Executive Summary
ROMP Site TR 11-2
Core & Chloride Monitor

Location - ROMP Site TR 11-2 is located along SR 60 in Hillsborough County approximately 50' east of the Tampa Bypass Canal just below control structure S-160. This site is located in the NE 1/4, NE 1/4, NE 1/4 of Section 23, Township 29 South, Range 19 East and at latitude N 27°57'05", longitude W 82°22'11".

Site Easement - This site is on District owned land adjacent to the Tampa Bypass Canal. Therefore, no temporary or perpetual easements were obtained for this site.

Reason for Coring - Core and water samples were obtained at this site in order to retrieve cores for microscopic analysis and description, and to define the freshwater/saltwater interface. Information obtained from the core and water samples was used in designing the monitor well and will be used in detailing the geohydrology of the District.

Geology - This site is located on the Pamlico Terrace at an elevation approximately 15' above mean sea level (MSL). The lithology at this site was described from analysis of 1 7/8" core samples taken in 5' sections. The site was cored to a total depth of 589' below land surface datum (LSD). The generalized geology is as follows:

0 - 7'	Interbedded sand and clay
7'-40'	Hawthorne Formation - tan and blue clay with quartz sand
40'-115'	Tampa Formation - limestone, light tan-cream with some clay and minor quartz sand, generally good porosity with many molds and fossils.
115'-330'	Suwannee Formation - limestone, cream colored, generally friable, with moderate to good porosity, highly fossiliferous in some areas, with some thin organic beds and marls throughout.

336'-554' Ocala Group - limestone, light tan-cream colored, low to moderate porosity and generally contains numerous fossil foraminifera of several distinctive varieties.

554'-589' Avon Park Formation - limestone, grainey, contains numerous fossil foraminifera (Dictyconus Cookei), varying porosity from low to high.

Hydrogeology - There was little data available or observed during coring or well construction to indicate the presence or absence of a water table aquifer at this site. Therefor, no determination of the significance of the water table as a source of water was made under this project.

The first major confining zone at this site is a sandy clay in the upper part of the Hawthorn Formation extending from 10'-30' below LSD. Immediately below this a graph of the chlorides shows that a lens of relatively fresh water (140 mg/l chlorides) exists in the Hawthorn limestone and the lithologic log indicates that the limestone from 45'-75' depth is very porous. Insufficient data was retrieved to determine whether or not this is an artesian aquifer. Below this, from 74'-76' a thin zone of chert and tight, impermeable limestone acts as a confining bed between the Hawthorn and Tampa limestones.

The first artesian zone is from 90'-220' below LSD and stratigraphically is composed of the Tampa and Suwannee limestone together. The Tampa and Suwannee limestones range from a soft, micrite to a micro-coquina in this area with good moldic porosity and some thin lenses of sand clay. The next confining zone is in the Suwannee limestone from 240'-310' below LSD. The Suwannee limestone is fine grained and relatively impermeable in this area. The second artesian zone is from 310'-440' below LSD and is in the lower part of the Suwannee limestone and the upper part of the Ocala group. The third and most prominent artesian zone is composed of lower Ocala group and the Avon Park limestone together and has the highest artesian head observed at this site. It

was not definitely determined whether or not there is hydraulic continuity between the 2nd and 3rd artesian zones at this site. However, interpretation of the lithologic log combined with the observed changes in the water level and water quality indicate that these two aquifers are not connected and are in fact separated by a zone of much less permeable limestone.

A specific capacity test was performed at this site using the rig pump. The bore hole was cased to 300' and had a total depth of 315 feet. That test indicated transmissivity values in the range of 68,000 - 75,000 gpd/ft (T.).

Core Drilling - At this site core and water samples were obtained to a depth of 589' below LSD. The work was accomplished between 1/22/79 and 3/22/79 using the District staff and District owned CME-75 core drilling rig. Core samples of 1 7/8" diameter were retrieved at 5' intervals from 22' below LSD to 589'. These samples were described by the field geologist and boxed up to be sent to the Florida Bureau of Geology for laboratory analysis. In addition, 41 water samples were obtained and analyzed for chlorides and conductance. Upon completion of the coring operation, the core hole was grouted from top to bottom with a neat cement slurry.

Well Construction - The monitor well at this site was constructed using the District Portadrill rotary drill rig, during the period from 1/23/80 to 2/25/80. Twenty three (23) feet of 14" steel surface casing and 45' of 12" steel work casing was set at site. Inside of this steel casing 300' of 6" external coupled PVC casing was stage grouted in place. Below the 300' of PVC casing an open borehole 6" in diameter was drilled out to a total depth of 315' (making the well 315' total depth below LSD). Upon

completion of the well, 7' of the 12" steel work casing and 8' of the PVC liner were left above ground with a grout mixture between the two. This was done in order to prevent artesian flow from escaping from the well and to provide a stable mounting place for construction of a USGS monitor station.

Geophysical Logs - Electric, Temperature, Gamma, Fluid Resistivity, and Caliper logs were run on the core hole to a depth of 589' below LSD.

Type of Monitor - This well is designed to monitor the freshwater/saltwater interface (250 mg/l isochlor) at this site.

Water Quality - Potable water (less than 250 mg/l chlorides) exists throughout the depth of the coring at this site. However, the 2nd artesian zone penetrated at this site is within the Ocala Group of limestones from a depth of 330'-455' below LSD and was found to have chlorides ranging from 230'-245' mg/l (the highest at this site). These results were obtained from the 41 water samples analyzed and 11 water levels recorded at this site.

This second artesian aquifer is the zone from which most producing wells in this area draw water and is, therefor, the zone which will be monitored for changes in water quality. This well was designed with 15' of open borehole from 300'-315' below LSD in order to serve as an indicator should the quality of the water in this zone be subject to further change.

U.S.G.S. Notification - The USGS was notified on March 1, 1980 that this well was complete and ready for monitoring.

LITHOLOGIC WELL LOG PRINTOUT

SOURCE - FGS

WELL NUMBER: W- 14668
TOTAL DEPTH: 00589 FT.
SAMPLES - NONE

COUNTY - HILLSBOROUGH
LOCATION: T.29S R.19E S.23 B
LAT = N 27D 57M 05
LON = W 82D 22M 11

COMPLETION DATE - N/A
ELEVATION - 015 FT
OTHER TYPES OF LOGS AVAILABLE - GAMMA, FLUID CONDUCTIVITY, SONIC, ELECTRIC

OWNER/DRILLER: SWFWMD; ROMP SITE TR 11-2;

WORKED BY: UNKNOWN GEOLOGIST; CODED AND ENTERED BY RICHARD GREEN
10-90 FROM A GEOLOGIST'S LOG PROVIDED BY SWFWMD.
THIS IS A CORE--SAMPLES WERE TAKEN AT 5' INTERVALS.
THIS SITE IS LOCATED ALONG S.R. 60 IN HILLSBOROUGH
COUNTY APPROXIMATELY 50' EAST OF THE TAMPA BYPASS CANAL
JUST BELOW THE CONTROL STRUCTURE S-160.

0.	7.	UNDIFFERENTIATED SAND AND CLAY
7.	115.	HAWTHORN GROUP
40.	115.	TAMPA MEMBER OF ARCADIA FM.
115.	335.	SUWANNEE LIMESTONE
336.	559.	OCALA GROUP
559.	.	AVON PARK FM.

0 - 3 SAND; MODERATE GRAY;
GRAIN SIZE: MEDIUM;

3 - 7 CLAY; WHITE TO LIGHT GRAY;
ACCESSORY MINERALS: QUARTZ SAND- %, CALCILUTITE-%;
WHITE, GRAY AND CREAM CLAY WITH MINOR POCKETS OF MICRITE PARTICLES. ABUNDANT FINE GRAINED QTZ SAND.

7 - 9 CLAY; BLUE;
ACCESSORY MINERALS: QUARTZ SAND- %;
OTHER FEATURES: PLASTIC;

9 - 22 CLAY; TAN;
ACCESSORY MINERALS: QUARTZ SAND-%;
VERY GUMMY. CONTAINS MED. GRAINED QTZ SAND. SET 6" CASING TO 20'.

22 - 27 LIMESTONE; WHITE;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CLAY-%;
VERY SOFT AND CLAYEY.

27 - 29 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
POOR INDURATION;
ACCESSORY MINERALS: QUARTZ SAND- %, SPAR- %;
FOSSILS: MOLLUSKS, FOSSIL MOLDS;
BIOMICRITE, NUMEROUS MOLLUSK FOSSILS FORMED OF SPARRY CALCITE, FRIABLE.

29 - 34.5 CALCARENITE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
DRUSY WITH CALCITE, HIGH SECONDARY AND PRIMARY POROSITY.

34.5- 39.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE, SKELETAL;
POOR INDURATION;
ACCESSORY MINERALS: QUARTZ SAND- %, CLAY- %;
FOSSILS: MOLLUSKS;
SOME THIN CLAY LENSES AND QTZ SAND POCKETS. FRIABLE, HIGH MOLDIC POROSITY.

39.5- 40.5 CLAY; TAN;
MARLY CLAY, FRIABLE, SOME FOSSILS.

40.5- 44.5 LIMESTONE; WHITE TO CREAM;
DISMICRITE, ANGULAR AND SUBANGULAR QTZ GRAINS (INTRACLASTS), VARIABLE POROSITY (MODERATE), FOSSILS ARE RARE.

44.5- 49.5 LIMESTONE; TAN TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS;
FOSSILIFEROUS MICRITE, ABUNDANT PELECYPODS, HIGH MOLDIC POROSITY.

49.5- 52 CALCARENITE; CREAM TO WHITE; FRACTURE, MOLDIC;
CEMENT TYPE(S): SPARRY CALCITE CEMENT;
ACCESSORY MINERALS: QUARTZ SAND- %, PYRITE-01%;
CALCITE CEMENTED QTZ GRAINS, APPROXIMATELY 50/50 MIX OF CALCITE AND QTZ. DENSE AND LESS POROUS. SOME VERY MINOR PYRITE PRESENT ALONG FRACTURES.

52 - 54 CALCARENITE; LIGHT BROWN; POSSIBLY HIGH PERMEABILITY, MOLDIC;
ACCESSORY MINERALS: CHERT-%;

54 - 54.5 SOME CHERT LENSES PRESENT. HIGH MOLDIC POROSITY.

54.5- 59.5 LIMESTONE; LIGHT TAN TO BROWN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CLAY- %, ORGANICS- %, QUARTZ SAND-01%;
FOSSILS: MOLLUSKS;
MICRITE W/ SOME CLAY LENSES, SOME BLACK AND BROWN ORGANICS. FRIABLE, SOME LARGE PELECYPODS.

59.5- 64.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: QUARTZ SAND-01%;
OTHER FEATURES: FOSSILIFEROUS;
FRIABLE, SOME FOSSILS, VERY LITTLE QTZ. HIGH POROSITY.

64.5- 69 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE, SKELETAL;
ACCESSORY MINERALS: QUARTZ SAND- %;
FOSSILS: MOLLUSKS;
FRIABLE, SOME ANGULAR QTZ GRAINS, LARGE PELECYPOD FOSSILS, HIGH MOLDIC POROSITY.

69 - 74.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
FRIABLE.

74.5- 76 LIMESTONE; WHITE TO LIGHT GRAY; LOW PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CHERT-%;
SOME SCATTERED CHERTS AND CALCITE. LOW-MOD. MOLDIC POROSITY.

76 - 79.5 LIMESTONE; CREAM TO WHITE; MOLDIC, POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: SPAR- %;
FOSSILS: FOSSIL MOLDS;
SOME GRAY STREAKS, FRIABLE, FOSSILS DISSOLVED OUT TO LARGE (1-2MM) OPEN PORES. HIGH MOLDIC POROSITY.

79.5- 84.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: QUARTZ SAND-%;
FRIABLE, MANY SUBANGULAR QTZ GRAINS PRESENT, SOME IN GRAY "SANDY" SPLOTCHES. HIGH POROSITY.

84.5- 86.5 LIMESTONE; ; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE, SKELETAL;
ACCESSORY MINERALS: QUARTZ SAND-01%;
OTHER FEATURES: FOSSILIFEROUS;
SOME FOSSILS COMPLETELY CALCITIZED. HIGH POROSITY.

86.5- 89.5 LIMESTONE; LIGHT GRAY; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
GOOD INDURATION;
ACCESSORY MINERALS: QUARTZ SAND-%;
CALCARENITE IN SOME AREAS OOLITIC, HIGH MOLDIC POROSITY.

89.5- 94.5 LIMESTONE; CREAM TO LIGHT TAN; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CLAY-%;
MICRITE AND MARL, SOME CLAY LENSES AND SOME HARD "CHERTY" AREAS. MOSTLY FRIABLE WITH HIGH MOLDIC POROSITY.

94.5- 99.5 LIMESTONE; LIGHT TAN; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CLAY- %, ORGANICS-%;
SOME CLAY OR MARLY AREAS, FRIABLE, SOME THIN VEINS OF DARK ORGANICS. HIGH MOLDIC POROSITY.

99.5- 104.5 LIMESTONE; CREAM TO WHITE; LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CLAY- %, CHERT-%;
SOME FOSSILS. LOW-MODERATE POROSITY.

104.5- 109.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE, SKELETAL, CRYSTALS;
ACCESSORY MINERALS: ORGANICS- %, SPAR- %;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS;
SOME BLACK ORGANICS AND SOME CALCITE SPAR,ABUNDANT MOLLUSKS AND LARGE FORAMS (NUMMULITES).

109.5- 110 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS;
BIOMICRITE, LARGE FORAMS AND MANY PELECYPODS. HIGH MOLDIC POROSITY.

110 - 113 AS ABOVE

113 - 114.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY, MOLDIC;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: QUARTZ SAND- %, SPAR-%;

114.5- 119.5 LIMESTONE; CREAM TO LIGHT BROWN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
ACCESSORY MINERALS: CHERT- %;
OTHER FEATURES: FOSSILIFEROUS;
CHERT IS LIGHT GRAY. LS IS HIGHLY POROUS AND FOSSILIFEROUS.

119.5- 124.5 LIMESTONE; CREAM TO TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, SKELETAL;
OTHER FEATURES: DOLOMITIC;
MICROCOQUINA, HEAVILY DOLOMITIZED IN SOME AREAS.

124.5- 129.5 LIMESTONE; CREAM TO TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: SKELETAL, BIOGENIC;
MICROCOQUINA. HIGH POROSITY.

129.5- 131.5 AS ABOVE
VERY FRIABLE, TRACE OF QTZ. SOME ARAGONITIC SHELLS.

131.5- 134.5 AS ABOVE
LESS FRIABLE WITH DEPTH AND MORE LITHIFIED.

134.5- 139.5 AS ABOVE
CREAMY WHITE TO LIGHT BROWN.

139.5- 144.5 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: VERY FINE;
FEW FOSSILS.

144.5- 149.5 AS ABOVE

149.5- 154.5 AS ABOVE
SLIGHTLY COARSER.

154.5- 159.5 LIMESTONE; CREAM TO WHITE;
SAME WITH THE EXCEPTION OF SOME THIN CLAY LENSES, LOOSELY CEMENTED, NO IDENTIFIABLE FOSSILS, HIGH POROSITY.

159.5- 164.5 LIMESTONE; CREAM TO LIGHT TAN; POSSIBLY HIGH PERMEABILITY, INTERGRANULAR;
GRAIN TYPE: SKELETAL, BIOGENIC;
POOR INDURATION;
MICROCOQUINA, LOOSELY COMPACTED WITH VERY LITTLE CEMENT. VERY HIGH POROSITY.

164.5- 169.5 LIMESTONE; LIGHT TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE, SKELETAL, CRYSTALS;
GOOD INDURATION;
ACCESSORY MINERALS: SPAR- %;
FOSSILS: MOLLUSKS;
DISMICRITE, COARSE LARGE PELECYPOD FOSSILS, HIGH POROSITY.

169.5- 174.5 LIMESTONE; LIGHT TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
POOR INDURATION;
COARSE POORLY CEMENTED COQUINA-LIKE MATERIAL, SOME COMPACTION. HIGH POROSITY.

174.5- 175.5 AS ABOVE

175.5- 179.5 LIMESTONE; CREAM TO LIGHT TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
POORLY CEMENTED CALCARENITE, MANY LOOSE GRAINS, SOME QTZ GRAINS PRESENT. MODERATE-HIGH POROSITY.

179.5- 182 CALCARENITE; CREAM TO TAN; POSSIBLY HIGH PERMEABILITY;
POOR INDURATION;
ACCESSORY MINERALS: QUARTZ SAND- %, SPAR-%;
LOOSE WELL COMPACTED AND POORLY CEMENTED SANDY MATERIAL OF CALCITE AND QTZ COMPOSITION.
HIGH POROSITY.

182 - 186 LIMESTONE; WHITE; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
GRAIN SIZE: FINE;
SPARSE TO PACKED BIOMICRITE. FRIABLE.

186 - 204 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
SPARSE TO PACKED BIOMICRITE, FRIABLE, GRAINY. MOD.POROSITY.

204 - 206 LIMESTONE; CREAM; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
POOR INDURATION;
PACKED BIOMICRITE, FRIABLE, CRUMBLY.

206 - 206.5 CHERT; DARK GRAY; GOOD INDURATION;

206.5- 215 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: FINE;
SOFT AND FRIABLE.

215 - 222 LIMESTONE; CREAM; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
PACKED BIOMICRITE, FRIABLE, SOME SECONDARY DEVELOPMENT OF POROSITY. POROSITY IS MODERATELY HIGH.

222 - 237 LIMESTONE; ;
SAME AS 206.5-215'.

237 - 247 LIMESTONE; CREAM; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS;
PACKED TO SPARSE BIOMICRITE, FRIABLE, CRUMBLY IN PLACES, ABUNDANT MOLLUSKS, POROSITY IS GENERALLY HIGH WITH SECONDARY DEVELOPMENT AROUND MACROFOSSILS.

247 - 248.5 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: CALCILUTITE;
GRAIN SIZE: FINE;

248.5- 254.5 LIMESTONE; GRAYISH BROWN; LOW PERMEABILITY;
ACCESSORY MINERALS: ORGANICS-%;
DISMICRITE, FRIABLE, LOW DENSITY. CONTAINS BLACK AND BROWN ORGANICS. GENERALLY LOW POROSITY.

254.5- 256 AS ABOVE
SIMILAR TO ABOVE BUT WITH MUCH MORE ORGANIC MATTER FOUND AS THIN BEDS AND SOME POCKETS. LOW POROSITY.

256 - 302 LIMESTONE; ;
SAME AS 248.5-254.5' W/O ORGANICS. LOW POROSITY.

302 - 316 LIMESTONE; CREAM TO TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS;
PACKED TO SPARSE BIOMICRITE, POROSITY IS HIGH AND SECONDARY IN PLACES GRADING OCCASIONALLY TO MODERATE POROSITY.

316 - 319 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE;
BIOMICRITE, CRUMBLY, MODERATE POROSITY.

319 - 329 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, SKELETAL, CALCILUTITE;
SPARSE TO PACKED BIOMICRITE, FRIABLE, GRAINY.

329 - 336 LIMESTONE; CREAM; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS;
PACKED BIOMICRITE, FRIABLE, MANY LARGE PELECYPODS, POROSITY IS MODERATELY HIGH TO MODERATE.

336 - 363 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
GRAIN SIZE: FINE;
SPARSE BIOMICRITE, FRIABLE, EVEN TEXTURE. POROSITY IS MODERATELY LOW-LOW.

363 - 365 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA;
PACKED BIOMICRITE, FRIABLE, ABUNDANT LEPIDOCYCLINA AND PELECYPODS. LOW POROSITY.

365 - 374 LIMESTONE; ;
SAME AS 336-363'.

374 - 385 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: BENTHIC FORAMINIFERA;
PACKED BIOMICRITE, ABUNDANT NUMMULITES (NUMMULITES VANDERSTOKI HEMICYTHERE ZONE). LOW POROSITY.

385 - 404 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
OTHER FEATURES: CHALKY;
SPARSE TO PACKED BIOMICRITE, FRIABLE, LOW POROSITY.

404 - 410 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS, ECHINOID, BENTHIC FORAMINIFERA;
PACKED BIOMICRITE, FRIABLE, ABUNDANT MOLLUSKS, ECHINOIDS, AND LEPIDOCYCLINA. POROSITY IS GENERALLY LOW.

410 - 436 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
PACKED TO SPARSE BIOMICRITE, FRIABLE. POROSITY IS LOW.

436 - 463.5 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
PACKED TO SPARSE BIOMICRITE, MORE COARSE GRAINED THAN ABOVE. POROSITY IS MODERATE TO LOW.

463.5- 475 LIMESTONE; CREAM TO WHITE; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
SPARSE TO PACKED BIOMICRITE, MOTTLED TEXTURE DUE TO VARIATION FROM DENSE MICRITE TO GRAINY FOSSIL HASH. POROSITY IS MODERATE-HIGH.

475 - 488 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
SPARSE BIOMICRITE, FRIABLE, GRAINY, EVEN TEXTURE.

488 - 514 LIMESTONE; LIGHT TAN TO CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: MOLLUSKS;
PACKED BIOMICRITE, GRAINY, ABUNDANT LARGE PELECYPODS, POROSITY APPEARS MODERATE.

514 - 519 LIMESTONE; TAN; POSSIBLY HIGH PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
GOOD INDURATION;
PACKED BIOMICRITE, CONTAINS HIGH SECONDARY POROSITY.

519 - 544 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
SPARSE-PACKED BIOMICRITE, FRIABLE, GRAINY, MODERATE TO LOW POROSITY.

544 - 554 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: ECHINOID;
PACKED BIOMICRITE, ABUNDANT CALCIFIED ECHINOIDS. MODERATE POROSITY.

554 - 559 AS ABOVE

559 - 573 LIMESTONE; CREAM;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
FOSSILS: BENTHIC FORAMINIFERA;
PACKED BIOMICRITE, GRAINY, MODERATE POROSITY. CONTAINS DICTYOCONUS COOKEI.

573 - 584 LIMESTONE; CREAM; LOW PERMEABILITY;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
GRAIN SIZE: FINE;
PACKED-SPARSE BIOMICRITE, FRIABLE, LOW POROSITY.

584 - 589 LIMESTONE; TAN; POSSIBLY HIGH PERMEABILITY, PIN POINT VUGS;
GRAIN TYPE: BIOGENIC, CALCILUTITE, SKELETAL;
SPARSE POORLY WASHED BIOMICRITE. HIGH POROSITY.

589 TOTAL DEPTH