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELTAL CAST, BIOGENIC, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS
MILIOLIDS
MOLDIC CALCARENITE.

599 - 614 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: INTERGRANULAR, MOLDIC
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, BIOGENIC, SKELTAL CAST
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, MOLLUSKS
INTERBEDS OF MOLDIC/SLIGHTLY MOLDIC GRAINY CALCARENITE.

614 - 617 NO SAMPLES

617 - 618 CALCARENITE; VERY LIGHT ORANGE
33% POROSITY: INTERGRANULAR, MOLDIC
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, MOLLUSKS

618 - 623 CALCARENITE; VERY LIGHT ORANGE
45% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELTAL CAST, BIOGENIC
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, MILIOLIDS
619'-623' CRUMBLED ON CORING - MOLDIC AND BRITTLE.

623 - 645 CALCARENITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS

645 - 655 CALCARENITE; VERY LIGHT ORANGE
38% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: BIOGENIC, SKELTAL CAST
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
MOLDIC PACKSTONE. SOME SECONDARY CALCITE. SORITES.

655 - 659 CALCARENITE; VERY LIGHT ORANGE
33% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: FOSSIL FRAGMENTS

659 - 668 CALCARENITE; VERY LIGHT ORANGE
45% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELTAL CAST, BIOGENIC
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-02%
OTHER FEATURES: GRANULAR
POOR CORE RECOVERY. FRAGMENTS ARE HIGHLY MOLDIC, HARD
BRITTLE. SLIGHTLY DOLOMITIC.

668 - 680 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST, PELLET
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, MILIOLIDS
VARIABLY CALCILUTITIC FOSSILIFEROUS PACKTONE. SORITES.
NUMEROUS BIVALVE, GASTROPODS, MILLIOLIDS.

680 - 684.5 CALCARENITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, PELLET, SKELTAL CAST
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, SPICULES
POOR CORE RECOVERY - MAY BE DUE TO MORE CALCILUTITIC
MATRIX.

684.5- 693 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
45% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST, PELLET
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, WORM TRACES, ECHINOID
BROKE UP ON CORING. HIGHLY MOLDIC, BRITTLE. DOLOMITIC?

693 - 694.5 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
35% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, SPICULES

694.5- 698 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
35% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST, PELLET
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ-01%
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MOLLUSKS, WORM TRACES, MILIOLIDS
TRACE AMOUNTS DRUSY QUARTZ IN MOLDS.

698 - 704 CALCARENITE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
28% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %, HEAVY MINERALS-01%
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS
WELL SORTED, SLIGHTLY DOLOMITIC. HEAVY MINERAL SPECKS(?)

704 - 708 CALCARENITE; YELLOWISH GRAY
33% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST, INTRACLASTS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, MILIOLIDS
WORM TRACES
SOMEWHAT DOLOMITIC. THIN BEDS OF RUBBLY BASAL INTRACLASTS
IN BOTTOM FOOT.

708 - 715.5 CALCARENITE; YELLOWISH GRAY TO GRAYISH ORANGE
30% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: GRADED BEDDING, CROSS-BEDDED
ACCESSORY MINERALS: DOLOMITE- %, HEAVY MINERALS-05%
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS
TWO FINING-UPWARD SEQUENCES OF WELL-SORTED VERY FINE
GRAINED CALCARENITE. FAINT CROSS BEDDING. DISSEMINATED
DOLOMITE.

715.5- 721.5 CALCARENITE; YELLOWISH GRAY TO GRAYISH ORANGE
38% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELTAL CAST
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE- %
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MOLLUSKS, MILIOLIDS, CORAL, BENTHIC FORAMINIFERA
MODERATELY HARD POROUS DOLOMITIZED CALCARENITE.

721.5- 726.5 CALCILUTITE; YELLOWISH GRAY TO GRAYISH YELLOW
20% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: GRADED BEDDING
ACCESSORY MINERALS: DOLOMITE- %
OTHER FEATURES: CHALKY, DOLOMITIC, PARTINGS, SPECKLED
VARIEGATED
DOLOMITIZED CALCILUTITE, VARIABLY CONTAINING DOLOMITIC
LITHIC FRAGMENTS (2 - 30MM). SOME ORGANIC PARTINGS. FEW
MOLLUSK MOLDS.

726.5- 732 CALCARENITE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELTAL CAST, PELLET
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE- %
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MOLLUSKS, FOSSIL FRAGMENTS, MILIOLIDS
HARD VARIABLY-DENSE, VARIABLY-POROUS DOLOMITIC CALCARENITE.
VUG-FILL SECONDARY DOLOMITE MASSES AT 726.5'.

732 - 733 CALCARENITE; YELLOWISH GRAY
22% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
OCALA-TYPE LITHOLOGY, POSSIBLE LEPIDOCYCLINA. REWORKED?

733 - 734 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: BIOGENIC, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE- %
OTHER FEATURES: GRANULAR, DOLOMITIC, PARTINGS
FOSSILS: MOLLUSKS, MILIOLIDS, CORAL
INTERFINGER OF SUWANNEE LITHOLOGY. SOME FRACTURE FILL OF ORGANICS OR OXIDE. BOTTOM OF SUWANNEE FORMATION.

734 - 744.2 CALCARENITE; YELLOWISH GRAY TO GRAYISH YELLOW
22% POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
CALCILUTITIC CALCARENITE WITH LEPIDOCYCLINA. TOP OF OCALA GROUP.

744.2- 745.4 CALCARENITE; YELLOWISH GRAY
30% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, WORM TRACES
BRYOZOA

745.4- 749 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE; 55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA.

749 - 767.5 CALCILUTITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
LEPIDOCYCLINA.

767.5- 771.5 CALCILUTITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS
UNIT PULVERIZED ON CORING.

771.5- 774 CALCILUTITE; VERY LIGHT ORANGE
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
LEPIDOCYCLINA COMMON AT 772'.

774 - 779 NO SAMPLES

779 - 784.2 CALCILUTITE; VERY LIGHT ORANGE
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS

784.2- 799 CALCARENITE; VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
NUMMULITES COMMON. LEPIDOCYCLINA. FRIABLE ZONES AT 792' 795'.

799 - 804 CALCILUTITE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS

804 - 808.8 CALCARENITE; VERY LIGHT ORANGE
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA
LEPIDOCYCLINA.

808.8- 813.5 CALCARENITE; VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
LEPIDOCYCLINA.

813.5- 827 CALCARENITE; VERY LIGHT ORANGE
22% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL FRAGMENTS

827 - 829 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
BRITTLE MOLDIC ZONE. LEPIDOCYCLINA, MOLLUSKS COMMON.

829 - 835 CALCARENITE; VERY LIGHT ORANGE
27% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
LEPIDOCYCLINA. SOMEWHAT BETTER INDURATED THAN ABOVE.

835 - 853 CALCARENITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL MOLDS
INTERBEDS OF FINE GRAINED CHALKY CALCARENITE AND FORAM-RICH
PACKSTONE. LOWER PORTION IS BEST INDURATED.

853 - 854 LIMESTONE; YELLOWISH GRAY
12% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DENSE HARD RECRYSTALLIZED BED (DOLOMITIC?). NUMMULITES.

854 - 870.5 CALCARENITE; VERY LIGHT ORANGE
27% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, BIOGENIC
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
VARIABLY INDURATED FORAM-RICH CALCARENITE. NUMMULITES LEPIDOCLYCLINA.

870.5- 879 CALCARENITE; VERY LIGHT ORANGE TO YELLOWISH GRAY
18% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
FOSSILS: BENTHIC FORAMINIFERA
INTERBEDDED DENSE HARD RECRYSTALLIZED (DOLOMITIC?) LIMESTONE AND VERY FINE GRAINED CALCARENITE.
LEPIDOCYCLINA.

879 - 895.5 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, ORGANICS
VARIABLY FORAM-PACKED AND CALCILUTITIC. DISSEMINATED ORGANIC SPECKS.

895.5- 896 LIMESTONE; YELLOWISH GRAY
06% POROSITY: INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ORGANICS
DENSE HARD RECRYSTALLIZED BED. LEPIDOCYCLINA. CORE PULVERIZED 896'-899'.

896 - 914 CALCARENITE; YELLOWISH GRAY
33% POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, SKELETAL
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA
VARIABLY CALCILUTITIC FORAM-RICH CALCARENITE. MANY LEPIDOCYCLINA. NUMMULITES COMMON.

914 - 931.5 NO SAMPLES
NO CORE RECOVERY. FINE CUTTINGS SIMILAR TO ABOVE.

931.5- 937 DOLOSTONE; MODERATE YELLOWISH BROWN
35% POROSITY: MOLDIC, INTERGRANULAR; 0-10% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: SUCROSIC, GRANULAR
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
DOLOMITIZED CALCARENITE. MOLDS OF NUMMULITES LEPIDOCYCLINA VERY COMMON.

937 - 990 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
08% POROSITY: MOLDIC, FRACTURE; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
MUCH OF UNIT CONTAINS MANY LEPIDOCYCLINA AND NUMMULITES MOLDS. TRACE DISSEMINATED ORGANICS. SOME MEDIUM GRAINED SUCROSIC ZONES.

990 - 999.5 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: MOLDIC, FRACTURE; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
MOLDS ARE MAINLY FROM NUMMULITES.

999.5- 1021 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE OLIVE BROWN
05% POROSITY: MOLDIC, FRACTURE; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
FOSSILS: FOSSIL MOLDS, ORGANICS, BENTHIC FORAMINIFERA
ORGANICS ARE DISSEMINATED SPECKS (1-3%), VEINLETS, AND SHARDS. NUMMULITES MOLDS. MOTTLING (INFILLED BURROWS?) MOST PRONOUNCED NEAR BASE. REWORKED AVON PARK SEDIMENTS AT BASE?

1021 - 1021.4 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: MOLDIC, FRACTURE; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS, ORGANICS, BENTHIC FORAMINIFERA
NUMMULITES MOLDS. OCALA TYPE SEDIMENTS AGAINST ORGANIC-RICH AVON PARK SEDIMENTS.

1021.4- 1022 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE OLIVE BROWN
03% POROSITY: LOW PERMEABILITY, MOLDIC; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, ORGANICS
MOTTLED (BURROWED?) REWORKED AVON PARK SEDIMENTS? FEW MOLDS - APPEAR TO BE NUMMULITES. BOTTOM OF OCALA GROUP SEDIMENTS.

1022 - 1023 SILT-SIZE DOLOMITE; DARK YELLOWISH BROWN TO DARK BROWN
15% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): ORGANIC MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED, CROSS-BEDDED
OTHER FEATURES: PARTINGS, MUDDY, VARIEGATED
FOSSILS: ORGANICS
SLOPING LAMINAE OF ORGANIC-RICH DOLOSILT. TOP OF AVON PARK FM.

1023 - 1024.1 DOLOSTONE; DARK YELLOWISH BROWN TO DARK BROWN
10% POROSITY: INTERGRANULAR, FRACTURE; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ORGANIC MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED, MOTTLED
OTHER FEATURES: PARTINGS
SHRINKAGE-CRACKED DOLOMITE WITH ORGANIC-RICH DOLOSILT INFILL.

1024.1- 1029 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
06% POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, BEDDED
FOSSILS: FOSSIL MOLDS, ECHINOID
MOLDS APPEAR TO BE ECHINOIDS.

1029 - 1033.6 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
27% POROSITY: MOLDIC; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS, ECHINOID
POOR CORE RECOVERY. PROBABLY VERY MOLDIC (ECHINOIDS - P. DALLI?).

1033.6- 1055 DOLOSTONE; MODERATE YELLOWISH BROWN
08% POROSITY: MOLDIC, FRACTURE; 10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: CROSS-BEDDED
OTHER FEATURES: PARTINGS, SUCROSIC
FOSSILS: ECHINOID, ORGANICS
INTERBEDS OF ECHINOID-RICH, FAINTLY TO DISTINCTLY CROSS-BEDDED GRANULAR DOLOMITE. DISSEMINATED (1%) ORGANIC SPECKS AND ORGANIC PARTINGS. SOME DOLOSILT PARTINGS.

1055 - 1074 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: MOLDIC, FRACTURE, INTERGRANULAR
10-50% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: CROSS-BEDDED
OTHER FEATURES: PARTINGS, SUCROSIC, VARIEGATED
FOSSILS: ECHINOID, ORGANICS
VARIABLY ORGANIC CROSS-BEDDED DOLOMITE. MUCH OF ORGANICS CONCENTRATED IN LAMELLAE. SOME POOR RECOVERY 1059'-1074' IS PROBABLY POROUS BRITTLE SUCROSIC DOLOMITE. WHITE CALCARENITE CLAST (1.5") AT 1071'. FEW ECHINOID MOLDS.

1074 - 1077 CALCARENITE; VERY LIGHT ORANGE TO WHITE
35% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, PELLET, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED
OTHER FEATURES: GRANULAR, CHALKY, PARTINGS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DICTYOCONUS. PARTINGS ALONG FAINT CROSSBEDS. VERY POROUS.

1077 - 1078 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELETAL, PELLET
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: CROSS-BEDDED
OTHER FEATURES: PARTINGS, GRANULAR, CHALKY
FOSSILS: BENTHIC FORAMINIFERA, ALGAE, FOSSIL FRAGMENTS
ORGANICS
CONTAINS ORGANIC LAMILLAE OR ALGAL MATS. VARIOUS FORAMS.
DICTYOCONUS.

1078 - 1079.5 CALCARENITE; VERY LIGHT ORANGE
45% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELETAL, BIOGENIC
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: CHALKY, GRANULAR
FOSSILS: OOLITES, ECHINOID, MOLLUSKS, FOSSIL MOLDS
WORM TRACES
PACKSTONE OF FOSSIL FRAGMENTS IN POROUS CALCILUTITE MATRIX.

1079.5- 1084 CALCARENITE; VERY LIGHT ORANGE
40% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELETAL
55% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BIOTURBATED
OTHER FEATURES: CHALKY
FOSSILS: PLANT REMAINS
POOR CORE RECOVERY ZONE. CORE FRAGMENTS ARE RIDDLED WITH
ROOTLET MOLDS.

1084 - 1089 CALCARENITE; VERY LIGHT ORANGE
35% POROSITY: INTERGRANULAR, MOLDIC
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MASSIVE
OTHER FEATURES: CHALKY
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, WORM TRACES
SOFT CHALK WITH THIN FOSSILIFEROUS BEDS. BOTTOM 1" IS
OLIVE, DENSE, FINE GRAINED LIMESTONE. TD OF CORE = 1089'.
DESCRIPTION OF CUTTINGS FOLLOWS FROM HOLE 200' AWAY.

1089 - 1105 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: GRANULAR, VARIEGATED
FOSSILS: CONES, BENTHIC FORAMINIFERA, ECHINOID
FOSSIL FRAGMENTS
OLIVE DOLOMITE & FINE DOLOMITIC CALCARENITE. SOME BROWN
DOLOMITE. DICTYOCONUS.

1105 - 1110 CALCARENITE; PINKISH GRAY
POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, BIOGENIC, CALCILUTITE
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: CONES, ECHINOID, FOSSIL FRAGMENTS
DICTYOCONUS, ECHINOIDS COMMON.

1110 - 1120 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: GRANULAR, VARIEGATED
FOSSILS: CONES, ECHINOID, FOSSIL FRAGMENTS
DOLOMITIZED & DOLOMITIC CALCARENITE. MINOR BROWN DOLOMITE.
DICTYOCONUS.

1120 - 1125 CALCILUTITE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
FOSSILS: ECHINOID, CONES, FOSSIL FRAGMENTS
MINOR FINE GRAINED CALCARENITE & GRAY DOLOMITIC LIMESTONE.

1125 - 1130 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MASSIVE
FOSSILS: ECHINOID, FOSSIL FRAGMENTS

1130 - 1140 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MASSIVE, STREAKED
FOSSILS: ORGANICS, ECHINOID, FOSSIL FRAGMENTS
BROWN DOLOMITE WITH CARBONACEOUS STREAKS.

1140 - 1145 CALCARENITE; VERY LIGHT ORANGE TO PINKISH GRAY
GRAIN TYPE: BIOGENIC, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: DOLOMITIC, GRANULAR
FOSSILS: FOSSIL FRAGMENTS
WITH SUBEQUAL CRYSTALLINE BROWN DOLOMITE.

1145 - 1150 CALCARENITE; VERY LIGHT ORANGE
GRAIN TYPE: BIOGENIC, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, GRANULAR
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
MINOR BROWN DOLOMITE.

1150 - 1155 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MASSIVE
FOSSILS: ORGANICS

1155 - 1170 DOLOSTONE; DARK YELLOWISH BROWN TO LIGHT OLIVE GRAY
POROSITY: INTERGRANULAR, VUGULAR
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: PARTINGS, GRANULAR
FOSSILS: ORGANICS
GRANULAR DOLOMITE/DOLOMITIZED CALCARENITE. DISSEMINATED & VARVED ORGANICS.

1170 - 1180 LIMESTONE; YELLOWISH GRAY
GRAIN TYPE: CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CHALKY
CALCILUTITE AND VERY FINE CALCARENITE.

1180 - 1185 CALCARENITE; YELLOWISH GRAY TO VERY LIGHT ORANGE
POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, SKELETAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MILIOLIDS
DOLOMITIC CALCARENITE. MILLIOLID-RICH BEDS.

1185 - 1190 CALCARENITE; GRAYISH ORANGE
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, PELLET, BIOGENIC
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR, DOLOMITIC
FOSSILS: MILIOLIDS, ORGANICS, FOSSIL FRAGMENTS
FINE CALCARENITE AND MEDIUM GRAINED PACKSTONE OF PELLETS MILLIOLIDS AND FOSSIL FRAGMENTS. ORGANIC PARTINGS IN CALCARENITE.

1190 - 1195 CALCARENITE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC, CALCILUTITE
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS, ORGANICS
VERY FINE CALCARENITE AND POROUS BROWN DOLOMITE.

1195 - 1200 DOLOSTONE; DARK YELLOWISH BROWN
POROSITY: VUGULAR, POSSIBLY HIGH PERMEABILITY
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
VERY DARK BROWN DOLOMITE - SOME IS VERY POROUS (SECONDARY POROSITY, MUCH RECRYSTALLIZED DOLOMITE IN VUGS).

1200 - 1215 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
CRYSTALLINE DOLOMITE - RECRYSTALLIZED DOLOMITE ON CAVITY WALLS. ORGANIC CLAY AT 1208'.

1215 - 1225 DOLOSTONE; GRAYISH BROWN
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
LIGHTER BROWN WITH DISSEMINATED ORGANICS.

1225 - 1230 DOLOSTONE; YELLOWISH GRAY TO DARK YELLOWISH BROWN
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX
OTHER FEATURES: VARIEGATED
FOSSILS: ORGANICS
TAN AND BROWN CRYSTALLINE DOLOMITE. FINE SPECKS OF ORGANICS. (MUCH SLUFF-IN OF OCALA MATERIAL).

1230 - 1250 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: VARIEGATED
FOSSILS: ORGANICS
TAN & LIGHT BROWN DOLOMITE. SOME ORGANIC VARVES, SPECKS.

1250 - 1260 DOLOSTONE; MODERATE YELLOWISH BROWN
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
TRACES EUHEDRAL, CLEAR QUARTZ AS VUG LINING. MINOR ORGANIC SPECKS IN DOLOMITE.

1260 - 1265 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: NOT OBSERVED; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
FOSSILS: NO FOSSILS
TAN RECRYSTALLIZED DOLOMITE WITH BROWN GRANULAR ORGANIC DOLOMITE.

1265 - 1270 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: ORGANICS
ORGANIC VARVES AND SPECKS. MORE POROUS THAN OVERLYING BEDS.

1270 - 1295 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
SLIGHTLY ORGANIC 1280-1285'.

1295 - 1305 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
TAN, GRANULAR POROUS DOLOMITE.

1305 - 1310 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: GRANULAR
FOSSILS: ORGANICS
SOME DARK BROWN VUGGY DOLOMITE.

1310 - 1325 DOLOSTONE; DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FOSSILS: ORGANICS
ORGANIC VARVES 1315-1320'.

1325 - 1335 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

1335 - 1340 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: ORGANICS
SOME ORGANIC VARVES; VERY ORGANIC, POROUS BED AT 1335'.

1340 - 1350 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FINELY GRANULAR. ORGANIC VARVES & SPECKS.

1350 - 1355 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: GRANULAR, PARTINGS
FOSSILS: ORGANICS
SOME ORGANIC VARVES.

1355 - 1365 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: NO FOSSILS

1365 - 1370 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FOSSILS: NO FOSSILS

1370 - 1375 DOLOSTONE; DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FOSSILS: ORGANICS
SOMEWHAT POROUS. FINE ORGANIC SPECKS.

1375 - 1380 DOLOSTONE; DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR, VUGULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
SOMEWHAT POROUS TAN MICROCRYSTALLINE DOLOMITE & SLIGHTLY
ORGANIC FINELY GRANULAR DOLOMITE.

1380 - 1390 DOLOSTONE; DARK YELLOWISH BROWN TO VERY LIGHT ORANGE
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
GRANULAR DOLOMITIZED CALCARENITE.

1390 - 1400 DOLOSTONE; MODERATE YELLOWISH BROWN TO VERY LIGHT ORANGE
POROSITY: INTERGRANULAR; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: ECHINOID
TRANSLUCENT MICROCRYSTALLINE - VERY FINE DOLOMITE.
DOLOMITIZED ECHINOID.

1400 - 1405 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
FOSSILS: ORGANICS
ORANGE-BROWN AND ORGANIC FINELY GRANULAR DOLOMITE.

1405 - 1415 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

1415 - 1420 CALCARENITE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR
GRAIN TYPE: BIOGENIC; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
DOLOMITIC CALCARENITE, GRANULAR ORANGE-BROWN DOLOMITE.

1420 - 1425 DOLOSTONE; MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FOSSILS: ORGANICS
DOLOMITIZED CALCARENITE. DISSEMINATED ORGANICS.

1425 - 1435 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
CUTTINGS SHOW A LOT OF OCALA SLUFF-IN (CALCARENITE WITH
NUMMULITES, LEPIDOCYCLINA, MILLIOLIDS).

1435 - 1450 DOLOSTONE; GRAYISH ORANGE
POROSITY: INTERGRANULAR; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
FOSSILS: ORGANICS
GRANULAR/DOLOMITIZED CALCARENITE. DISSEMINATED ORGANICS.

1450 - 1455 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

1455 - 1465 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

1465 - 1470 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
TAN AND BROWN MICROCRYSTALLINE DOLOMITE.

1470 - 1480 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: ORGANICS
MINOR ORGANIC PARTINGS.

1480 - 1490 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR, SUCROSIC, CALCAREOUS
EXTREMELY GRANULAR, WELL-SORTED DOLOMITIZED CALCARENITE.

1490 - 1495 DOLOSTONE; MODERATE BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

1495 - 1500 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: ORGANICS
MINOR ORGANIC PARTINGS. SLUFF-IN OF OCALA MATERIAL.

1500 - 1505 DOLOSTONE; MODERATE YELLOWISH BROWN
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-01%
TAN MICROCRYSTALLINE TO FINELY GRAINED DOLOMITE. SMALL
AMOUNTS OF WHITE ANHYDRITE IN VUGGY CUTTINGS.

1505 - 1515 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
POROSITY: INTERGRANULAR; 0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-10%, ANHYDRITE-02%
OTHER FEATURES: GRANULAR, PARTINGS, CALCAREOUS
FOSSILS: ORGANICS
VERY FINE - FINE GRAINED TAN DOLOMITE. TRACES OF ANHYDRITE IN VUGGY CUTTINGS.

1515 - 1520 DOLOSTONE; GRAYISH ORANGE TO VERY LIGHT ORANGE
0-10% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-10%, ANHYDRITE-01%
OTHER FEATURES: CALCAREOUS
SLIGHTLY CALCAREOUS VERY FINE GRAINED DOLOMITIZED CALCARENITE.

1520 - 1525 CALCARENITE; VERY LIGHT ORANGE
POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-10%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL MOLDS
SLIGHTLY DOLOMITIC CALCARENITE. PELECYPOD MOLDS.

1525 - 1530 CALCARENITE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: DOLOMITIC
SUBEQUAL, SLIGHTLY DOLOMITIC CALCARENITE AND VERY FINE GRAINED BROWN DOLOMITE.

1530 - 1545 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
10-50% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-01%
OTHER FEATURES: GRANULAR, SUCROSIC
FOSSILS: ORGANICS
SUCROSIC DOLOMITE WITH DISSEMINATED AND VARVED ORGANICS.
MINOR ANHYDRITE 1540-1545'.

1545 - 1550 DOLOSTONE; DARK YELLOWISH BROWN TO DARK BROWN
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
ORGANIC MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ANHYDRITE-01%
OTHER FEATURES: VARIEGATED, PARTINGS
FOSSILS: ORGANICS
SUBEQUAL AMOUNTS OF MICROCRYSTALLINE BROWN DOLOMITE
GRANULAR SLIGHTLY ORGANIC TAN DOLOMITE; AND EXTREMELY
ORGANIC GRANULAR DOLOMITE CONTAINING CALCARENITE FRAGMENTS
ORGANIC PARTINGS, AND TRACES OF ANHYDRITE.

1550 - 1555 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: SUCROSIC

1555 - 1560 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
POROSITY: INTERCRYSTALLINE, INTERGRANULAR; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ANHYDRITE-01%
OTHER FEATURES: SUCROSIC, VARIEGATED
FOSSILS: ORGANICS
BROWN, GRAY, AND RED/BROWN DOLOMITES, WITH MINOR ANHYDRITE.

1560 - 1565 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
POROSITY: INTERCRYSTALLINE, INTERGRANULAR; 10-50% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: CALCAREOUS
BROWN MICROCRYSTALLINE DOLOMITE AND TAN DOLOMITIC
CALCILUTITE.

1565 - 1575 CALCILUTITE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: DOLOMITIC
SLIGHTLY GRANULAR DOLOMITIC CALCILUTITE.

1575 - 1580 CALCILUTITE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, BIOGENIC
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-15%, ANHYDRITE-01%
OTHER FEATURES: DOLOMITIC, PARTINGS
FOSSILS: ORGANICS, MOLLUSKS
SLIGHTLY GRANULAR DOLOMITIC CALCILUTITE AND DOLOMITIC VERY
FINE GRAINED CALCARENITE. MINOR ORGANIC LAMINAE. MINOR
ANHYDRITE WITH ORGANICS.

1580 - 1590 CALCILUTITE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MASSIVE
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: DOLOMITIC
DOLOMITIC CALCILUTITE. SOME MOLDIC POROSITY.

1590 - 1600 CALCILUTITE; VERY LIGHT ORANGE
POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: DOLOMITIC
DOLOMITIC CALCILUTITE.

1600 TOTAL DEPTH