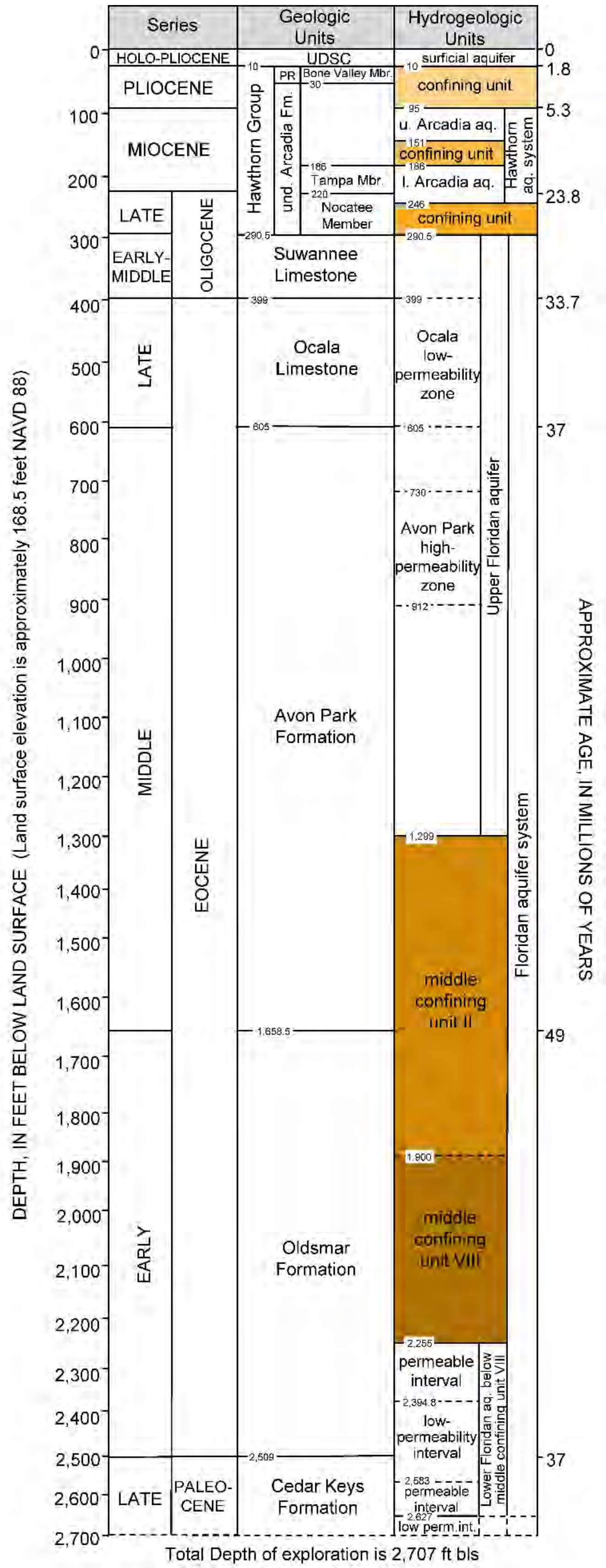
ADDENDUM TO THE HYDROGEOLOGY, WATER QUALITY, AND WELL CONSTRUCTION AT ROMP 45.5 – PROGRESS ENERGY WELL SITE IN POLK COUNTY, FLORIDA REPORT

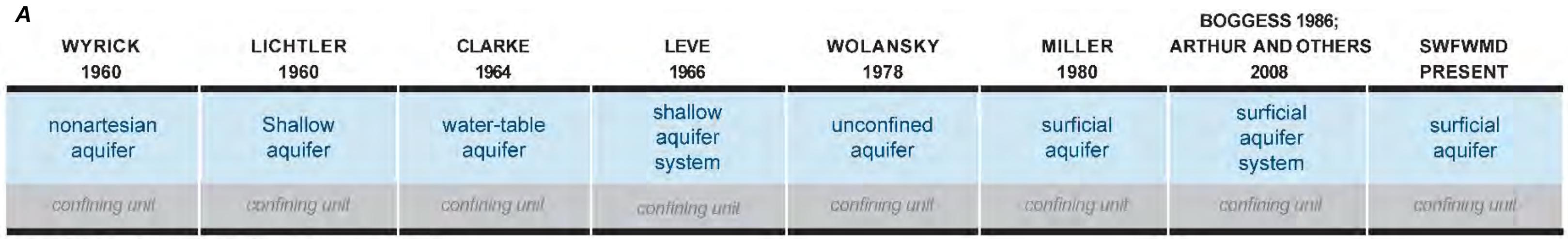
This document is an addendum to the Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 – Progress Energy Well Site in Polk County, Florida dated July 2011 (Horstman, 2011). The purpose of this addendum is to document changes to the hydrostratigraphy of the Southwest Florida Water Management District (District) that have been made based on new data collected at well sites since this report was completed in 2011.

An updated stratigraphic column (attachment 1) and updated correlation charts (attachment 2) are added to this report to assist the reader.

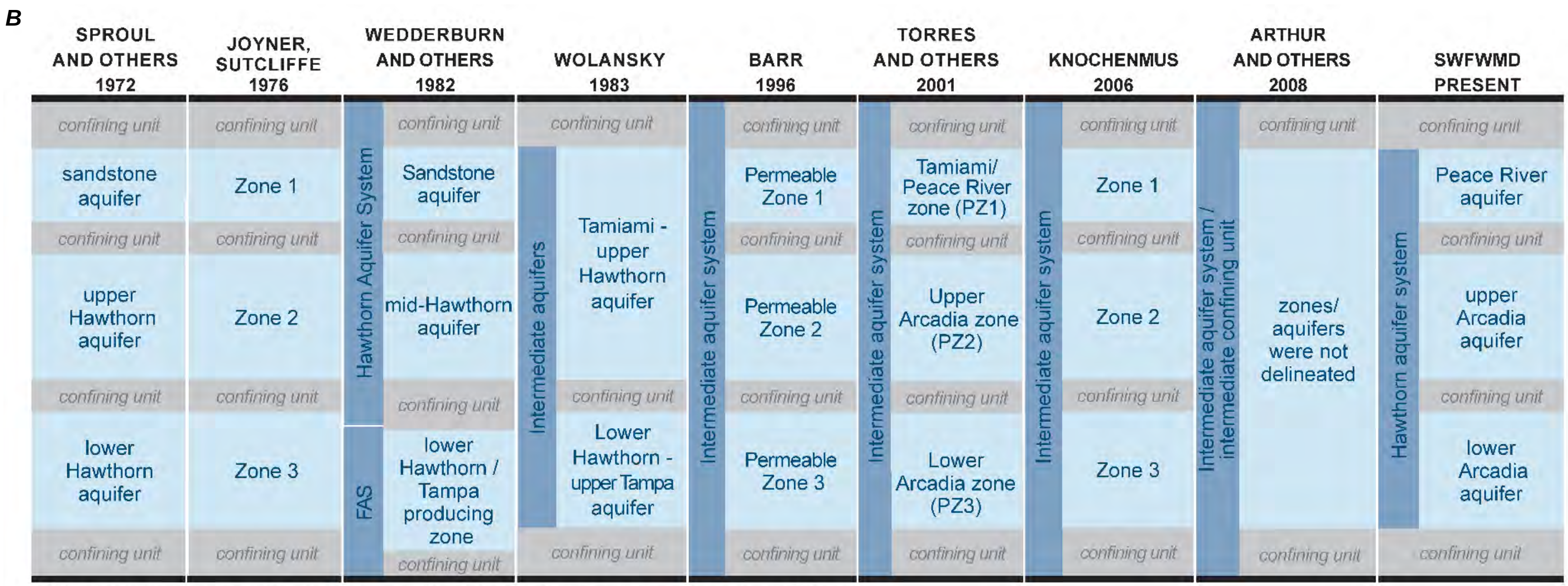


[aq., aquifer; bls, below land surface; ft, feet; Holo, Holocene; int., interval; l., lower; Mbr., Member; NAVD 88, North American Vertical Datum of 1988; perm., permeable; PR, Peace River Formation; u., upper; und., undifferentiated; UDSC, undifferentiated sand and clay]

Attachment 1. Updated (as of 2022) stratigraphic column detailing the hydrogeologic setting at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.



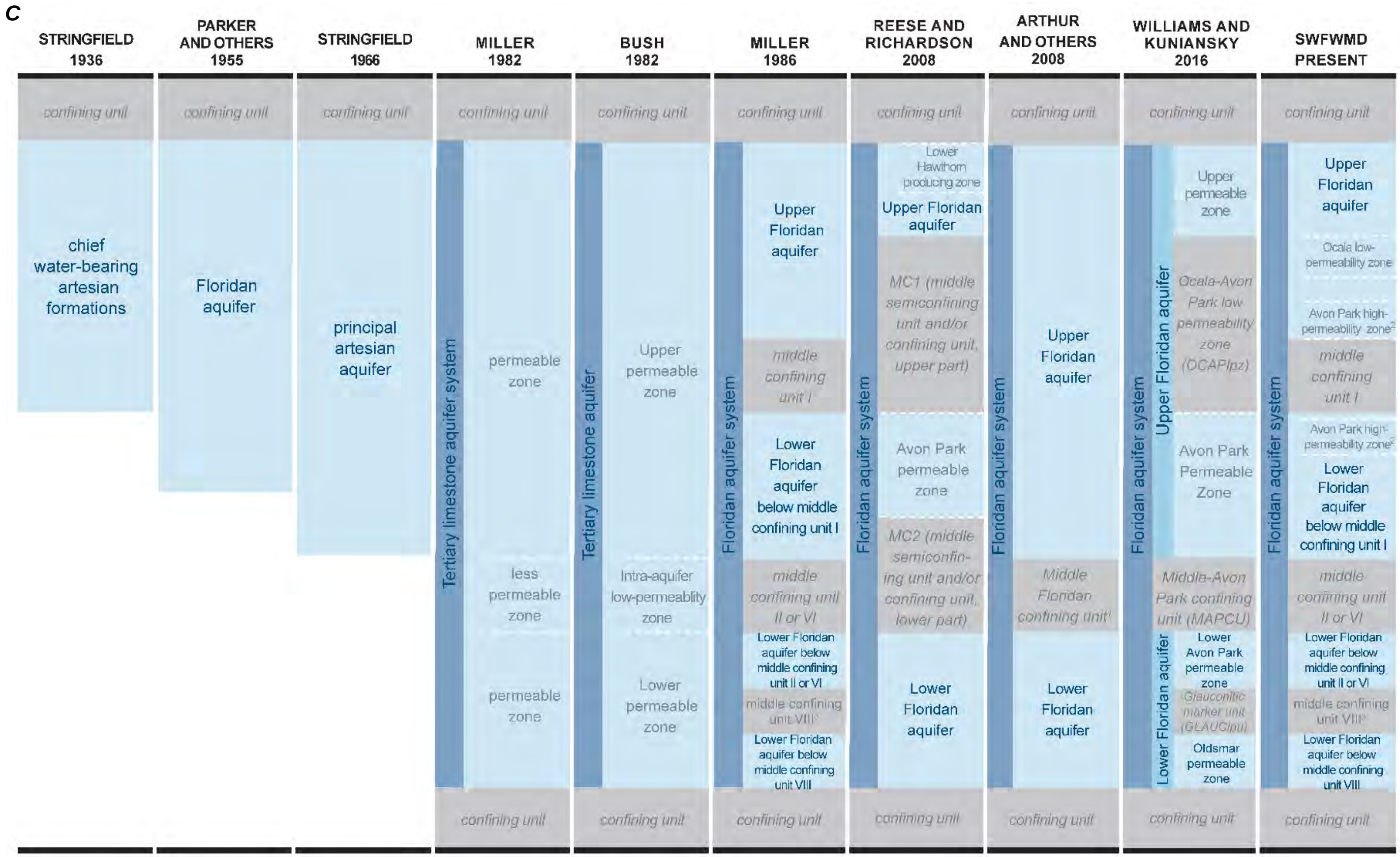
[SWFWMD, Southwest Florida Water Management District]



[FAS, Floridan aquifer system; PZ, permeable zone; SWFWMD, Southwest Florida Water Management District]

Attachment 2. Nomenclature of (*A*) the surficial aquifer, (*B*) the Hawthorn aquifer system, and (*C*) the Floridan aquifer system used by the Southwest Florida Water Management District compared to nomenclature in previously published reports.

C



[Terms shown are for hydrogeologic units present within the Southwest Florida Water Management District (SWFWMD)]

[1]Arthur and others acknowledge existence of the middle confining unit I within the Southwest Florida Water Management but do not map it for Special Publication 68.

[2]The Avon Park high-permeability zone (SWFWMD fracture zone) crosses middle confining unit I in central Polk County; therefore, it occurs above the middle confining unit I in northern Polk and below the middle confining unit I in southern Polk.

[3]The middle confining unit VIII of Miller (1986) in south Florida was extended across the entire peninsula based on new data in Williams and Kuniansky (2015) and reidentified as the Glauconite marker unit.

Attachment 2. (Continued) Nomenclature of (*A*) the surficial aquifer, (*B*) the Hawthorn aquifer system, and (*C*) the Floridan aquifer system used by the Southwest Florida Water Management District compared to nomenclature in previously published reports.

References (for Attachment 2)

Arthur, J.D., Fischler, C., Kromhout, C., Clayton, J.M., Kelley, M., Lee, R.A., O'Sullivan, M., Green, R.C., Werner, C.L., 2008, Hydrogeologic Framework of the Southwest Florida Water Management District: Florida Geological Survey Bulletin 68, 175 p.

Barr, G.L., 1996, Hydrogeology of the Surficial and Intermediate Aquifer Systems in Sarasota and Adjacent Counties, Florida: U.S. Geological Survey Water-Resources Investigations Report 96-4063, 81 p.

Boggess, D.M., and Watkins, F.A., Jr., 1986, Surficial aquifer system in eastern Lee County, Florida: U.S. Geological Survey Water-Resources Investigations Report 85-4161, 59 p.

Bush, P. W., 1982, Predevelopment Flow in the Tertiary limestone aquifer, southeastern United States; A Regional Analysis from Digital Modeling: U.S. Geological Survey Water-Resources Investigations 82-905, 56 p.

Clarke, WE., Musgrove, R.M., Menke, G.C., and Cagle, J.W., Jr., 1964, Water resources of Alachua, Bradford, Clay, and Union Counties, Florida: Florida Geological Survey Report of Investigations 35, 170 p.

DeWitt, D. J. and Mallams, J. L., 2007, The Hawthorn Aquifer System: A Proposal for Hydrostratigraphic Nomenclature Revision in Southwest Florida, in Geological Society of America, Abstracts with Programs, 2007: Southeastern Section 56th Annual Meeting, v. 39, no. 2, 89 p.

Joyner, B.F., and Sutcliffe, H. Jr., 1976, Water Resources of the Myakka River Basin Area, Southwest Florida: U.S. Geological Survey Water-Resources Investigations Report 76-58, 87 p.

Knochenmus, L.A., 2006, Regional Evaluation of the Hydrogeologic Framework, Hydraulic Properties, and Chemical Characteristics of the Intermediate Aquifer System Underlying Southern West-Central Florida: U.S. Geological Survey Scientific Investigations Report 2006-5013, 52 p.

Laney, Robert L., and Davidson, Claire B., 1986, Aquifer-Nomenclature Guidelines: U.S. Geological Survey Open-File Report 86-534, 60 p.

Leve, G.L., 1966, Ground water in Duval and Nassau Counties, Florida: Florida Geological Survey Report of Investigations 43, 91 p.

Lichtler, W.F., 1960, Geology and ground-water resources of Martin County, Florida: Florida Geological Survey Report of Investigations 23, 149 p.

Miller, W.L., 1980, Geologic aspects of the surficial aquifer in the Upper East Coast planning area, southeast Florida: U.S. Geological Survey Water-Resources Investigations Report 80-586, scale 1:62,500, 2 sheets.

Miller, J.A., 1982, Geology and configuration of the base of the Tertiary limestone aquifer system, southeastern United States: U.S. Geological Survey Water-Resources Investigations 81-1176, 1 map sheet.

Miller, J.A., 1986, Hydrogeologic Framework of the Floridan Aquifer System in Florida and in Parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Professional Paper 1403-B, 91 p.

Parker, G.G., Ferguson, G.E., Love, S.K., and others, 1955, Water resources of southeastern Florida: U.S. Geological Survey Water-Supply Paper 1255, 965 p.

Reese, R.S., and Richardson, E., 2008, Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida: U.S. Geological Survey Scientific Investigations Report 2007-5207, 60 p., 4 pls., plus apps. (on CD).

Sproul, C.R., Boggess, D.H., and Woodward, H.J., 1972, Saline-water intrusion from deep artesian sources in the McGregor Isles area of Lee County, Florida: Florida Bureau of Geology Information Circular 75, 30 p.

Stringfield, V.T., 1936, Artesian water in the Floridan peninsula: U.S. Geological Survey Water-Supply Paper 773-C, p. C115-C195.

Stringfield, V. T., 1966, Artesian water in Tertiary limestone in the Southeastern States: U.S. Geological Survey Professional Paper 517, 226 p.

Torres, A.E., Sacks, L.A., Yobbi, D.K., Knochenmus, L.A., and Katz, B.G., 2001, Hydrogeologic Framework and Geochemistry of the Intermediate Aquifer System in Parts of Charlotte, De Soto, and Sarasota Counties, Florida: U.S. Geological Survey Water-Resources Investigations Report 01-4015, 74 p.

Wedderburn, L.A., Knapp, M.S., Waltz, D.P., and Burns, W.S., 1982, Hydrogeologic Reconnaissance of Lee County, Florida: South Florida Water Management District Technical Publication 82-1, pts. 1, 2, and 3, 192 p.

Williams, L.J., and Kuniansky, E.L., 2016, Revised Hydrogeologic Framework of the Floridan Aquifer System in Florida and Parts of Georgia, Alabama, and South Carolina (ver. 1.1, March 2016): U.S. Geological Survey Professional Paper 1807, 140 p., 23 pls., http://dx.doi.org/10.3133/pp1807.

Wolansky, R.M., 1978, Feasibility of water-supply development from the unconfined aquifer in Charlotte County, Florida: U.S. Geological Survey Water-Resources Investigations Report 78-26, 34 p.

Wolansky, R.M., 1983, Hydrogeology of the Sarasota-Port Charlotte Area, Florida: U.S. Geological Survey Water-Resources Investigations Report 82-4089, 54 p.

Wyrick, G.G., 1960, Ground-water resources of Volusia County, Florida: Florida Geological Survey Report of Investigations 22, 65 p.

Southwest Florida
Water Management District

Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

Southwest Florida Water Management District
Regional Observation and Monitor-well Program

July 2011

Cover Photo: Permanent monitor wells at the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida in order from left to right: SURF AQ MONITOR; L FLDN AQ MONITOR; U FLDN AQ MONITOR; AVPK PZ MONITOR; U ARCA AQ MONITOR; HAWT CU MONI-TOR; L ARCA AQ MONITOR. Photograph by Tiffany Horstman.

Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

By Tiffany Horstman

July 2011

Southwest Florida Water Management District
Regional Observation and Monitor-well Program

Southwest Florida Water Management District

Resource Data and Restoration Department
Eric DeHaven, P.G., Director

Geohydrologic Data Section
Jerry Mallams, P.G., Manager

Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899

For ordering information:

World Wide Web: http://www.watermatters.org/documents

Telephone: 1-800-423-1476

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Telephone: 1-800-423-1476

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The hydrogeologic evaluations and interpretations contained in *Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 - Progress Energy Well Site in Polk County, Florida* have been prepared by or approved by a licensed Professional Geologist in the State of Florida, in accordance with Chapter 492, Florida Statutes.

Tiffany M Horstman

Tiffany M. Horstman
Professional Geologist
State of Florida License No. PG 2661

Date: 8-2-2011

Foreword

The Regional Observation and Monitor-well Program (ROMP) was started in 1974 in response to the need for hydrogeologic information by the Southwest Florida Water Management District (District). The focus of the ROMP is to quantify the flow characteristics and water quality of the groundwater systems which serve as the primary source of drinking water within southwest Florida. The original design of the ROMP consisted of a ten-mile grid network comprised of 122 well sites and a coastal transect network comprised of 24 coastal monitor transects of two to three wells sites each. Since its inception, the ROMP has taken on many more data collection and well construction activities outside these original two well networks. The broad objectives at each well site are to determine the geology, hydrology, water quality, and hydraulic properties, and install wells for long-term monitoring. The majority of these objectives are achieved by core drilling and testing, which provides data for the hydrogeologic characterization of the well site. The ROMP staff then uses this characterization to ensure the site's monitor wells are properly installed. The hydrologic data of each completed ROMP well site are presented in either an executive summary or report.

Each ROMP well site is given a unique number and a site name. The ten-mile grid network numbering starts in the southern District with ROMP No. 1 and generally increases northward. The coastal transect network numbering starts with ROMP TR 1 in the south and also increases northward.

Jerry L. Mallams
Manager

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Figures

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Conversion Factors and Datums

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)
	Area	
acre	4,047	square meter (m^2)
acre	0.004047	square kilometer (km^2)
square foot (ft^2)	929.0	square centimeter (cm^2)
square foot (ft^2)	0.09290	square meter (m^2)
	Volume	
gallon (gal)	3.785	liter (L)
gallon (gal)	0.003785	cubic meter (m^3)
gallon (gal)	3.785	cubic decimeter (dm^3)
cubic foot (ft^3)	28.32	cubic decimeter (dm^3)
cubic foot (ft^3)	0.02832	cubic meter (m^3)
	Flow rate	
foot per second (ft/s)	0.3048	meter per second (m/s)
foot per minute (ft/min)	0.3048	meter per minute (m/min)
foot per day (ft/d)	0.3048	meter per day (m/d)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)
cubic foot per day (ft^3/d)	0.02832	cubic meter per day (m^3/d)
gallon per minute (gal/min)	0.06309	liter per second (L/s)
gallon per day (gal/d)	0.003785	cubic meter per day (m^3/d)
mile per hour (mi/h)	1.609	kilometer per hour (km/h)
	Pressure	
atmosphere, standard (atm)	101.3	kilopascal (kPa)
bar	100	kilopascal (kPa)
	Specific capacity	
gallon per minute per foot [(gal/min)/ft)]	0.2070	liter per second per meter [(L/s)/m]
	Hydraulic conductivity	
foot per day (ft/d)	0.00035278	centimeter per second (cm/s)
	Transmissivity*	
foot squared per day (ft^2/d)	0.09290	meter squared per day (m^2/d)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

°F=(1.8×°C)+32

Temperature in degrees Fahrenheit (°F) may be converted to degrees Celsius (°C) as follows:

°C=(°F-32)/1.8

Vertical coordinate information is referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

*Transmissivity: The standard unit for transmissivity is cubic foot per day per square foot times foot of aquifer thickness [(ft^3/d)/ft^2]ft. In this report, the mathematically reduced form, foot squared per day (ft^2/d), is used for convenience.

Specific conductance is given in micromhos per centimeter at 25 degrees Celsius (µmhos/cm at 25 °C).

Concentrations of chemical constituents in water are given either in milligrams per liter (mg/L) or micrograms per liter (µg/L).

Acronyms and Abbreviations

µg/l	micrograms per liter
µmhos/cm	micromhos per centimeter
als	above land surface
APT	aquifer pumping test
AQ	aquifer
ARCA	arcadia
AVPK	Avon Park
bls	below land surface
btoc	below top of casing
Ca^{2+}	calcium
$CaCO_3$	calcium carbonate or limestone
CAL	caliper
$[CaMg(CO_3)^2]$	calcium magnesium carbonate or dolostone
$CaSo_4$•$2H_2O$	gypsum
CH	core hole
CME	Central Mining Equipment
commun.	communication
CU	confining unit
day^{-1}	feet per day per foot
DDC	Diversified Drilling Company
Dia.	diameter
District	Southwest Florida Water Managment District
FGS	Florida Geological Survey
FLDN	Floridan
ft	feet
ft/d	feet per day
GAM	gamma
gpm	gallons per minute
gpm/ft	galons per minute per foot
HAWT	Hawthorn
HCO_3^{1-}	bicarbonate
ID	identification
K	hydraulic conductivity
L	lower or Lower
meq	milliequivalent
Mg^{2+}	magnesium
mg/l	milligrams per liter
OB	observation
PVC	polyvinyl chloride
PZ	permeable zone
RES	resistance geophysical log
RES (16N)	short normal resistivity
RES (64N)	long normal resistivity
ROMP	Regional Observation and Monitor-well Program
SID	site identification
sp.	species
SURF	surficial
SWFWMD	Southwest Florida Water Management District
TDS	total dissolved solids
TEMP	temporary
U	upper or Upper
UDR	Universal Drill Rigs
WQ	water quality
WMIS	Water Management Information System

Hydrogeology, Water Quality, and Well Construction at ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

By Tiffany Horstman

Introduction

The Southwest Florida Water Management District's (District) Regional Observation and Monitor-well Program (ROMP) obtained the ROMP 45.5 – Progress Energy (ROMP 45.5) well site in May 2005 at the Progress Energy - Hines Energy Complex in central Polk County, Florida to construct a dedicated groundwater monitoring station (fig. 1). The ROMP 45.5 well site location was selected to evaluate current groundwater resources in the area, with emphasis on future availability of supply from the Floridan aquifer system. There is a particular interest in determining the hydrogeologic characteristics of the Lower Floridan aquifer and the potential for industrial water supply from the Lower Floridan aquifer in the region. In 2005, no water was withdrawn from the Lower Floridan aquifer in Polk County. However, nearly a quarter of all groundwater withdrawn in Polk County is used for industrial supply (Spechler and Kroening, 2007).

The ROMP 45.5 well site was developed in four phases: (1) shallow exploratory core drilling and testing, (2) monitor well construction, (3) deep exploratory core drilling and testing, and (4) aquifer pumping testing. Core drilling, testing, and well construction spanned a period of 3 years. Shallow core drilling and testing began in September 2005 and was completed in August 2006 with the District's Central Mining Equipment (CME) core drilling rig and staff. Monitor well construction commenced in October 2006 and ended in September 2007 through a contract with Diversified Drilling Corporation (DDC). Deep exploratory core drilling and testing began in October 2007 and was completed in March 2008 with the District's Universal Drilling Rig (UDR) 200D LS core drilling rig and staff. Aquifer pumping tests (APTs) were conducted from July 2008 to September 2008.

Site Location

The ROMP 45.5 well site is located in southwestern Polk County approximately 7 miles south of the city of Bartow at the Progress Energy/Florida Power Corporation's Hines Energy Complex (fig. 1). The well site is located on a parcel of land granted to the District by easement agreement from Florida Power Corporation/ Progress Energy Inc. It consists of a 301 feet by 92 feet by 287 feet by 263 feet temporary construction easement and 20 feet by 80 feet permanent easement. The temporary easement was used for core drilling and temporary well construction. The well site layout is presented in figure 2.

The well site can be found by taking State Road 60 in Tampa east to County Road 555. Drive south on County Road 555 about 7 miles, crossing State Road 640, to the power plant entrance on the east side of County Road 555. The well site is just south of the main entrance road leading to the power generating facility and is located in the northwest ¼ of the southwest ¼ of Section 11, Township 31 south, and Range 24 east. Well site coordinates are latitude 27° 47' 45.58" North and longitude 81° 53' 13.60" West. The power generating facility is about 0.7 miles southeast of the well site.

The well site is located in the Polk Upland physiographic region in mid-peninsular Florida. The Polk Upland is a roughly square area surrounded by lower ground on three sides: the DeSoto Plain to the south, the Southern Gulf Coastal Lowland to the west, and the Western Valley to the north. On the east, it is bounded by the higher ground of the Lake Hendry (Lake Henry) Ridge and Lake Wales Ridge, and the Lakeland and Winter Haven Ridges rise from its surface in its northeastern part. Land surface elevation is 169.5 feet above the National Geodetic Vertical Datum of 1929 (NGVD 29) as indicated by a survey conducted after well construction was completed. The Polk Upland and the ridges may have been part of a once ubiquitous highland where the ridges are relict shorelines of the Pleistocene Wicomico Sea and the Polk Upland was reduced by a later inundation. A siliciclastic-rich composition has contributed to the topographic character of the Polk Upland and neighboring ridges because the effects of solution are not as intense as they are elsewhere throughout peninsular Florida (White, 1970).

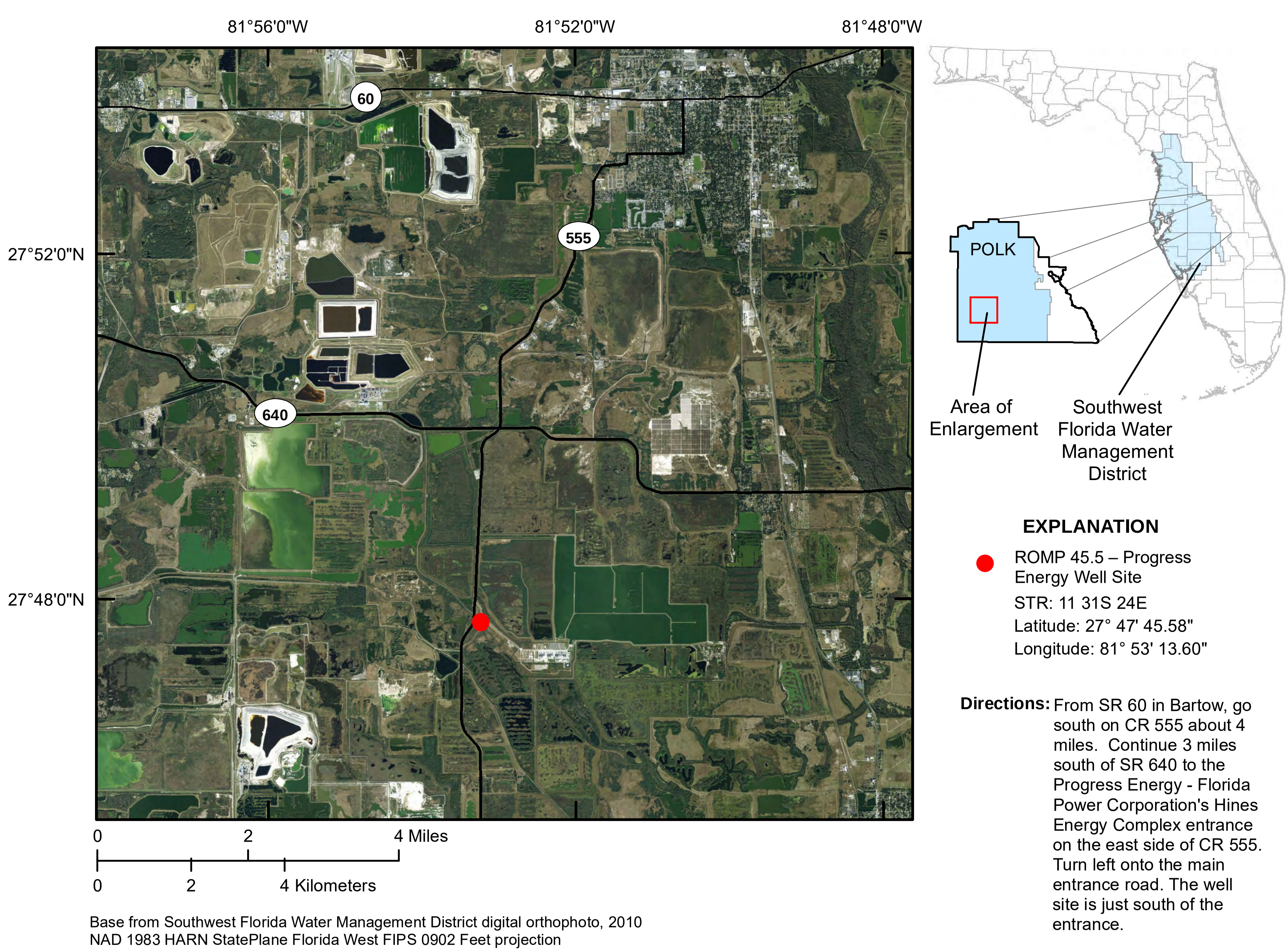
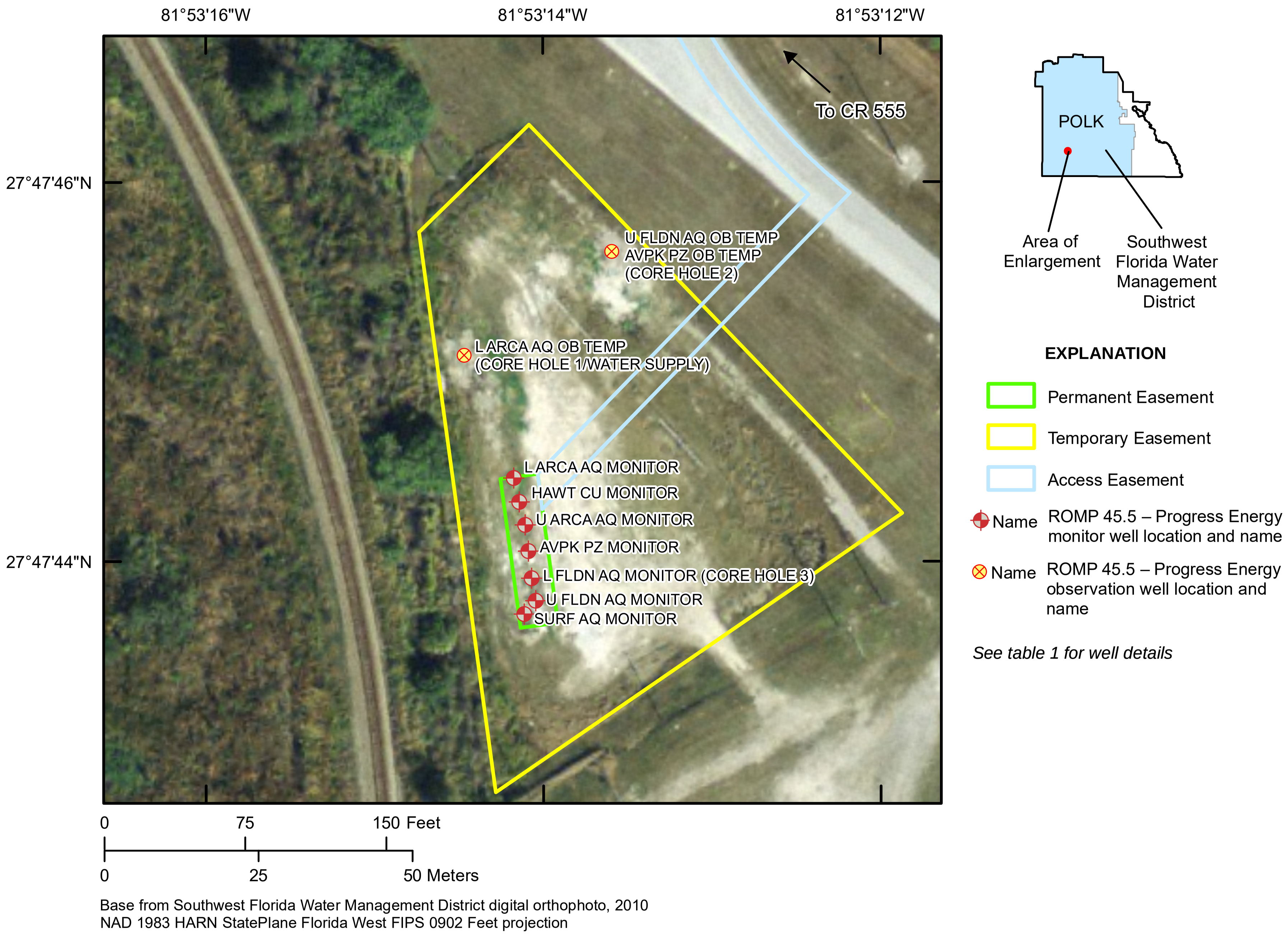


Figure 1. Location of the ROMP 45.5 – Progress Energy well site in Polk County, Florida.



Base from Southwest Florida Water Management District digital orthophoto, 2010
NAD 1983 HARN StatePlane Florida West FIPS 0902 Feet projection

Figure 2. Well site layout for the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

The well site is located in an area of historical strip mining for phosphate ore and as a result the land surface geomorphology has been extensively altered. The immediate well site location has been disturbed by past mining activities. Historical imagery from 1984 shows evidence of mining activities and the Bureau of Mining and Minerals Regulation confirmed the well site had been mined (Orlando Rivera, Bureau of Mining and Minerals Regulation, written commun., 2010). Partially reclaimed strip mines are located to the south and west of the well site and large holding ponds are located to the north and east. The holding ponds are used as a cooling-water supply source for the power plant facility. Limited mining activity is still taking place to the southwest of the well site.

Methods

Exploratory core drilling and testing at the ROMP 45.5 well site included continuous core drilling and sampling to collect lithologic samples. Hydraulic and water quality data were collected primarily during packer tests as the core hole was advanced. APTs also were conducted to obtain large-scale estimates of hydraulic properties. In addition, borehole geophysical logging was conducted at various intervals as core drilling progressed to provide additional hydrogeologic data. A detailed description of the data collection methods used by the ROMP can be found in appendix A. Data pertaining to this well site are available online in the District's Water Management Information System (WMIS) within the ROMP 45.5 – Progress Energy portfolio (WMIS Portfolio ID 120). The WMIS portfolio search can be found at the following web address: http://www8.swfwmd.state.fl.us/WMIS/Portfolio/ExtSearchPortfolios.aspx (accessed April 18, 2011). Available data includes water quality, geophysical log, and long-term water level data. Aquifer pumping test data, slug test data, and stratigraphy will be available in the future.

Lithologic Sampling

The District conducted hydraulic-rotary core drilling from land surface to a total depth of 2,707 feet below land surface (bls) in three different core holes. Shallow exploratory core drilling and testing was conducted to 1,780 feet bls with the District's CME 85 core drilling rig. Lithologic sampling began while core drilling core hole 1 from 2 to 200 feet bls. The punch shoe core drilling method was used to sample the upper unconsolidated sediments and then the wireline core drilling method was employed. Then, core hole 1 was converted to a 6-inch drilling water supply well. Lithologic sampling resumed in core hole 2 from 172 to 1,780 feet bls. Deep exploratory core drilling and testing was conducted using the District's UDR 200D LS core drilling rig. Lithologic sampling was conducted from 1,717 to 2,707 feet bls in the Lower Floridan aquifer monitor well that was constructed on the permanent easement. The well was specifically designed for the possibility of further Lower Floridan aquifer exploration and is designated as core hole 3.

Hydraulic Testing

Hydraulic properties were estimated by performing 41 slug test suites. Testing began after core drilling through the unconsolidated sediments of the undifferentiated sand and clay deposits and the upper part of the Hawthorn Group. Slug testing was performed approximately every 40 feet during shallow exploratory core drilling and testing and about every 100 feet during deep exploratory core drilling and testing. APTs also were performed to estimate hydraulic properties of the Hawthorn and Upper Floridan aquifer systems in the area around the well site.

Water Quality Sampling

Thirty-one groundwater samples were collected at roughly 40-foot intervals during shallow core drilling and testing from 66 to 1,780 feet bls. Ten groundwater samples were collected approximately every 100 feet during deep exploratory core drilling and testing from 1,717 to 2,707 feet bls. The sample collection method varied depending on borehole conditions present during sampling. The samples were collected either directly through the air-lift discharge point or with a nested bailer. Typically, samples were retrieved prior to conducting any slug testing on the packer interval. A portion of each sample was analyzed in the field for temperature, specific conductance, pH, chloride, and sulfate. The remainder of each sample was prepared and delivered to the District's Chemistry Laboratory for additional water quality analyses (Southwest Florida Water Management District, 2009).

Geophysical Logging

Borehole geophysical logs are helpful in delineating stratigraphic units, identifying permeable zones and confining units, characterizing water quality, and determining well casing points and grouting requirements. Geophysical logging was performed four times during the shallow core drilling and testing phase and twice after the deep exploratory core drilling and testing phase ended at the well site. In addition, gamma-ray and caliper logs were run in three wells after the well construction phase. All geophysical logs were collected using the District-owned Century® geophysical logging equipment except for the gamma-ray and caliper log run after deep exploratory core drilling and testing ended. These logs were run by the contractor Aquifer Data Systems because the wire on the District-owned geophysical logging spools were not long enough to reach to 2,707 feet bls. After the District acquired new spools, a full suite of logs were run in core hole 3.

The first suite of logs was performed in October 2005 in core hole 1 after core drilling ended. The 8044C multifunction tool was run from land surface to 202.50 feet bls and the 9165C caliper tool was run from land surface to 202.0 feet bls. In December 2005, a full suite of geophysical logs was conducted from land surface to 356 feet bls in core hole 2. This was done prior to advancing the HW casing to the top of the Upper Floridan aquifer. After core drilling stopped at 1,780 feet bls in August 2006, another set of logs was run from land surface to 1,780 feet bls to obtain a composite geophysical profile of core hole 2. Steel casing causes interference in induction logs and electric logs; therefore, the induction and electric logs may be usable only below the bottom of the temporary casing at 850 feet bls. To capture the borehole without the casing, another set of logs was run after removing the NW casing in August 2006. Because of an obstruction, the tool would not pass below 742 feet bls, a full suite of logs was not obtained. These logs are not presented in this report because they do not offer any additional useful data.

After deep exploratory core drilling and testing ended in March 2008, a gamma-ray and caliper log was run in core hole 3 from land surface to 2,707 feet bls. A final suite of geophysical logs was run in core hole 3 in June 2010, including a gamma-ray and caliper (9074C tool), multifunction (8044C tool), and induction (9511C tool). The final induction geophysical log is not included in this report because the tool malfunctioned during logging.

After well construction and before lining the wells, a gamma-ray and caliper log was run in the Upper Floridan aquifer, the Avon Park permeable zone, and the lower Arcadia aquifer permanent monitor wells. The Avon Park permeable zone monitor well was logged in September 2008, and the Upper Floridan aquifer and lower Arcadia aquifer monitor wells were logged in July 2009.

Well Construction

From September 2005 to October 2005, District staff converted core hole 1 into a drilling water supply well on the temporary easement using the CME 85 rig. The drilling water supply well later served as the lower Arcadia aquifer observation well (L ARCA OB TEMP) during the APT. District staff also constructed a surficial aquifer monitor well (SURF AQ MONITOR) on the permanent easement in October 2005.

Additional well construction and core hole modifications began in October 2006 and ended in September 2007 at the ROMP 45.5 well site. DDC installed seven wells at the ROMP 45.5 well site. Six permanent monitor wells were installed on the permanent easement and include: the Hawthorn confining unit monitor well (HAWT CU MONITOR), the upper Arcadia aquifer monitor well (U ARCA AQ MONITOR), the lower Arcadia aquifer monitor well (L ARCA AQ MONITOR), the Upper Floridan aquifer monitor well (U FLDN AQ MONITOR), the Avon Park permeable zone monitor well (AVPK PZ MONITOR), and the Lower Floridan aquifer monitor well (L FLDN AQ MONITOR). The permanent wells were used as production wells during the APTs. DDC modified core hole 2 on the temporary easement into a dual-zone Upper Floridan aquifer (U FLDN AQ OB TEMP) and Avon Park permeable zone (AVPK PZ OB TEMP) observation well.

From August 2009 to October 2009, District staff lined the lower Arcadia aquifer monitor well (L ARCA AQ MONITOR), the Upper Floridan aquifer monitor well (U FLDN AQ MONITOR), and the Avon Park permeable zone monitor well (AVPK PZ MONITOR) with 6-inch schedule 40 PVC casing. District staff also plugged the dual-zone Upper Floridan aquifer (U FLDN AQ OB TEMP) and Avon Park permeable zone (AVPK PZ OB TEMP) observation well and the lower Arcadia aquifer observation well (L ARCA OB TEMP) with cement grout.

The well placement is presented in figure 2, the well as-built diagrams are presented in appendix B, and a summary of well construction details are presented in table 1. Daily well construction logs for all core drilling and well construction operations are available from the District's online document storage database (Alchemy Web®). Additional well construction details can be found in WMIS.

Geology

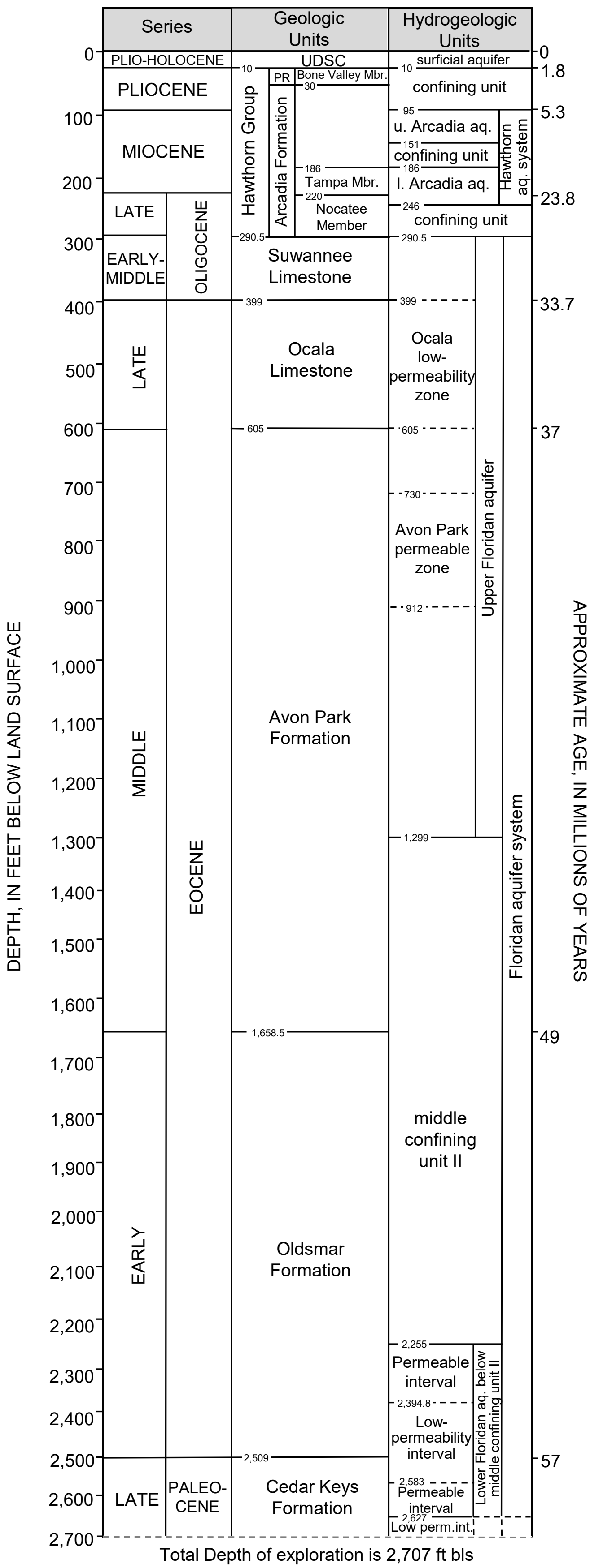
The lithostratigraphy of the ROMP 45.5 well site is based on the exploratory core drilling that was conducted from land surface to a total depth of 2,707 feet bls. The general geology of the area around the well site consists of Tertiary-age carbonates and clastic sediments overlain by Quaternary-age clastic sediments. The geologic units encountered at the well site include, in ascending order: the Cedar Keys Formation, Oldsmar Formation, Avon Park Formation, Ocala Limestone, Suwannee Limestone, Hawthorn Group inclusive of the Arcadia Formation and its Nocatee and Tampa Members and the Bone Valley Member of the Peace River Formation, and undifferentiated sand and clay deposits. Although geologic units have been picked in the upper 30 feet, the unit horizons should not be used as true horizons if performing a geologic study comparing regional stratigraphy because they have been disturbed by past mining activities. A stratigraphic column detailing the hydrogeology of the well site is presented in figure 3. The lithologic logs for the well site are presented in appendix C. Digital photographs of the lithologic core samples are presented in appendix D.

Table 1. Summary of well construction details at the ROMP 45.5 – Progress Energy well site in Polk County, Florida

[ft, feet; bls, below land surface; WCP No., well construction permit number(s), District, Southwest Florida Water Management District; DDC, Diversified Drilling Corporation; SID, site identification; U, upper; L, lower; SURF, surficial; AQ, aquifer; PCRV, Peace River; ARCA, Arcadia; FLDN, Floridan; AVPK, Avon Park; PZ, permeable zone; OB, observation; ROMP, Regional Observation and Monitor-well Program; CH, core hole]

Well Name	SID	Alternate Name	Open Interval (ft bls - ft bls)	Construct-ed By	Start Date (MM/DD/YYYY)	Complete Date (MM/DD/YYYY)	Status	WCP No.
ROMP 45.5 (PRIM WC01) SURF AQ MONITOR	24808		2-12	District	10/05/2005	10/05/2005	Active	727431
ROMP 45.5 HAWT CU MONITOR	662167		50-76	DDC	09/12/2007	09/13/2007	Active	765729
ROMP 45.5 U ARCA AQ MONITOR	661559		95-151	DDC	09/06/2007	09/11/2007	Active	765361
ROMP 45.5 L ARCA AQ MONITOR	660962		170-215	DDC	08/21/2007	09/05/2007	Active	749660, 764964, 786382
ROMP 45.5 U FLDN AQ MONITOR	599857		290-392	DDC	01/19/2007	06/28/2007	Active	749659, 786383
ROMP 45.5 AVPK PZ MONITOR	657524		555-915	DDC	06/29/2007	08/20/2007	Active	749658, 762994, 786385
ROMP 45.5 L FLDN AQ MONITOR	670743	CH 3	1,650-2,688	DDC/District	12/12/2006	03/14/2008	Active	749657, 766845
ROMP 45.5 L ARCA AQ OB TEMP	766731	CH 1/Drilling Water Supply	180-228	District	10/05/2005	10/14/2005	Abandoned	724597, 786386
ROMP 45.5 U FLDN AQ OB TEMP	726606	CH 2	290-400	District/DDC	10/15/2005	02/16/2007	Abondoned	749656, 800237
ROMP 45.5 AVPK PZ OB TEMP	599854	CH 2	615-911	District/DDC	10/15/2005	02/16/2007	Abondoned	749656, 800237
ROMP 45.5 COREHOLE 1	24807	CH 1/Drilling Water Supply	50-200	District	9/21/2005	10/4/2005	Abandoned	724597
ROMP 45.5 COREHOLE 2	24806		172-1,780	District	11/1/2005	8/3/2006	Abandoned	724587, 730098, 736997, 745692
ROMP 45.5 COREHOLE 3	766733	CH 3/L FLDN AQ MONITOR	1,650-2,707	District	10/1/2007	3/14/2008	Active[1]	766845

[1]COREHOLE 3 is now the L FLDN AQ MONITOR.



UDSC, undifferentiated sand and clay; Plio, Pliocene; l., lower; Mbr., Member; aq., aquifer; PR, Peace River Formation; u., upper; perm., permeable; int., interval

Cedar Keys Formation (Late Paleocene)

At the ROMP 45.5 well site, the late Paleocene aged Cedar Keys Formation was encountered at 2,509 feet bls and extends past the total depth of exploration at 2,707 feet bls. The top of the Cedar Keys Formation is marked by the start of an extensive dolostone sequence, which is a distinct lithologic change from the overlying Oldsmar Formation. From 2,509 to 2,583 feet bls, the formation is very pale orange to pale yellowish brown and gray, finely crystalline, very well indurated, vuggy dolostone. Vugs are filled with dolomite crystals. The upper section contains abundant evaporites thought to be anhydrite and is better described as interbedded anhydritic dolostone and dolomitic anhydrite. Angled banding or laminations are present from 2,537 to 2,555 feet bls. From 2,570 to 2,583 feet bls, the anhydrite decreases. Observed porosity is low with an estimate of 1 percent or less. In addition, apparent permeability is low.

From 2,583 to 2,627 feet bls, the lithology changes to a very pale orange to pale yellowish brown, very fine to finely crystalline, moderately to well indurated, fractured dolostone. The dolostone contains appreciably less anhydrite than the section above. The anhydrite is present interstitially and as fill in veins and vugs. Fossil remnants resembling gastropods were observed at 2,611 feet bls but they could not be identified. Observed porosity is low. The apparent permeability increases because of the fractures.

From 2,627 feet bls to the total depth of the core hole at 2,707 feet bls, the dolostone becomes less indurated. Porosity appears to increase but permeability appears to decrease because the fractures decrease. Core recovery in the Cedar Keys Formation was 98 percent.

Oldsmar Formation (Early Eocene)

The early Eocene aged Oldsmar Formation is a carbonate rock formation that underlies the entire Florida peninsula (Miller, 1986). At the ROMP 45.5 well site, the top of the Oldsmar Formation was picked at 1,658.5 feet bls where the lithology changes from dolostone to limestone. The Oldsmar Formation extends to 2,509 feet bls. The transition to the Oldsmar Formation from the overlying Avon Park Formation is gradual and not easily differentiated. The first limestone bed encountered from 1,658.5 to 1,685.5 feet bls is a substantial change from the dolostone of the overlying Avon Park Formation, however, the dolostone interbeds of the Oldsmar Formation are similar to the dolostone of the overlying Avon Park Formation. Additionally, according to Chen (1965) the top of the Oldsmar is not easily recognized on electric logs.

Figure 3. Stratigraphic column detailing the hydrogeologic setting at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

However, there is a substantial drop in gamma-ray activity near the top of the Oldsmar Formation (appendix E). Coincidentally, the steel casing, which typically reduces gamma-ray activity, ends at 1,650 feet bls.

The Oldsmar Formation predominantly consists of thickly interbedded layers of very pale orange limestone and very pale orange to pale yellowish brown dolostone. The limestone beds predominate the dolostone beds and are generally thicker. The interbedding is apparent on the resistivity logs as intervals of erratic increases and decreases in resistivity (appendix E5).

Limestones make up nearly 65 percent of the lithology of the Oldsmar Formation at the well site. The limestone beds are mostly moderately to well indurated, however, there are instances of poorly indurated limestones. The limestones range from mudstones to grainstones that have a weathered appearance but some limestones are crystalline. The limestones are moldic in parts and some of the molds are lined with calcite crystals. Some sections of the limestones are mottled most likely because of selective dolomitization. The limestones are very fossiliferous and predominantly include benthic foraminifera. From about 2,009 to about 2,151 feet bls, fossils that measure roughly 0.2-inch in diameter were observed but could not be identified. The fossils look like large *Miscellanea nassauensis* or *Nummulites sp*. Green fibrous material resembling algae was observed at 2,166 feet bls. *Dictyoconus sp.* was observed at 2,166 and 2,176 feet bls. At 2,291 and 2,293 feet bls, a fossil resembling *Coskinolina elongata* was observed. Sections of the limestones have a pelletal appearance that could be ooids, miliolids, or *Helicostigina gyralis*. Remnants of coral, bryozoa, and mollusks that resemble oysters also are present. Organic laminations and plant remains were sparsely observed in this section.

The limestones also contain evaporites interstitially and as pore, mold, vein, and fracture fill. From 2,302.5 to 2,306 feet bls, the evaporites appear green. The evaporite content is less in the limestones than in the interbedded dolostones. The lower section of the Oldsmar Formation, beginning about 2,200 feet bls, is more dolomitized than the upper section. From about 2,241 to 2,255 feet bls, pale olive sandstone was observed intermixed with the limestone. The color resembles the color of glauconite.

Observed porosity values vary within the limestone beds and range from 5 to 15 percent. The main sources of porosity in the limestones are pinpoint vugs and molds. Minor fractures appear from about 2,321 to 2,347 feet bls that could increase porosity. The limestone beds appear to have higher porosity than the dolostone interbeds.

Dolostones make up roughly 35 percent of the Oldsmar Formation. The dolostones are very well-indurated, highly altered, crystalline, and vuggy. The dolostones range from fine to coarsely crystalline. They contain abundant gypsum and anhydrite interstitially and as nodules and beds. Various fossil fragments and molds were observed but only echinoid remnants could be identified in the upper section of dolostones. Organic laminae and plant remains also were observed.

The dolostones have low apparent permeability. Observed porosity in the dolostones is less than 5 percent and the main types are vuggy and intercrystalline. Some vugs are lined with calcite crystals. The core recovery within the Oldsmar Formation was 100 percent.

Avon Park Formation (Middle Eocene)

The Avon Park Formation extends from 605 to 1,658.5 feet bls at the ROMP 45.5 well site. The formation conformably overlies the Oldsmar Formation (Chen, 1965). The disappearance of the benthic foraminifer *Nummulites vanderstoki* and the appearance of the *Neolaganum dalli* echinoid mark the top of the Avon Park Formation. The top also corresponds to gamma-ray peak and subsequent higher background count rates on the gamma-ray log (appendix E). The top of the Avon Park Formation is commonly marked by a gamma-ray peak that is attributed to organic material (Arthur and others, 2008; Tihansky and Knochenmus, 2001). Arthur and others (2008) further state that the Avon Park Formation typically has a higher gamma-ray background count rate than the overlying Ocala Limestone and a gamma-ray peak is still apparent, although subdued, even if organic material is not visible in the core because of recrystallization and dolomitization.

The Avon Park Formation is predominantly yellowish-gray to very pale orange, fossiliferous limestones and dolostones with organic laminae throughout. The Avon Park Formation from 605 to 785 feet bls, largely consists of yellowish-gray to very pale orange, weathered, highly fossiliferous, pelletal limestone intermixed with three notable beds of very pale orange, fine-grained, calcareous sand. The sand layers are located from 625 to 630 feet bls, 745 to 750 feet bls, and 755 to 785 feet bls. The limestone texture is predominantly grainstone but instances of mudstone, wackestone, and packstone are present throughout this section. Sedimentary structures present in this section are laminations and bioturbation. Induration ranges from poor to good, although, it is generally poor. The fossils identified within this section include benthic foraminifera, echinoids, and mollusks, most notably *Cushmania americana (formerly Dictyoconus americanus)* and *Neolaganum dalli* (Bryan, 2005). The limestone from 630 to 665 feet bls is an interbedding of fine-grained, fossiliferous grainstone and coarse-grained, very fossiliferous grainstone that is primarily made up of echinoids, resembling coquina.

During the core drilling of the Avon Park Formation, the drill rods dropped various times throughout the uppermost portion of the formation. The first rod drop occurred from

730 to 742 feet bls. Sediment was not returned in the air-lift discharge suggesting a large void is present. More rod drops occurred within the sand beds from 755 to 785 feet bls. Most of the sediment recovered from this interval was from the air-lift discharge. From 605 to 785 feet bls, the porosity is primarily intergranular and moldic and generally ranges from 10 to 25 percent, but is higher where the void is present.

From 785 to 912 feet bls, the lithology is generally dark yellowish brown, slightly fossiliferous, vuggy, fractured, crystalline dolostones. The dolostones are moderately to highly altered, hard, dense, and well indurated. They are predominately fine-grained but are sucrosic in areas throughout the section (most notably from 812 to 821 feet bls). Some organics are present below 869 feet. The dolostones in this section have fewer fossils than the preceding limestone layers and are mainly in the form of echinoid molds. From about 815 to 830 feet bls, the beds appear to dip at approximately 45 degrees. The dolostones are brecciated and have a mottled appearance. From 861.5 to 912 feet bls, breccia structures and mottles are particularly common. Sources of porosity are fractures, vugs and pin-point vugs, intergranular, intercrystalline, and molds. From 793 to 912 feet bls, the dolostones are highly fractured resulting in high secondary porosity ranging from 35 to 40 percent.

Below from 912 to 1,299 feet bls, the lithology is predominantly interbedded very pale orange to yellowish-gray, silty, fossiliferous dolostones and dolomitic limestones. Induration ranges from poor to good but overall this section is more poorly indurated than the previous section. Some beds are weathered and friable. Rare white dolomitic limestone beds are interspersed in this section. Fossils present are mainly in the form of echinoid, foraminifer, mollusk, and coral molds. Organics are present in the form of laminates and clasts throughout this section. From approximately 1,004 to 1,020 feet bls, drusy quartz and euhedral quartz crystals are present in vugs. Minor traces of gypsum begin at 1,046.4 feet bls. Vugs lined with euhedral calcite crystals are present from 1,116.5 feet to the end of the section at 1,299 feet bls. The lower half of the section becomes increasingly weathered. Sedimentary structures in this section include laminations, breccia, and, to a lesser extent, bioturbation. Mottling is present throughout this section. Wormholes were noted around 1,046.4 feet bls. Sources of porosity include vugs and pin-point vugs, intergranular, and molds. Porosity is estimated to range from 10 to 25 percent.

From 1,299 to 1,658.5 feet bls, the lithology is primarily very pale orange, hard, vuggy, fine to very fine grained dolostone with interstitial and massive gypsum and anhydrite. Fossils observed throughout this section were benthic foraminifera, echinoids, corals, bryozoans, and mollusks. Traces of chert and organics are present throughout the section. Another significant drop in porosity and permeability occurs within this section of the Avon Park Formation because of the abundance of pore-filling gypsum and anhydrite. Observed porosity values stay below 10 percent in this section. Washouts correlating with the beds of massive gypsum and anhydrite near the top of this section (from 1,323 to 1,425 feet bls) are evident on the caliper log. This is probably because of dissolution of the evaporite minerals that have been exposed to drilling fluids the longest amount of time. The massive beds below have had less exposure time and have not dissolved, although small caliper kicks appear to correspond with some of the beds (appendix E). The average recovery within the Avon Park Formation was 85 percent.

Ocala Limestone (Late Eocene)

The Ocala Limestone extends from 399 to 605 feet bls at the ROMP 45.5 well site. The Ocala Limestone disconformably overlies the Avon Park Formation. The top of the Ocala Limestone is marked by the appearance of abundant *Lepidocyclina ocalana*, a fossil characteristic to this lithostratigraphic unit (Miller, 1986). More importantly, a characteristic drop in gamma-ray activity also corresponds with the contact. This muted response remains throughout the formation (appendix E). The general lithology is a fossiliferous, weathered, moderately soft, moderately to poorly indurated mudstone to wackestone. The Ocala Limestone appears to lack any sedimentary structure. Observed porosity in the Ocala Limestone ranges from 10 to 15 percent and is generally intergranular and moldic. The Ocala Limestone encountered at the well site closely resembles what Miller (1986) describes as a less often encountered lower permeability micritic limestone that can compose the entire Ocala Limestone in certain places in southern Florida.

From 399 to 475 feet bls, the limestone is a yellowish-gray, granular, fossiliferous mudstone with moderate to poor induration. Another benthic foraminifer observed in this section is *Spirolaea veroni*. Observed porosity is approximately 10 percent in this section. A pyrite nodule was found at the top of the formation. Below from 475 to 555 feet bls, the limestone changes to a white to yellowish gray, very fossiliferous, wackestone with some beds of packstone. Echinoid fossils (*Eupatagus sp.*) and *Nummulites vanderstoki* were observed around 535 feet bls and continued throughout the Ocala Limestone. *Lepidocyclina ocalana* and mollusk fragments also were found in this section. The observed porosity within this bed appeared to increase.

White to yellowish-gray, fossiliferous mudstone and wackestone predominates the Ocala Limestone below 555 feet bls. Induration still is moderate to poor; however, it is better than the above sections in the formation. Observed porosity remains from about 8 to 10 percent. *Lepidocyclina ocalana* is still present but in lower numbers and echinoids and *Nummulites vanderstoki* increase. The average core recovery achieved within the Ocala Limestone was 98 percent.

Suwannee Limestone (Oligocene)

At the ROMP 45.5 well site, the Suwannee Limestone extends from 290.5 to 399 feet bls. The Suwannee Limestone disconformably overlies the Ocala Limestone. An abrupt absence of phosphatic siliciclastics and a drop in gamma-ray activity (appendix E) mark the top of the Suwannee Limestone. It consists of white to yellowish-gray, poorly to moderately indurated, mostly soft, friable, fossiliferous mudstone to wackestone with some beds of packstone. Packstone is the dominant texture from 349.6 to 377.2 feet bls. Some harder, better indurated limestone lenses are present throughout the Suwannee Limestone. Below 353 feet bls some beds are more fossiliferous, friable, and softer than other beds. Mollusk, gastropod, foraminifera, coral, and bryozoa fragments were observed. A dolostone nodule is present at 375 feet bls and a thin organic layer was observed at 377 feet bls. The limestone is extremely friable from 385 to 390 feet bls. Observed porosity ranges from 20 to 25 percent and is intergranular and moldic.

Coarsening upward graded bedding is the prominent sedimentary structure within this formation and suggests a series of regressions occurred during deposition. This is especially apparent from 290.5 to 353 feet bls. The finer beds have poorer induration than the coarser grained layers. Approximate core recovery was 68 percent within the Suwannee Limestone.

Hawthorn Group (Early Pliocene, Miocene, Late Oligocene)

The Hawthorn Group extends from 10 to 290.5 feet bls at the ROMP 45.5 well site. The Hawthorn Group unconformably rests atop the Suwannee Limestone. In west-central Florida, the Hawthorn Group consists of several formations and formational members. At the well site, the formations and members encountered are, in ascending order: the Arcadia Formation and its Nocatee and Tampa Members and the Bone Valley Member of the Peace River Formation.

Two test holes were drilled within the Hawthorn Group sediments during exploratory core drilling. The drilling water supply well initially served as core hole 1 and was drilled from land surface to 200 feet bls. After constructing the drilling water supply well, the core rig was moved about 150 feet northeast (fig. 2) and core drilling resumed from 172 to 1,780 feet bls in core hole 2. The overlapping lithology of the two core holes is alike.

The Arcadia Formation extends from 30 to 290.5 feet bls. The term undifferentiated Arcadia is used to describe the Arcadia Formation where the Nocatee and Tampa Members are not present (Scott, 1988). The undifferentiated Arcadia extends from 30 to 186 feet bls, the Tampa Member extends from 186 to 220 feet bls, and the Nocatee Member extends from 220 to 290.5 feet bls at the well site.

The top of the Nocatee Member is delineated at 220 feet bls because this depth corresponds to a left kick on the gamma-ray log that is characteristic of the top of the Nocatee Member on the generalized gamma-ray log of the Hawthorn Group in Polk County (Scott, 1988). The top of the Nocatee Member also is marked by the start of predominantly siliciclastic sand and clay sediments and a decrease in carbonate sediments. Carbonates are not unusual in the Nocatee but generally are dominated by siliciclastics. Generally, sand content is higher in the Nocatee Member than in the Tampa Member. The Nocatee Member from 220 to 246 feet bls consists of quartz sandstone and limestone that is variably dolomitic. The Nocatee Member from 246 to 271 feet bls consists of stiff clay that grades from olive-gray to dark greenish gray to greenish-black. There is minor mottling of the colors in this section. From 271 to 290.5 feet bls, the lithology becomes increasingly sandy and less clayey down-hole with several layers of yellowish-gray, well-indurated, fine-grained, phosphatic and quartzose sandstone. Gamma-ray activity is more subdued in the Nocatee Member than in the undifferentiated Arcadia Formation because the phosphate content decreases (appendix E). Clay minerals appreciably reduce formation resistivity because they are flat and have a greater surface area per volume; thus, they have a greater surface conduction (Keys, 1990). This is evident by the left kick in short (16N) and long (64N) resistivity from 246 to 290.5 feet bls that corresponds with the Nocatee Member, which is primarily clay. Single-point resistance also shows a decrease in intensity within the Nocatee Member (appendix E). Because of the extensive clay content of the Nocatee Member, the observed porosity is very low ranging from zero in the upper section to 3 percent in the lower sandier section. The average core recovery of the Nocatee Member was 61 percent. The core recovery was low because of the abundant sand content. Core was not recovered from 235 to 240 feet bls because it was a sand bed.

The Tampa Member of the Arcadia Formation extends from 186 to 220 feet bls. The top is marked by a major decrease in phosphate content and is evident as a decrease in gamma-ray response (appendix E). The lithology is predominantly limestone that is mostly yellowish gray to white, moderate to well indurated, variably dolomitic, packstone to wackestone with instances of mudstone. The limestones contain yellowish gray to light olive gray fine-grained quartz, phosphate, and calcareous sand and a minor amount of grayish green, plastic clay. The limestones also contain rare coral, gastropod, and echinoid fossil remnants. Chert nodules are present in the uppermost limestone bed. The Tampa Member also contains dark yellowish orange, crystalline, well indurated dolostone from about 199 to 210 feet bls. The major sources of porosity are intergranular and moldic. The observed porosity ranges from 2 to 25 percent with the low values representing the mudstones and clay. The average core recovery within the Tampa Member was 60 percent.

The undifferentiated Arcadia Formation extends from 30 to 186 feet bls. The contact between the overlying Bone Valley Member and the undifferentiated Arcadia Formation appears gradational because it is not easily recognizable from the core samples. However, the top is marked by a left kick on the gamma-ray log that is characteristic of the top of undifferentiated Arcadia Formation on the generalized gamma-ray log of the Hawthorn Group in Polk County (Scott, 1988).

The lithology within the undifferentiated Arcadia Formation is highly variable. It generally consists of, in order of abundance: interbedded yellowish-gray to gray to white, very poorly to moderately indurated, fossiliferous, mudstone to grainstone with phosphate and quartz sand; yellowish-gray to light olive gray, fine-grained, phosphate and quartz sand which is clayey in areas; poorly indurated very pale orange to yellowish-gray dolostone; light olive gray to grayish-green, plastic clay; and white to light-gray to yellowish-gray dolosilt. Several chert nodules are located throughout the undifferentiated Arcadia Formation. Abundant phosphate pebbles are present from 33 to 40 feet bls. A limestone and phosphate breccia is present from 49 to 49.5 feet bls. The gamma-ray response is active throughout the undifferentiated Arcadia Formation where the phosphatic sands and clays are present (appendix E). The gamma-ray activity may be more active than observed, however, as a result of interference from the steel casing set at 167 feet bls because steel casing can reduce gamma-ray activity nearly thirty percent (Helander, 1983). It is evident on the gamma-ray log that intensity increases just below the casing point where phosphate is still relatively abundant. Then, the activity becomes more muted around 186 feet bls where phosphate decreases.

Observed porosity in the undifferentiated Arcadia Formation ranges from 1 to 20 percent and is generally on the lower end of porosity values for this formation. The primary type of porosity in the limestone beds is intergranular with moldic porosity where fossiliferous. The observed porosity for the limestones ranges from 5 percent for the mudstones and wackestones to 10 to 20 percent for the packstones and grainstones. The primary type of porosity in the dolostone and dolosilt beds is intergranular and generally is 5 percent or less. The observed porosity for the sand and clay layers is variable but generally less than 10 percent and is intergranular. Unidentifiable echinoid and mollusk fossils were observed. The core recovery was relatively poor (as compared to other recoveries) at 65 percent because of the abundant sand layers.

The Bone Valley Member of the Peace River Formation extends from about 10 to 30 feet bls. The top of the unit is delineated by the first appearance of phosphate. The Bone Valley Member is the phosphate ore body that has been extensively mined in the region. The ROMP 45.5 well site was previously mined and sediments indicate reworking that is likely the result of mining activities. Therefore, as mentioned in the first paragraph of the Geology section, the delineated top may not be accurate and should not be used as a true unit horizon.

The Bone Valley Member lithology is mostly fine to medium grained, yellowish-gray, clayey quartz and phosphate sand intermixed with grayish yellow green clay. Iron staining was observed. Abundant phosphate pebbles are present throughout the unit. No fossils were observed. Mottling was observed in the Bone Valley Member. The observed porosity of the Bone Valley Member is under 10 percent and is intergranular. Gamma-ray response is very active and intense and likely results because of the abundant phosphate present (phosphate contains radioactive uranium isotopes). Core recovery in the Bone Valley Member was 82 percent.

Undifferentiated Sand and Clay Deposits (Pliocene-Holocene)

The Holocene to Pliocene age undifferentiated sand and clay deposits extend from land surface to about 10 feet bls. For reasons discussed in the first paragraph of the Geology section, the undifferentiated sand and clay deposits horizon may not be accurate. The lithology from 2 to 4 feet bls is a pale yellowish brown, fine-grained, quartz sand layer. The lithology from 4 to 5 feet bls is a very fine to fine grained, dusky-brown, quartz sand with a silt-sized organics. The lithology from 5 to 10 feet is very light gray, fine-grained, iron-stained, and mottled, clayey sand.

Observed porosity is approximately 25 percent from 2 to 10 feet bls, however, the apparent permeability decreases from 5 to 10 feet bls because of an increase in clay. Average sediment recovery was 38 percent and there was no recovery from land surface to 2 feet bls.

Hydrogeology

The ROMP 45.5 well site hydrogeology was defined during exploratory core drilling and testing. Hydrogeologic units primarily were identified from the results of 47 slug tests, as well as from APTs, specific capacity tests, lithologic descriptions, water levels, water quality data, and geophysical log data. One aquifer and two main aquifer systems were delineated at the well site and include, in descending order: the surficial aquifer, the Hawthorn aquifer system (intermediate aquifer system in previously published reports), and the Floridan aquifer system. The Hawthorn aquifer system can be divided into two aquifers, the upper Arcadia and lower Arcadia aquifers, separated by a confining unit. The Floridan aquifer system can be divided into the Upper Floridan aquifer and the Lower Floridan aquifer, separated by the middle confining unit II (Miller, 1986). Additionally, the Upper Floridan aquifer contains a zone of lower permeability and a zone of higher permeability (fig. 3). The Hawthorn aquifer system is equivalent to the intermediate aquifer system that is referred to in previous reports and the aquifers contained within it have been referred to using a variety of schemes (fig. 4). In this report, the Hawthorn aquifer system naming convention presented by DeWitt and Mallams (2007) is used and is consistent with aquifer nomenclature guidelines proposed by Laney and Davidson (1986) and the North American Stratigraphic Code (2005). In addition, the naming convention used in this report for the surficial aquifer and the Floridan aquifer system is consistent with aquifer nomenclature guidelines proposed by Laney and Davidson (1986) and the North American Stratigraphic Code (2005). A comparison of the nomenclature used in this report (District nomenclature that is not site-specific) and previously published reports is presented in figure 4.

As discussed in appendix A, the horizontal hydraulic conductivities (herein referred to as hydraulic conductivity) derived from the slug tests may be underestimated because of unavoidable testing errors and limitations of the analysis (Butler, 1998). Consequently, the values should be used as an approximation of the relative differences between permeable and confining intervals. The slug test results are presented in table 2. All the hydraulic conductivity estimates are within expected ranges for the lithology types encountered (Freeze and Cherry, 1979). A graph of the hydraulic conductivity estimates and core hole depth is presented in figure 5. The slug test data acquisition sheets are offered in appendix F and the curve-match analyses are given in appendix G.

Water level data were collected almost daily during the core drilling phases in the surficial aquifer monitor well (SURF AQ MONITOR), lower Arcadia aquifer monitor well (L ARCA AQ MONITOR), and the composite (non-isolated) core hole (appendix H). Additionally, core hole water level data were recorded during isolated test intervals and should be representative of how the water level varied with depth and within the different aquifers and aquifer systems. The composite and test interval core hole water level data recorded during exploratory core drilling are presented in figure 5.

APTs were conducted on the lower Arcadia aquifer and the Upper Floridan aquifer within the Suwannee Limestone and the Avon Park permeable zone. The APT data collection sheets are presented in appendix I. The APT curve-match analyses are presented in appendix J.

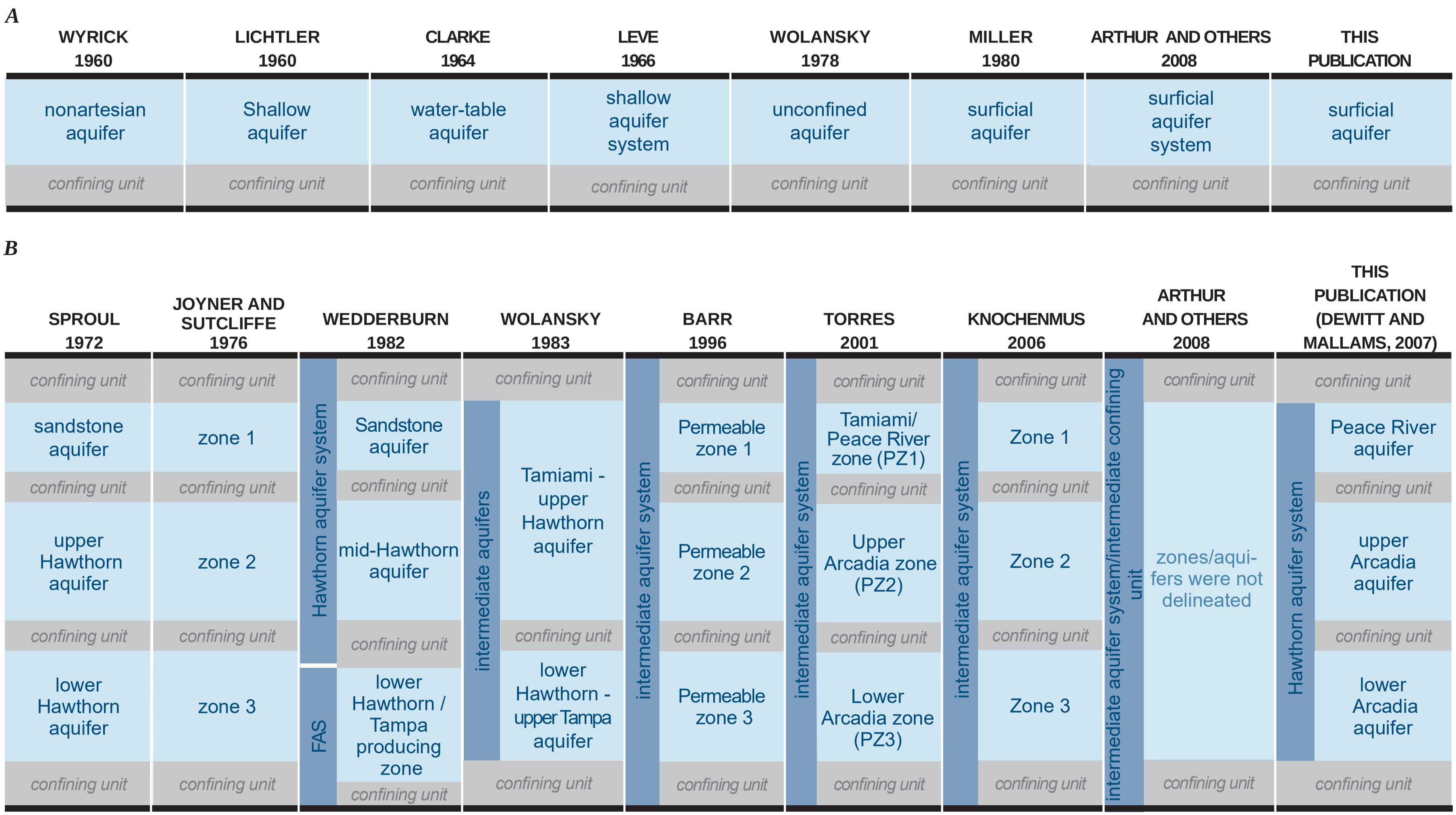
Surficial Aquifer

The surficial aquifer is the uppermost hydrologic unit at the ROMP 45.5 well site and extends from land surface to approximately 10 feet bls. It is contained in the undifferentiated sand and clay deposits. The water table marks the top of the surficial aquifer. The clayey sand and clay seams at the base of the undifferentiated sand and clay unit and the low permeability clay and clayey sand sediments of the Bone Valley Member and the upper part of the undifferentiated Arcadia Formation create a confining unit that forms its base, which separates the surficial aquifer from the Hawthorn aquifer system. The surficial aquifer is defined as an aquifer and not an aquifer system because it consists only of one permeable unit at the well site. The unconfined surficial aquifer essentially underlies all of Polk County (Campbell, 1986). In Polk County, the surficial aquifer is used primarily for domestic, commercial, and small municipal supplies, where the sand deposits are substantial and are water-producing (Knochenmus, 2006; Miller, 1990).

A 6-inch diameter surficial well screened from 2 to 12 feet bls (appendix B) was constructed in October 2005 to monitor surficial aquifer water levels. During shallow core drilling and testing, the water level in the surficial aquifer ranged from 3.3 to 8.8 feet bls from November 2005 to August 2006 (appendix H). During deep exploratory core drilling and testing, from October 2007 to March 2008, the water level in the surficial aquifer ranged from 0.09 feet above land surface to 7.1 feet below land surface (appendix H). The surficial sediments remained saturated throughout both monitoring periods. The water level fluctuated with rainfall. No slug testing or water quality sampling was performed in the surficial aquifer because the unconsolidated sediments made it difficult to test during exploratory core drilling. In addition, no tests were performed after the well was constructed.

The confining unit below the surficial aquifer helps to restrict vertical movement of water between the overlying surficial aquifer and the Hawthorn aquifer system and extends from about 10 to 95 feet bls. No slug tests were performed from 16 to 51 feet bls because testing is difficult in unconsolidated sediments. In addition, water levels were not recorded from 16 to 51 feet bls because well casing was set through the Bone Valley Member and the very top of the undifferentiated Arcadia Formation. Although no hydraulic data were collected for this section, it is considered to be a part of the confining unit because of its overall lithology.

Two slug tests were conducted in the confining unit; one with a test interval from 51 to 90 feet bls and another from 66 to 90 feet bls. The hydraulic conductivity estimates are 3 ft/d and 0.5 ft/d, respectively. The geometric mean hydraulic conductivity value is 1 ft/d. During well construction, the contract supervisor noticed a substantial amount of water while drilling from about 50 to 60 feet bls within the Arcadia Formation. Therefore, a well was constructed with an open interval from 50 to 76 feet bls (table 1). The Peace River aquifer is not mapped in this area and this interval was not observed during exploratory core drilling. Consequently, it is likely a local thin permeable interval within the unit; but, overall, the unit acts as a confiner. The higher hydraulic conductivity estimate between 51 and 90 feet bls may have resulted from this



[FAS, Floridan aquifer system]

Figure 4. Nomenclature of (*A*), the surficial aquifer, (*B*), the Hawthorn aquifer system, and (*C*), the Floridan aquifer system used for the ROMP 45.5 – Progress Energy well site compared to names in previous reports.

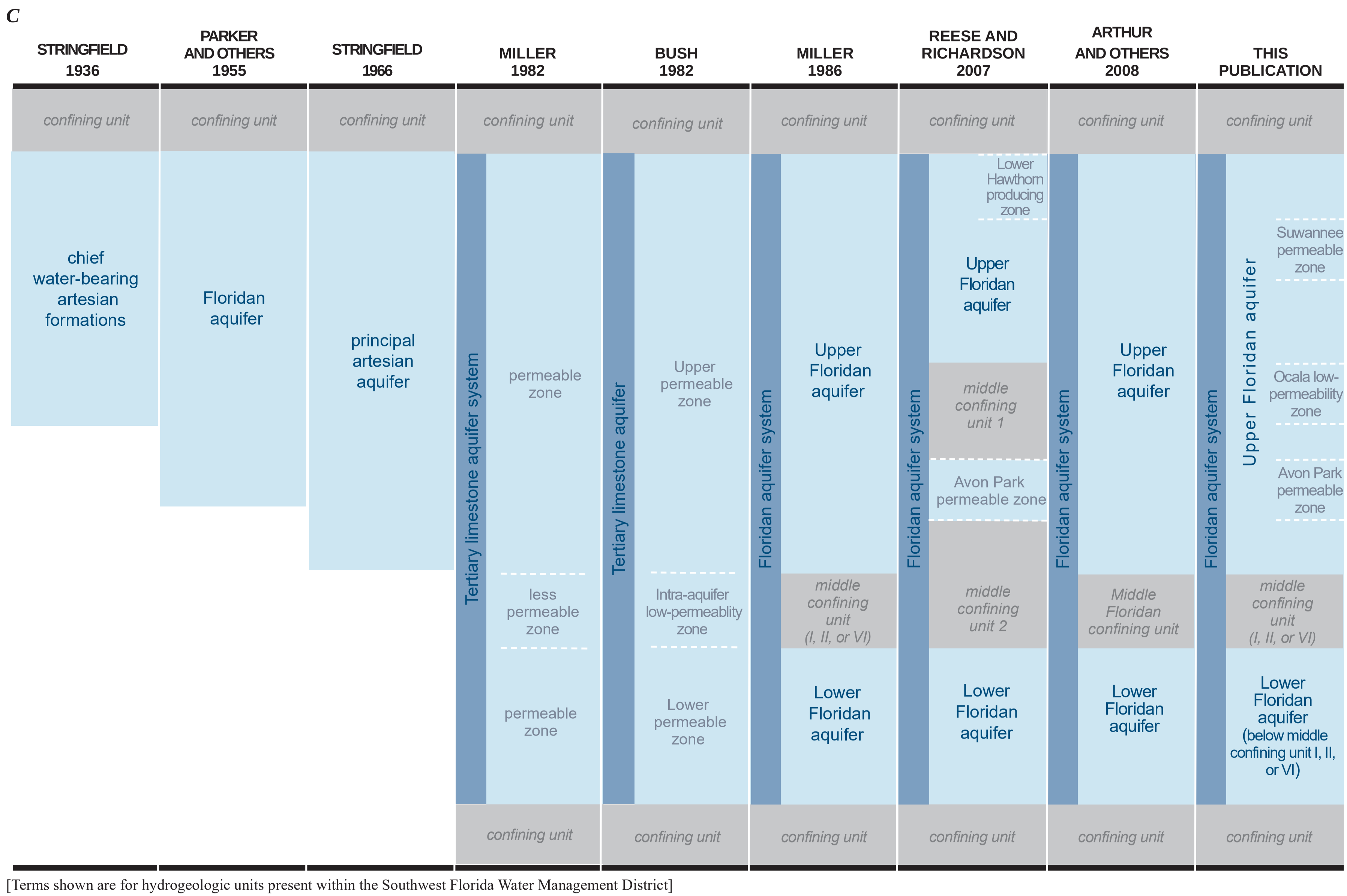


Figure 4. (Continued) Nomenclature of the (*A*), surficial aquifer, (*B*), Hawthorn aquifer system, and (*C*), Floridan aquifer system used for the ROMP 45.5 – Progress Energy well site compared to names in previous reports.

Table 2. Summary of the core hole slug test results performed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida

[No., number; ft., feet; bls, below land surface; CH 1, COREHOLE 1; CH 2, COREHOLE 2; CH 3, COREHOLE 3; ft/d, feet per day; All slug tests are pneumatic rising head except where otherwise noted; All slug test intervals are isolated with a packer assembly except where otherwise noted; Hydraulic conductivity values are underestimated for higher K zones when using NQ packer assembly]

Slug Test No.	Date (MM/DD/YYYY)	Test Interval (ft bls)	Visual Lithologic Characterization	Geologic/Hydrogeologic Unit	Analytical Method	Horizontal Hydraulic Conductivity (K) (ft/d)	Comments
1	09/26/2005	51-90	Limestone and Phosphatic, clayey sand	confining unit	KGS (Hyder and others, 1994)	3	CH 1,Tested on HW casing, no packer
2	09/27/2005	66-90	Weathered Limestone and Phosphatic, sandy clay	confining unit	KGS (Hyder and others, 1994)	0.5	
3	09/29/2005	95-130	Fossiliferous Dolostone and Limestone and Dolosilt	upper Arcadia aquifer	Cooper-Bredehoeft-Papadopulos (Cooper and others, 1967)	2	
5	10/04/2005	175-200	Limestone and Weathered Limestone	lower Arcadia aquifer	Butler (1998)	99	Last test performed in CH 1
6	11/02/2005	173-190	Weathered Limestone	confining unit	KGS (Hyder and others, 1994)	0.2	First test performed in CH 2, Tested on HW casing
7	11/08/2005	195-215	Limestone and Dolostone	lower Arcadia aquifer	Butler (1998)	110	High head dependence
8	11/15/2005	218-245	Limestone and Quartz/Calcareous Sand	lower Arcadia aquifer	Butler (1998)	90	High head dependence
9	11/29/2005	247-265	Clay - tight	confining unit	Hvorslev (1951)	0.005	Drop slug, hole making very little water
10	12/01/2005	289-315	Limestone - soft packstone	Upper Floridan aquifer	KGS (Hyder and others, 1994)	2	
11	12/06/2005	340-375	Limestone - soft, fossiliferous packstone	Upper Floridan aquifer	Butler (1998)	36	
12	12/13/2005	396-415	Limestone - mudstone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.9	
13	12/16/2005	415-435	Limestone - mudstone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.1	
14	12/20/2005	440-475	Limestone - mudstone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.08	
15	12/30/2005	495-515	Limestone - fossiliferous wackestone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.1	

Table 2. (Continued) Summary of the core hole slug test results performed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida

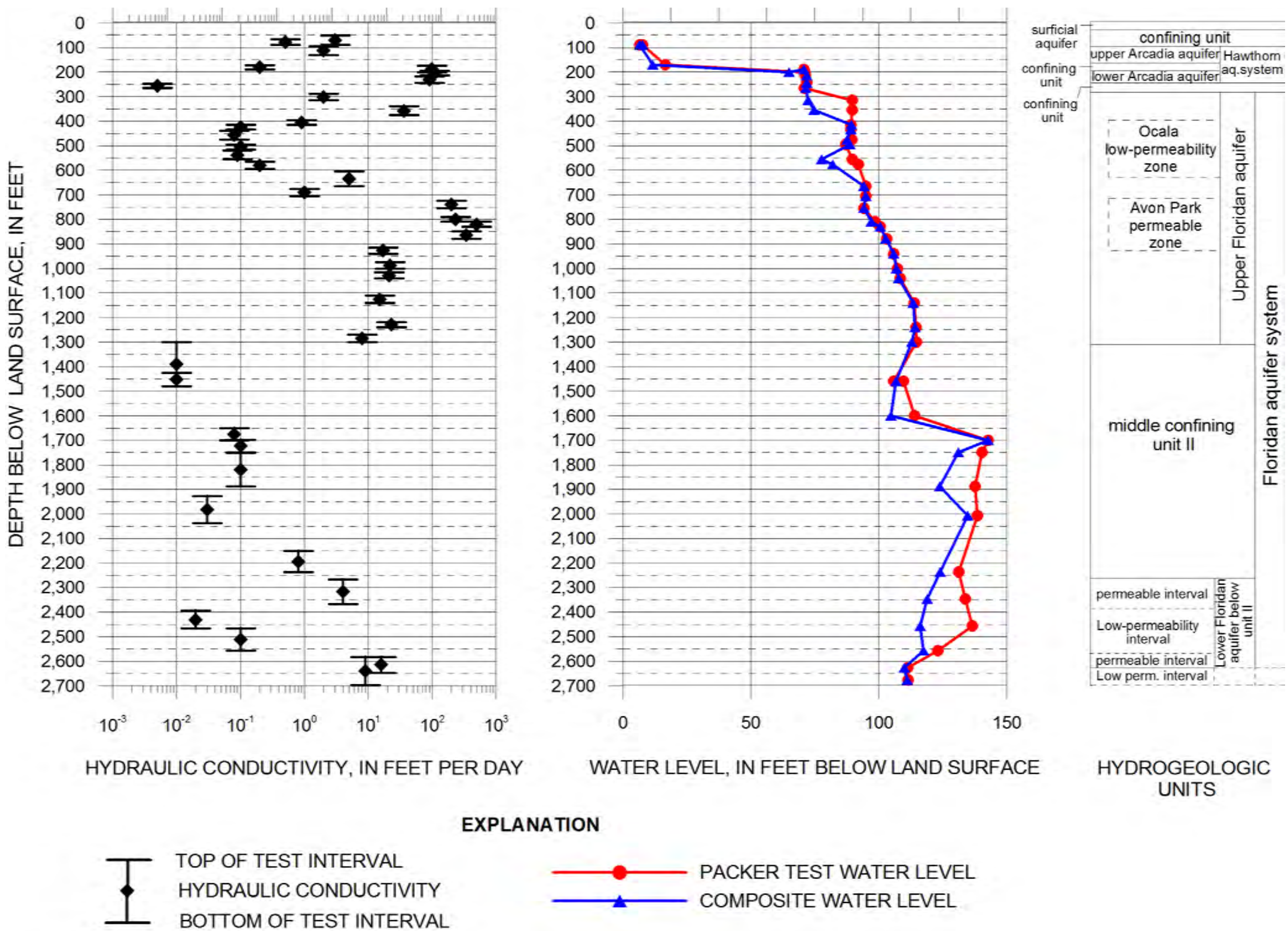
[No., number; ft., feet; bls, below land surface; CH 1, COREHOLE 1; CH 2, COREHOLE 2; CH 3, COREHOLE 3; ft/d, feet per day; All slug tests are pneumatic rising head except where otherwise noted; All slug test intervals are isolated with a packer assembly except where otherwise noted; Hydraulic conductivity values are underestimated for higher K zones when using NQ packer assembly]

Slug Test No.	Date (MM/DD/YYYY)	Test Interval (ft bls)	Visual Lithologic Characterization	Geologic/Hydrogeologic Unit	Analytical Method	Horizontal Hydraulic Conductivity (K) (ft/d)	Comments
16	01/06/2006	520-555	Limestone - fossiliferous wackestone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.09	
17	01/19/2006	565-595	Limestone - mudstone/wackestone	Ocala low-permeability zone	KGS (Hyder and others, 1994)	0.2	
19	02/22/2006	605-665.6	Limestone - grainstone	Upper Floridan aquifer	KGS (Hyder and others, 1994)	5	Re-test of 18; Test on HW casing, no packer
20	02/24/2006	676-705	Limestone - hard, grainstone	Upper Floridan aquifer	KGS (Hyder and others, 1994)	1	
21	03/02/2006	725-755	Dolostone, Weathered Limestone and Clayey Calc. sand	Avon Park permeable zone	Butler (1998)	200	A 12 ft void exists from 730-742 ft bls
22	03/17/2006	790-810	Fractured Dolostone	Avon Park permeable zone	Butler (1998)	230	
23	03/24/2006	810-830	Fractured Dolostone	Avon Park permeable zone	Butler (1998)	490	Test on NW casing, no packer
24	04/04/2006	850-880	Fractured Dolostone	Avon Park permeable zone	Butler (1998)	340	Test on NW casing, no packer
25	04/11/2006	915-940	Dolostone and Dolomitic Limestone	Upper Floridan aquifer	Butler (1998)	17	
26	04/14/2006	975-1000	Dolostone and Dolomitic Limestone	Upper Floridan aquifer	Butler (1998)	22	Possible leaky packer combination line
27	04/18/2006	1,016-1,040	Dolostone and Dolomitic Limestone	Upper Floridan aquifer	Butler (1998)	21	Possible leaky packer combination line
29	05/08/2006	1,111-1,140	Dolostone	Upper Floridan aquifer	Butler (1998)	15	New combination line
31	05/15/2006	1,218-1,240	Dolostone	Upper Floridan aquifer	Butler (1998)	23	
32	05/22/2006	1,270-1,300	Interbedded Limestone and Dolostone	Upper Floridan aquifer	Butler (1998)	8	
33	06/21/2006	1,300-1,480	Evaporitic Dolostone	middle confining unit II	KGS (Hyder and others, 1994)	0.01	Large interval, used water slug

Table 2. (Continued) Summary of the core hole slug test results performed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida

[No., number; ft., feet; bls, below land surface; CH 1, COREHOLE 1; CH 2, COREHOLE 2; CH 3, COREHOLE 3; ft/d, feet per day; All slug tests are pneumatic rising head except where otherwise noted; All slug test intervals are isolated with a packer assembly except where otherwise noted; Hydraulic conductivity values are underestimated for higher K zones when using NQ packer assembly]

Slug Test No.	Date (MM/DD/YYYY)	Test Interval (ft bls)	Visual Lithologic Characterization	Geologic/Hydrogeologic Unit	Analytical Method	Horizontal Hydraulic Conductivity (K) (ft/d)	Comments
34	06/23/2006	1,425-1,480	Evaporitic Dolostone	middle confining unit II	KGS (Hyder and others, 1994)	0.01	Very tight interval, used water slug, overlaps test 33
36	07/27/2006	1,698-1,749	Interbedded Evaporitic Limestone and Dolostone	middle confining unit II	KGS (Hyder and others, 1994)	0.1	Last test performed in CH 2
38	10/09/2007	1,650-1,700	Interbedded Evaporitic Limestone and Dolostone	middle confining unit II	KGS (Hyder and others, 1994)	0.08	First test performed in CH 3. Physical slug. Tested on 8-inch casing.
40	11/08/2007	1,751-1,887	Interbedded Evaporitic Limestone and Dolostone	middle confining unit II	Cooper-Bredehoeft-Papadopulos (Cooper and others, 1967)	0.1	Large interval
41	12/11/2007	1,927-2,037	Interbedded Evaporitic Limestone and Dolostone	middle confining unit II	KGS (Hyder and others, 1994)	0.03	Large interval
42	01/03/2008	2,151-2,237	Limestone - wackestone to mudstone with gypsum	middle confining unit II	KGS (Hyder and others, 1994)	0.8	
43	01/14/2008	2,267-2,367	Limestone - wackestone to mudstone	Lower Floridan aquifer below unit II	Butler (1998)	4	
44	01/22/2008	2,395-2,467	Interbedded Limestone and Evaporitic Dolostone	Lower Floridan aquifer below unit II	KGS (Hyder and others, 1994)	0.02	
45	02/11/2008	2,467-2,557	Evaporitic Dolostone	Lower Floridan aquifer below unit II	KGS (Hyder and others, 1994)	0.1	
46	02/21/2008	2,583-2,647	Crystalline Dolostone - Fractured	Lower Floridan aquifer below unit II/confining unit	Butler (1998)	16	
47	03/12/2008	2,583-2,697	Crystalline Dolostone	Lower Floridan aquifer below unit II/confining unit	Butler (1998)	9	Overlaps test 46. From 2,627 to 2,697 ft bls is confining because K value decreased substantially



aq., aquifer; perm., permeable

Figure 5. Horizontal hydraulic conductivity estimates and static water levels collected during core drilling at the ROMP 45.5 – Progress Energy well site.

thin permeable interval. The two water level measurements recorded in this unit were 6.57 and 7.65 feet bls. A substantial water level drop occurs just below this unit. The unit appears to act as a competent confiner between the Hawthorn aquifer system and the surficial aquifer.

On July 16, 2008, a short duration specific capacity test was attempted on the Hawthorn confining unit well. A Redi-Flo pump, pumping approximately 5 gallons per minute, was turned on at 9:06 am and turned off at 10:48 am. At the start of the test, the static water level was 13.4 feet below top of casing (btoc). The water level dropped to 30.57 feet btoc and did not equilibrate before the pump was turned off. The drawdown during the 99 minute test was 17.17 feet and falling. The resulting specific capacity is less than 3 gallons per minute/foot (gpm/ft). An exact value cannot be given because the water level did not equilibrate.

Hawthorn Aquifer System

At the ROMP 45.5 well site, the Hawthorn aquifer system is a confined aquifer system that underlies the surficial aquifer and overlies the Floridan aquifer system. The Hawthorn aquifer system extends from 95 to 246 feet bls and consists of all the permeable rocks and confining layers that lie between the base of the confining layer that separates the surficial aquifer from the Hawthorn aquifer system and the top of the confining layer that separates the Hawthorn aquifer system from the underlying Floridan aquifer system. The primary uses for the Hawthorn aquifer system in the region near the well site are domestic and small public supply wells (Miller, 1990).

At the well site, two aquifers were identified within the Hawthorn aquifer system: the upper Arcadia aquifer and the lower Arcadia aquifer, separated by a confining unit. These aquifers have been widely referred to as permeable zone 2 (PZ2) and permeable zone 3 (PZ3), depending on where they are located within the aquifer system (fig. 4)). At the well site, the permeable units generally correlate with the carbonate layers and the confining unit corresponds to the clay and clayey sand layers of the Nocatee Member.

Five slug tests were performed within the Hawthorn aquifer system. The resulting hydraulic conductivity estimates range from 0.005 to 110 ft/d (table 2). The lower end values correspond to confining units and the higher end values correspond to aquifers. In addition, a specific capacity test and an APT were performed.

Upper Arcadia Aquifer

The first aquifer encountered within the Hawthorn aquifer system at the ROMP 45.5 well site extends from 95 to 151 feet bls. It is referred to as the upper Arcadia aquifer because it is located within the upper section of the undifferentiated Arcadia Formation. The upper boundary was based on a substantial water level drop and a hydraulic conductivity value that is four times greater than the hydraulic conductivity value of the overlying confining unit. The hydraulic conductivity estimate obtained in this aquifer from slug test 3 is 2 ft/d. This hydraulic conductivity value seems reasonable for the lithology of the upper section of the undifferentiated Arcadia Formation. The water level dropped from 7.65 feet bls, recorded in the overlying confining unit, to 16.53 feet bls within the interval from 95 to 130 feet bls during slug test 3. The bottom extent of this zone is approximate and was picked at 151 feet bls where the packstones and grainstones end.

On July 17, 2008, a short duration specific capacity test was attempted on the upper Arcadia aquifer monitor well (U ARCA AQ MONITOR). A Redi-Flo pump, pumping approximately 2 gallons per minute, was turned on at 1:17 pm and turned off at 3:15 pm. At the start of the test, the static water level was 23.49 feet btoc. The water level dropped to 35.26 feet btoc and did not equilibrate before the pump was turned off. The drawdown during the 118 minute test was 11.77 feet and falling. The resulting specific capacity is less than 6 gpm/ft. An exact value cannot be given because the water level did not equilibrate. On October 15, 2008, a water (drop) slug test was conducted in the U ARCA AQ MONITOR well that yielded the same hydraulic conductivity estimate of 2 ft/d that was estimated from slug test 3 performed during exploratory core drilling and testing (Appendix G).

A confining unit extends from about 151 to 186 feet bls and separates the upper Arcadia aquifer from the underlying lower Arcadia aquifer. The confining unit primarily consists of fine-grained limestone, dolosilt, and clay. Slug test 6 was performed within the confining unit from 173 to 190 feet bls; however, 1 foot of this interval was in the lower Arcadia aquifer. The estimated hydraulic conductivity is 0.2 ft/d. It was also noted that when airlifting in this interval the discharge was less than 1 gallon per minute (gpm). A water level measurement within this isolated interval dropped to 70.78 feet bls from 16.53 feet bls in the overlying upper Arcadia aquifer (fig. 5). This water level drop likely results because the lower Arcadia aquifer was penetrated 1 foot. Two composite water level measurements were recorded within this confining unit and were 11.64 and 11.96 feet bls. The composite water level was nearly 5 feet higher than in the overlying upper Arcadia aquifer.

Lower Arcadia Aquifer

At the ROMP 45.5 well site, the lower Arcadia aquifer extends from about 186 to 246 feet bls and lies within the Tampa Member of the Arcadia Formation. Three slug tests were performed within this aquifer. Hydraulic conductivity estimates range from 90 to 110 ft/d (table 2). As discussed previously, the overlap between core hole 1 and core hole 2 takes place within this unit. Consequently, slug test 5 performed in core hole 1, from 175 to 200 feet bls overlaps slug test 6 performed in core hole 2, from 173 to 190 feet bls. Slug test 5 better penetrates the lower Arcadia aquifer and is more representative of the lower Arcadia aquifer. Because of a slight elevation difference, the bottom of the lower Arcadia aquifer is slightly different between core hole 1 and core hole 2.

The water level dropped from 16.53 to 71.19 feet bls during slug test 5 and remained close to the same level for the remainder of core drilling in the Hawthorn aquifer system (appendix H). The water level of 71.19 feet bls is reasonable with respect to the potentiometric level of the Hawthorn aquifer system in the region (Duerr, 2001). The water level difference between the upper and lower Arcadia aquifers suggests competent confinement exists between the two aquifers.

In October 2005, core hole 1 was converted to a 6-inch well with a total depth of 200 feet bls to supply water for core drilling and to serve as a lower Arcadia aquifer observation well (L ARCA OB TEMP) during APTs. Knochenmus (2005) states that the lower Arcadia aquifer is the most permeable aquifer of the Hawthorn aquifer system and this was apparent at the well site. The drilling water supply well was used to monitor the lower Arcadia aquifer water level during core drilling in core hole 2. The water level ranged from 71.12 to 87.36 feet bls from November 2005 to August 2006.

An APT was conducted on the lower Arcadia aquifer from September 2, 2008 to September 5, 2008. The lower Arcadia aquifer monitor well (L ARCA AQ MONITOR) was pumped with a 6-inch submersible pump at an average rate of 172 gpm for approximately 70 hours. The water was pumped approximately 400 feet south to the discharge point in a low-lying area. The lower Arcadia aquifer observation well (L ARCA OB TEMP) was located 60 feet north of the production well (fig. 2). The static water level in the production well was 78.75 feet btoc or 93.4 feet NGVD 29 prior to starting the drawdown phase of the test on September 2, 2008. Maximum drawdown was 20.8 feet in the production well and 8.26 feet in the observation well. Drawdown was not observed in the overlying upper Arcadia aquifer monitor well (U ARCA AQ MONITOR) or the underlying Upper Floridan aquifer monitor well (U FLDN AQ MONITOR). A hydrograph of water levels before, during, and after the APT is presented in figure 6.

Prior to the analysis, all observation well data were corrected for a rising regional water level trend (0.0001 ft/d) delineated from one month of background data collected from the lower Arcadia aquifer observation well (L ARCA OB TEMP). Derivative analysis of the lower Arcadia aquifer APT data suggests the aquifer is leaky because of a signature arch (appendix J, fig. J1) (Hantush and Jacob, 1955). Because there was no observed drawdown in the overlying and underlying aquifers (fig. 6), the cause is likely storage from the overlying confining unit. The drawdown curve deviates from the Theis curve in middle-time but then coincides with the Theis curve in late-time. The cause of the dip in the derivative curve following the early-time arch is unknown, however, it is likely not noise from nearby pumping because it is also on the recovery curve beginning at roughly the same elapsed time of 90 minutes (appendix J, figs. J1 and J2). Partial penetration also could be affecting the drawdown curve. The static water level and the maximum drawdown in the lower Arcadia aquifer was above the top of the aquifer, therefore, it is not a dewatering effect. Curve-match analysis of the drawdown and recovery data using the Hantush-Jacob (1955)/Hantush (1964) solution yielded an estimated transmissivity value of 25,000 feet ^{2}/day, storativity value of 0.003, and a leakance value of 0.0006 day^{-1} (appendix J, fig. J1 and table 3).

Below the lower Arcadia aquifer is a confining unit separating the Hawthorn aquifer system from the Floridan aquifer system. The confining unit extends from 246 to 290.5 feet bls and consists of the Nocatee Member, which is primarily clay with sand beds. One drop slug test was performed within this unit that yielded a hydraulic conductivity estimate of 0.005 ft/d.

Floridan Aquifer System

At the ROMP 45.5 well site, the Floridan aquifer system underlies the Hawthorn aquifer system and extends from 290.5 feet to past the total depth of exploration. The Floridan aquifer system is confined in the vicinity of the well site by nearly 290 feet of mainly Hawthorn Group sediments (fig. 3). The Floridan aquifer system at the well site consists of the Oldsmar Formation, Avon Park formation, Ocala Limestone, and Suwannee Limestone. At the well site, the aquifer system is divided into the Upper and Lower Floridan aquifers, separated by a thick sequence of low permeability evaporitic carbonates referred to as middle confining unit II (Miller, 1986). In the area around the well site, the Upper Floridan aquifer is more permeable and yields better quality water than the Lower Floridan aquifer. As a result, the Upper Floridan aquifer is the principal source for water supply in Polk County and supplies nearly all the groundwater used for commercial-industrial self-supplied, public supply, domestic self-supplied, agricultural irrigation, and recreational irrigation. Nearly half of all groundwater withdrawal is used for agricultural irrigation and the other half for public and industrial supply (Spechler and Kroenig, 2007).

Upper Floridan Aquifer

The top of the Upper Floridan aquifer generally coincides with the first sequence of carbonate rocks below the Hawthorn aquifer system. At the ROMP 45.5 well site, the top of the Upper Floridan aquifer corresponds to the Suwannee Limestone at 290.5 feet bls and includes all the Suwannee and Ocala Limestones and the upper part of the Avon Park Forma-

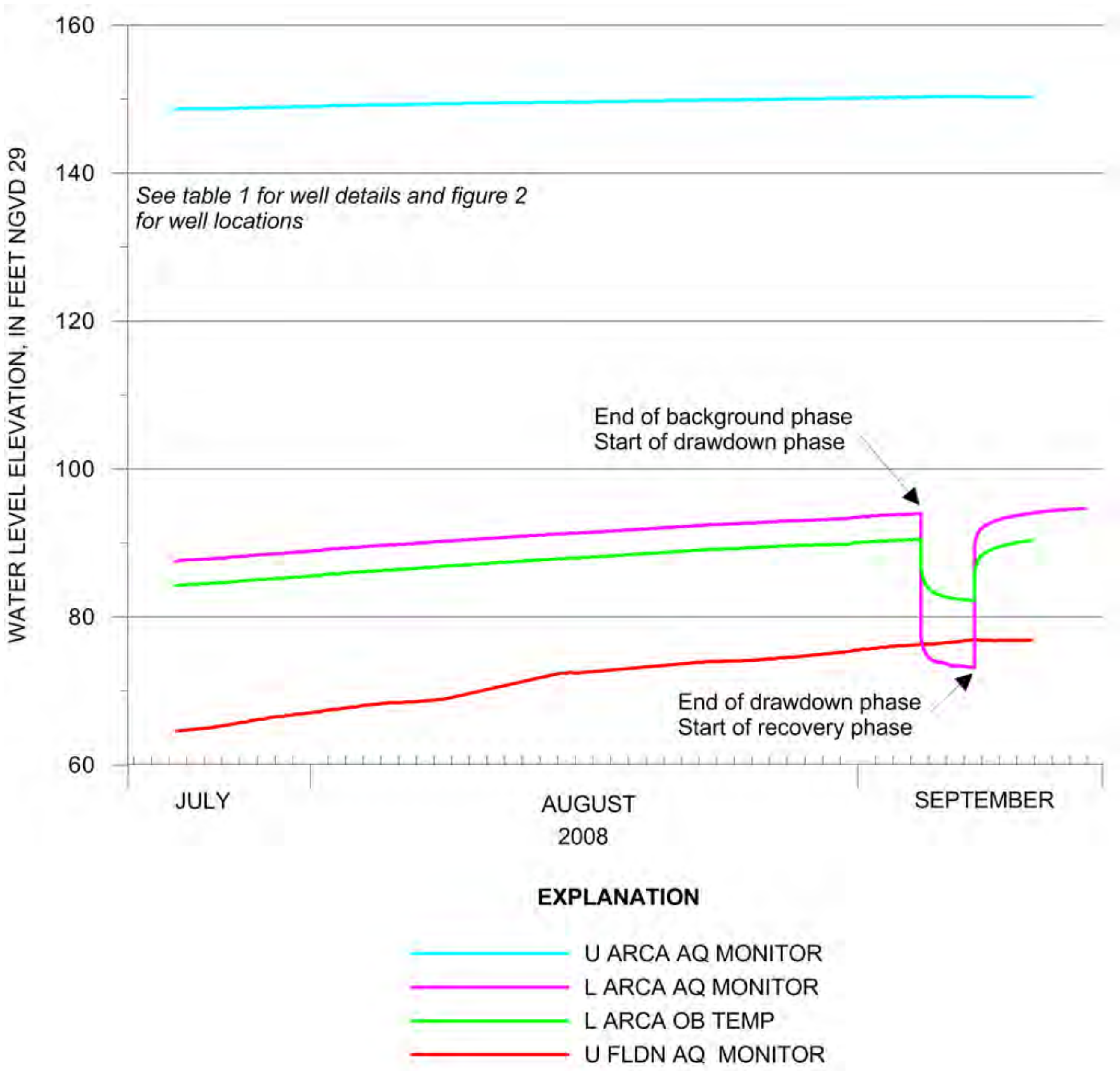


Figure 6. Hydrograph of the lower Arcadia aquifer APT at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

tion. The Upper Floridan aquifer extends to a depth of 1,299 feet bls where the low permeability middle confining unit II begins.

The top of the Upper Floridan aquifer was marked primarily by a decline in water level of nearly 20 feet. The water level dropped from 70.88 feet bls (measured during slug test 9) to 89.66 feet bls (measured during slug test 10). This water level is close to the expected potentiometric level of the Upper Floridan aquifer in the region (Ortiz, 2006). The water level ranged from 87.07 to 114.84 feet bls within the Upper Floridan aquifer (appendix H). The water level generally declined during the 5 months of core drilling in the Upper Floridan aquifer likely because of seasonal fluctuations (fig. 5 and appendix H) but remained close to expected Upper Floridan aquifer potentiometric levels.

Although the Upper Floridan aquifer is a single aquifer, it can be subdivided based on local variations of hydraulic properties. Intervals where permeability is not characteristic of the entire aquifer, whether substantially higher or lower, are referred to as zones. In the area around the well site, the Upper Floridan aquifer contains a zone of higher permeability called the Avon Park permeable zone and a zone of lower permeability called the Ocala low-permeability zone. The Ocala low-permeability zone has a lower permeability than is

Table 3. Aquifer pumping test results conducted at the ROMP 45.5 – Progress Energy well site

[ft/d, feet per day; ft^2/d, feet squared per day; gpm, gallons per minute; NR, not recorded; NA, not applicable]

Hydrogeologic Unit	Test Phase	Unit Thickness (b) (ft)	Distance to Production Well (ft)	Average Pump Rate (gpm)	Analytical Method	Transmissivity (ft^2/d)	Storativity (dimensionless)	Leakance (day^{-1})
lower Arcadia aquifer	Drawdown/ Recovery Combined	60	60	172	Hantush-Jacob (1955)/Hantush (1964)	25,000	0.003	0.0006
Upper Floridan aquifer, Suwannee Limestone Portion	Drawdown/ Recovery Combined	108.5	185	393	Hantush-Jacob (1955)/Hantush (1964)	26,000	0.003	0.007

typical of the Upper Floridan aquifer whereas the Avon Park permeable zone is an interval of substantially higher permeability that is uncharacteristic of the rest of the Upper Floridan aquifer in the area.

Nineteen slug tests were performed within the Upper Floridan aquifer. The hydraulic conductivity estimates range from 0.08 to 490 ft/d with a geometric mean of 6 ft/d (table 2 and fig. 5). Two slug tests were performed in the Suwannee Limestone with intervals from 289 to 315 feet bls and from 340 to 375 feet bls. The hydraulic conductivity estimates for these intervals are 2 and 36 ft/d, respectively. The increase in hydraulic conductivity within the Suwannee Limestone is probably because the lithology changes from predominantly mudstone and wackestone to predominantly packstone.

An APT was conducted within the Suwannee Limestone portion of the Upper Floridan aquifer from September 15, 2008, to September 16, 2008. The Upper Floridan aquifer monitor well (U FLDN AQ MONITOR) was pumped with a 30 horsepower submersible pump at an average rate of 393 gpm for approximately 24 hours. The water was pumped approximately 400 feet south to the discharge point in a low-lying area. The Upper Floridan aquifer observation well (U FLDN OB TEMP) was located 185 feet northeast of the production well (fig. 2). The static water level in the production well was 98.75 feet btoc or 72.68 feet NGVD 29 prior to starting the drawdown phase of the test on September 15, 2008. Maximum drawdown was 58.5 feet in the production well and 1.07 feet in the observation well. A hydrograph of water levels before, during, and after the APT is presented in figure 7. Prior to the analysis, all observation well data were corrected for a declining regional water level trend (0.00008 ft/d) delineated from one week of background data collected from the observation well. Derivative analysis of the drawdown and recovery data indicates a leaky aquifer (signature arch) although no noticeable drawdown was observed in the overlying and underlying aquifers. Curve-match analysis of the drawdown and recovery data using the Hantush-Jacob (1955)/Hantush (1964) solution yielded an estimated transmissivity value of 26,000 ft^2/day, storativity estimate of 0.003, and a leakance value of 0.007 day^{-1} within the Suwannee Limestone portion of the Upper Floridan aquifer (appendix J, fig. J3, and table 3). The estimated values are plausible for a confined aquifer. Prior to the APT, drawdown was predicted to be approximately 4 feet in the observation well and 25 feet in the production well using estimated field parameters and the conf_pred.xls spreadsheet (Halford and Kuniansky, 2002) and the drawdown predictor tool in AQTESOLV® (Duffield, 2007). The drawdown in the observation well was appreciably less than predicted. Contrastly, the drawdown in the production well was substantially higher than predicted. The substantially higher drawdown is inconsistent with the APT results and the cause is unknown.

The Ocala low-permeability zone consists of the Ocala Limestone and extends from 399 to 605 feet bls. Six slug tests were performed in this unit and the hydraulic conductivity estimates range from 0.08 to 0.9 ft/d. The geometric mean hydraulic conductivity estimate is 0.2 ft/d. The water level ranged from 87.07 to 91.99 feet bls in the discrete test intervals within the Ocala low-permeability zone .

Below the Ocala low-permeability zone, from 605 to 1,299 feet bls, the permeability of the Upper Floridan aquifer is substantially higher. This section is entirely within the Avon Park Formation. Twelve slug tests were performed in this section that yielded hydraulic conductivity estimates ranging from 1 to 490 ft/d. The geometric mean hydraulic conductivity estimate is 31 ft/d. The water level ranged from 94.24 to 114.84 feet bls in the discrete test intervals.

The Avon Park permeable zone extends from about 730 to about 912 feet bls within a highly fractured dolostone. A 12-foot void was encountered from 730 to 742 feet bls. The four slug tests performed within the Avon Park permeable zone resulted in substantially higher hydraulic conductivity estimates that range from 200 to 490 ft/d. The two highest

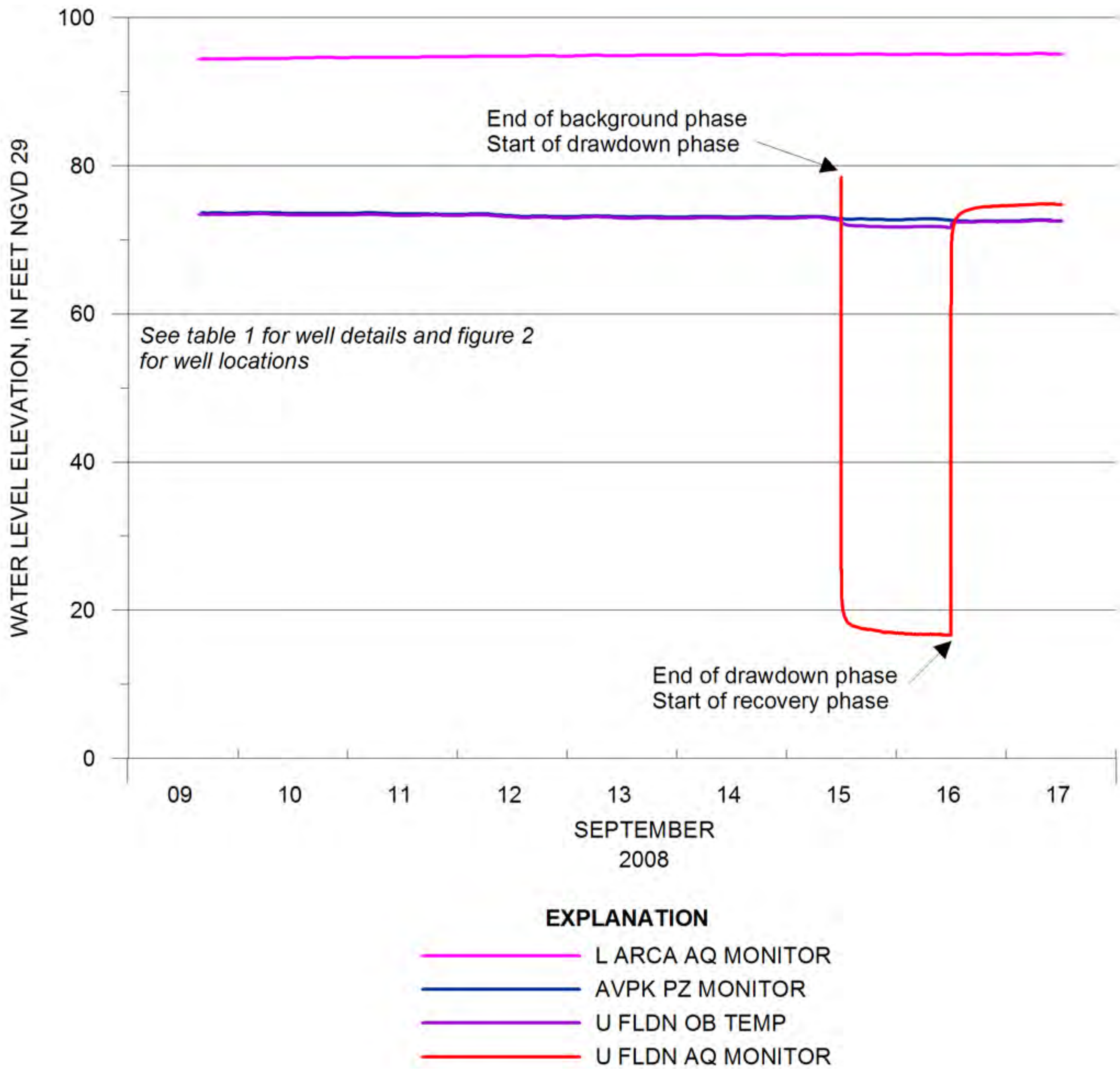


Figure 7. Hydrograph of the Upper Floridan aquifer APT within the Suwannee Limestone at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

values of 340 and 490 ft/d were estimated from tests that were performed without a packer assembly. These hydraulic conductivity values are probably more accurate because they were not affected by the packer restriction (Butler, 1998).

An APT was attempted in the Avon Park Formation portion of the Upper Floridan aquifer on September 29, 2008. The Avon Park permeable zone monitor well (AVPK PZ MONITOR) was pumped with a 10-inch turbine pump at an average rate of 3,053 gpm for approximately 24 hours. The Avon Park permeable zone observation well (AVPK PZ OB TEMP) was located 160 feet northeast of the production well (fig. 2). After 24 hours, no noticeable drawdown was observed in the observation well. The drawdown in the production well was about 10 feet. The water level trend in the observation well during the 24 hour test period appeared to mimic the regional trend that was observed in the background data and water level data from the ROMP 45 well site (located about 15 miles southeast of the ROMP 45.5 well site). The recovery data could not be analyzed as a single-well pumping test because the check valve in the column pipe malfunctioned and the water in the pipe backflowed and surged like a large slug. A hydrograph of water levels during the APT depicting the water column surge and no noticeable drawdown in the observation well is presented in figure 8. Because the water column acted like a large slug, the recovery data was analyzed as a slug test. The estimated hydraulic conductivity is 2,300 ft/d. However, uncertainty is associated with this value because the testing conditions were not ideal (appendix G).

Prior to the APT, drawdown was predicted to be approximately 4 feet in the observation well and 14 feet in the production well using estimated field parameters and the conf_pred.xls spreadsheet (Halford and Kuniansky, 2002) and the drawdown predictor tool in AQTESOLV® (Duffield, 2007). The estimated field parameters included a high hydraulic conductivity value for karst limestone to account for the void (Freeze and Cherry, 1979) and the highest hydraulic conductivity value estimated from slug tests conducted in the Avon Park permeable zone for the remainder of the aquifer thickness. However, considering the estimated hydraulic conductivity value of 2,300 ft/d from the slug test analysis of the APT data, it is likely the parameters used to estimate the drawdown were too low. As a result, the pumping rate was too low (although it was pumped at the maximum rate capable for the District-owned pump) and did not sufficiently stress the aquifer. However, the observed drawdown in the production well is substantially more than the predicted drawdown of 3 feet using a larger hydraulic conductivity estimate.

Schreuder Inc. performed an Upper Floridan aquifer APT in 2006 at the Hines Energy Complex that resulted in a transmissivity and storativity value of 4,452,000 gallons per day per foot (about 595,000 ft^2/day) and 0.0059, respectively (Schreuder Inc., 2006). Although, the APT performed by Schreuder, Inc. was an Upper Floridan aquifer test that included the Ocala Limestone and the Avon Park Formation, the majority of production likely originates from the Avon

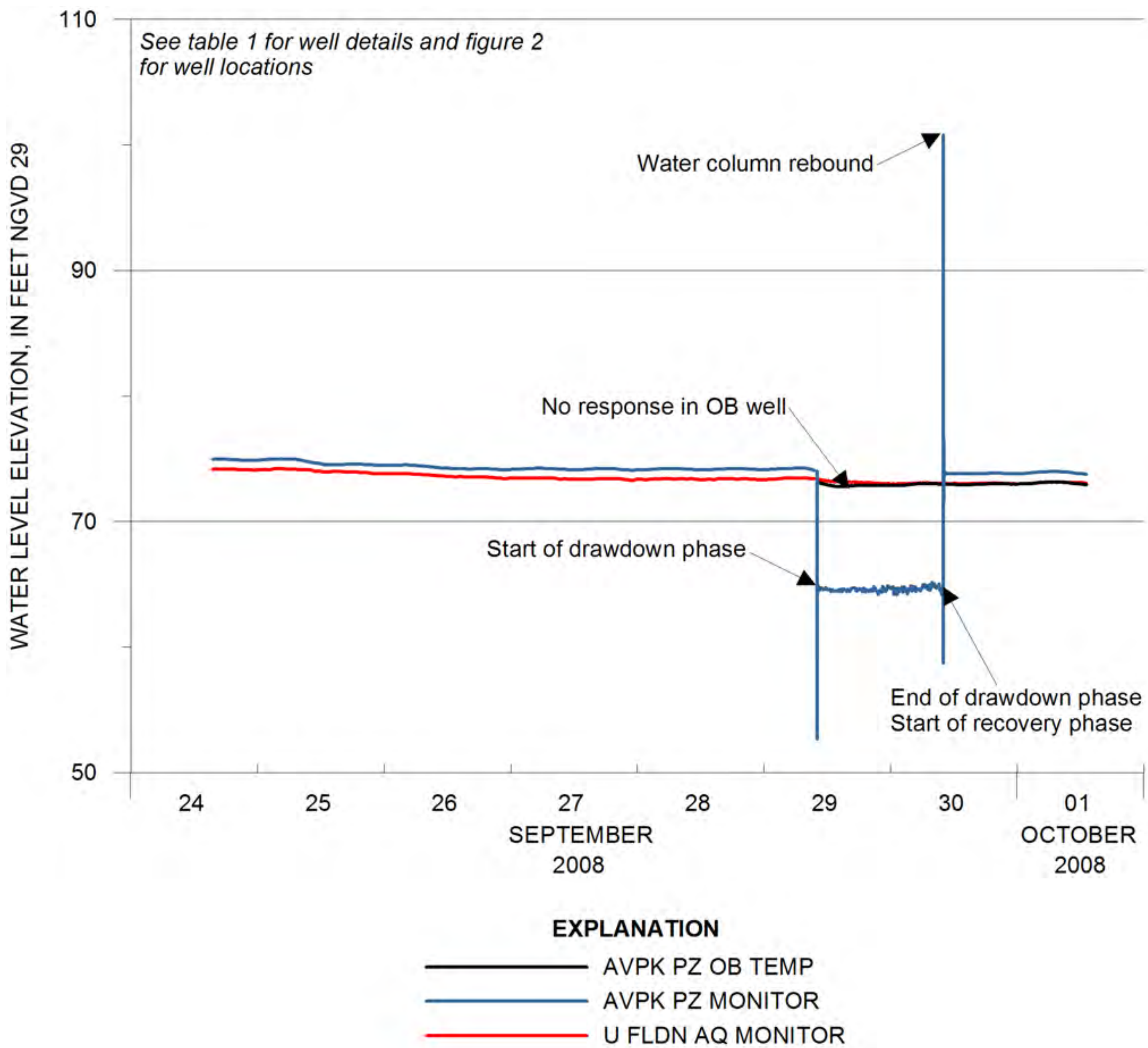


Figure 8. Hydrograph of the Upper Floridan aquifer APT attempt within the Avon Park permeable zone at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

Park permeable zone because the Ocala Limestone is a low-permeability zone in this area that likely does not contribute an appreciable amount of water to the overall production.

Middle Confining Unit II

The middle confining unit II extends from 1,299 to 2,255 feet bls at the ROMP 45.5 well site. Miller (1986) suggests the top is about 1,350 feet bls. The top of the middle confining unit II was chosen at the first appearance of persistent gypsum and anhydrite in the Avon Park Formation that substantially decreases the permeability of the formation. An increase in resistivity also was helpful in identifying the lower permeability rocks that make up the middle confining unit II (appendix E). An isopach map by Miller (1986) suggests the middle confining unit II is approximately 200 feet thick in the vicinity of the well site. At this site, however, the evaporites remain abundant to 2,255 feet bls causing permeability to remain low and increasing the thickness of the unit to 956 feet. At the well site, the middle confining unit II consists of the lower section of the Avon Park Formation and the upper section of the Oldsmar Formation. The anomalously thick middle confining unit II could be the result of incomplete evaporite dissolution because of a sluggish deep flow system below the middle confining unit II.

Seven slug tests were performed in the middle confining unit II. The hydraulic conductivity values range from 0.01 to 0.8 ft/d with a geometric mean hydraulic conductivity value of 0.06 ft/d (fig. 5 and table 2). Additional slug tests were attempted but could not be completed because the middle confining unit II would not accept the addition of a slug because of its low permeability.

The hydraulic conductivity value estimated from slug test 40 (interval from 1,751 to 1,887 feet bls) is 0.8 ft/d. This value is higher than the other hydraulic conductivity estimates within the middle confining unit II; however, it is still low. According to Miller (1986), the middle confining unit II may locally contain thin zones of higher permeability but overall the units act as a single confining unit within the aquifer system. The middle confining unit II acts as an essentially nonleaky confining unit.

Discrete water levels ranged from 105.83 to 142.87 feet bls within the middle confining unit II and generally declined with depth (fig. 5 and appendix H). Initially, the water level rose from 114.84 feet bls measured in the Upper Floridan aquifer during slug test 32 (packer set from 1,270 to 1,300 feet bls) to 105.83 feet bls measured during slug test 33 (packer set from 1,300 to 1,480 feet bls). Then, the discrete water level dropped to about 140 feet bls during slug test 36 in core hole 2 (packer set from 1,698 to 1,749 feet bls) and slug test 38 in core hole 3 (discrete interval from 1,650 to 1,700 feet bls). Composite water levels ranged from 100.05 to 144.27 feet bls (Appendix H). In core hole 2 at about 1,750 feet bls and in core hole 3 at about 1,700 feet bls, the discrete and composite water levels dropped substantially. Thereafter, the discrete and composite water levels generally rose (fig. 5). Water level measurements during packer sets were consistently lower than the composite water levels. Although the water level generally rose, the water level fluctuated up to about 20 feet from one day to the next. The water level degraded substantially beginning about 1,650 feet bls where the total dissolved solids increased from about 3,000 to about 30,000 milligrams per liter (water quality is discussed further in the Groundwater Quality section). However, water density differences cannot be the only cause for the water level fluctuation based on calculations to correct for variable density.

Lower Floridan Aquifer

At the ROMP 45.5 well site, the top of the Lower Floridan aquifer below middle confining unit II, herein referred to as the Lower Floridan aquifer, was delineated at 2,255 feet bls and likely extends beyond the total depth of exploratory core drilling of 2,707 feet bls. The Lower Floridan aquifer was not easily discernable because of the thick middle confining unit II. Regional hydrogeologic data suggest the middle confining unit II is 200 feet thick around the well site (Miller, 1986). However, because the evaporites remain abundant and the middle confining unit II was anomalously thick at the well site, the top of the Lower Floridan aquifer was encountered deeper. The top of the Lower Floridan aquifer was delineated where the lithology changes from evaporite-rich carbonates to a limestone with less abundant evaporites and the hydraulic conductivity increases substantially from a geometric mean hydraulic conductivity value of 0.06 ft/d (within the middle confining unit II) to 4 ft/d. The Lower Floridan aquifer is within the lower part of the Oldsmar Formation and the Cedar Keys Formation. According to Ryder (1985), the permeability of the Lower Floridan aquifer is low. Furthermore, it consists largely of low permeability rocks separated by thin beds of higher permeability rocks and possibly the lower permeability is the result of less secondary porosity caused by a sluggish flow system (Miller, 1986). At the well site to a depth of 2,707 feet bls, the Lower Floridan aquifer consists of two permeable intervals separated by a low-permeability interval. Another low-permeability interval is present below the second permeable interval and likely is not the basal confining unit for the Floridan aquifer system because Miller (1986) suggests the surface for the basal confining unit in the area around the well site is approximately 3,100 feet bls.

A permeable interval extends from 2,255 to approximately 2,394.8 feet bls. Slug test 43 was performed in this interval from 2,267 to 2,367 feet bls and the estimated hydraulic conductivity is 4 ft/d (fig. 5 and table 2). This permeable interval is within the Oldsmar Formation where it is a fossiliferous mudstone to packstone with low evaporite content.

A low-permeability interval extends from 2,394.8 to

2,583 feet bls that consists of crystalline dolostone and dolomitic limestone with evaporites of the Oldsmar Formation and evaporitic crystalline dolostone of the Cedar Keys Formation. Two slug tests were performed in this interval. Slug test 44 was performed from 2,395 to 2,467 feet bls and yielded an estimated hydraulic conductivity of 0.02 ft/d. Slug test 45 was performed from 2,467 to 2,557 feet bls and yielded an estimated hydraulic conductivity of 0.1 ft/d.

A second permeable interval extends from 2,583 to 2,627 feet bls and is within the Cedar Keys Formation. Two slug tests were performed within this interval. Slug test 46 was performed from 2,583 to 2,647 feet bls and yielded an estimated hydraulic conductivity value of 16 ft/d. A corresponding decrease in resistivity below about 2,590 feet bls substantiates a more permeable interval (appendix E). Slug test 47 was performed from 2,583 to 2,697 feet bls and overlaps the interval for slug test 46 because of the depth limitation of the wireline on the UDR. Slug test 47 yielded an estimated hydraulic conductivity of 9 ft/d. The additional footage of the test interval is considered confining because the hydraulic conductivity decreased nearly in half even though the test interval is 50 feet thicker than the test interval for slug test 46. The second low-permeability interval top is delineated at 2,627 feet bls based on a change in lithology.

The discrete water level ranged from 111.23 to 136.63 feet bls in the Lower Floridan aquifer (fig. 5 and appendix H). The discrete water level dropped nearly 3 feet after penetrating the Lower Floridan aquifer as measured during slug test 43 (packer set from 2,267 to 2,367 feet bls) and an additional nearly 3 feet during slug test 44 (packer set from 2,395 to 2,467 feet bls). Thereafter, the discrete water level generally rose. The composite water level ranged from 110.08 to 136.96 feet bls. A substantial drop in the composite water level was observed at about 2,580 feet bls and is coincident with the second permeable interval. Thereafter, the water level generally rose. As discussed previously in the Middle Confining Unit II section, the water level fluctuated up to about 20 feet from one day to the next and water density differences cannot be the only cause for the water level fluctuation based on calculations to correct for variable density.

Groundwater Quality

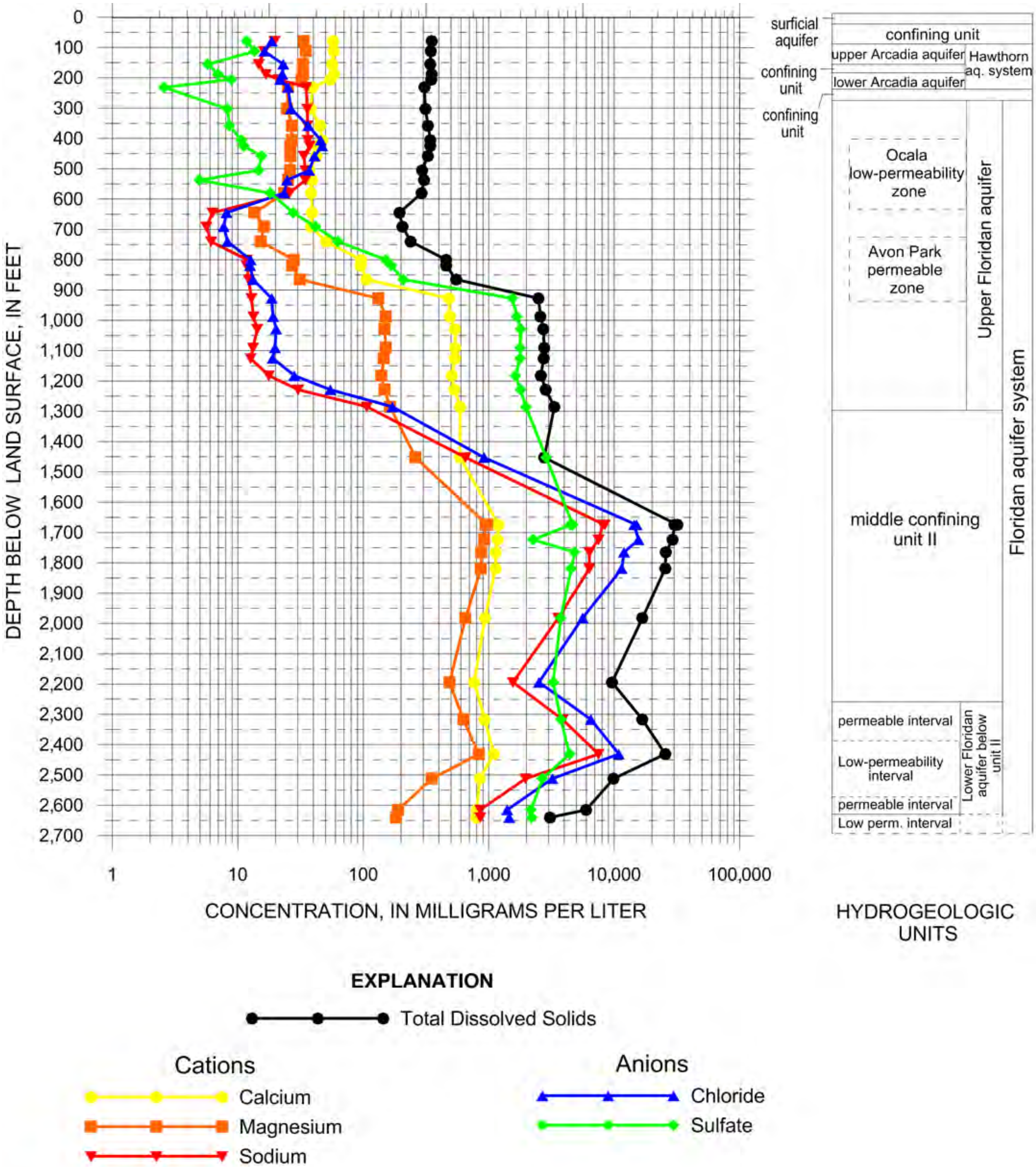
One objective of the work at the ROMP 45.5 well site was to assess groundwater characteristics from the Floridan aquifer system for future supply, especially for industrial water supply from the Lower Floridan aquifer. Groundwater quality is a major factor for determining the suitability of water for supply. The groundwater quality characterization is based on results from 41 discrete groundwater samples that were collected throughout the total depth of exploratory core drilling. The field and laboratory analyses results are presented in appendix K1 and K2, respectively.

The secondary drinking water standards for total dissolved solids (TDS), sulfate, chloride, and iron are 500 milligrams per liter (mg/L), 250 mg/L, 250 mg/L and 0.3 mg/L (300 micrograms per liter, µg/L), respectively (Hem, 1985; U.S. Environmental Protection Agency, 2009). The water quality sample results indicate the groundwater is fresh (TDS concentrations less than 500 parts per million) to a depth between 830 and 868 feet bls within the Upper Floridan aquifer. The first water quality sample to exceed secondary drinking water standards because of TDS is WQ 24 (from 868 to 880 feet bls) with a concentration of 549 mg/L (fig. 9 and appendix K2). Below 868 feet bls, the water quality quickly degrades because TDS and sulfate continually increase down hole and exceed secondary drinking water standards. The water quality sample collected from 915 to 940 feet bls (WQ 25) is the first sample to exceed secondary drinking water standards for sulfate with a concentration of 1,550 mg/L. The first water quality sample to not meet secondary drinking water standards for chloride is WQ 34 (from 1,425 to 1,480 feet bls) with a concentration of 917.80 mg/L (fig. 9 and appendix K2).

Iron concentrations typically are underestimated when analyzed from aerated samples collected from the air-lift discharge as opposed to being analyzed from bailer samples. This is apparent in eight of the 12 bailer samples analyzed from the well site because the iron concentration is notably higher in the bailer samples (WQ 2, WQ 4, WQ 34, WQ 36, and WQ 43 - WQ 46) as compared to the air-lift discharge samples from respective units (appendix K2). Iron concentrations exceed secondary drinking water standards in 11 out of the 42 water quality samples analyzed; however, it is probable iron concentrations are higher in more samples because the laboratory values are most likely lower than the actual concentrations. All but one of the samples that exceed secondary standards for iron were collected from below 1,165 feet. The other was sampled from the upper Arcadia aquifer from 140 to 170 feet bls.

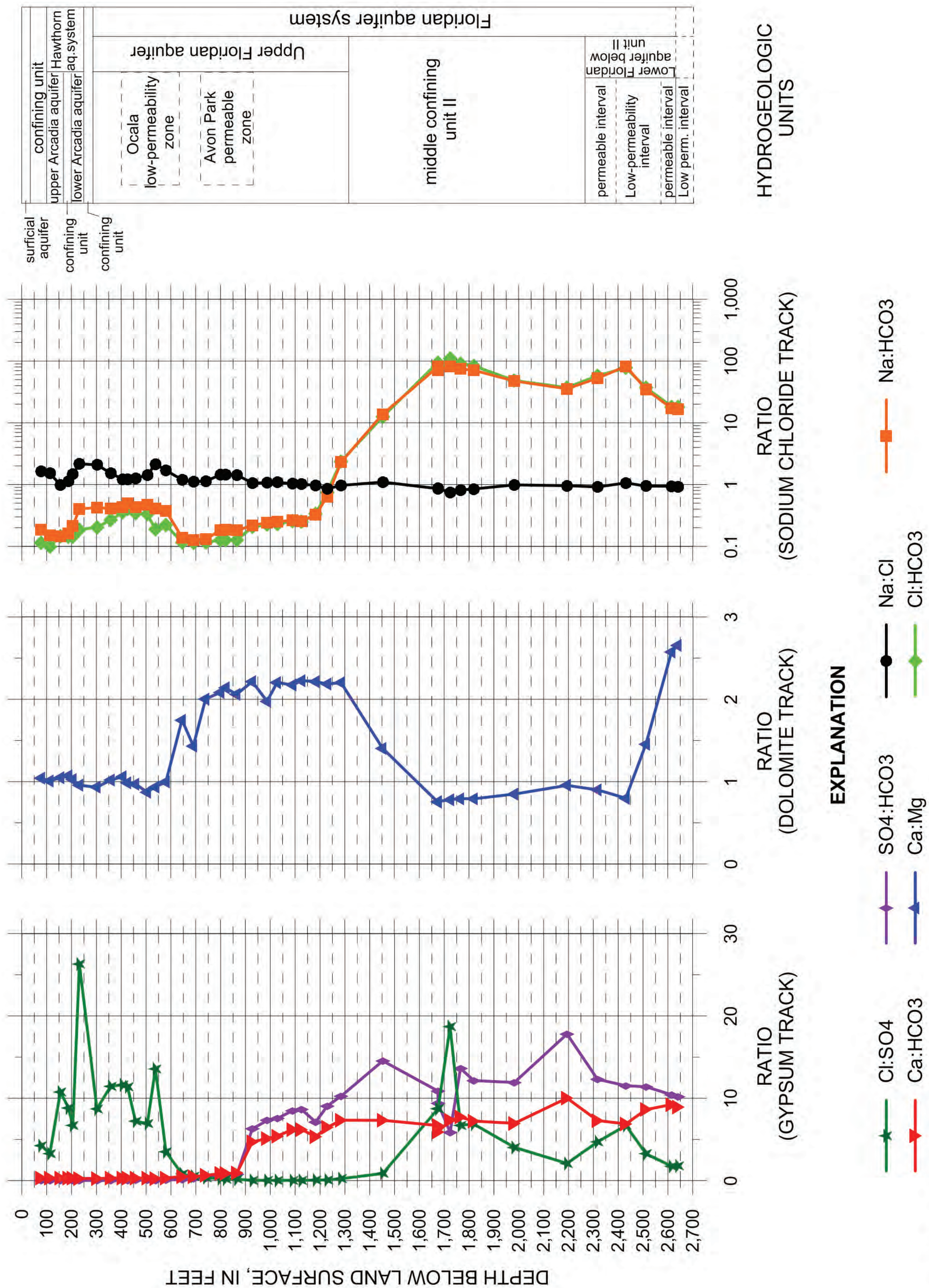
Specific conductance values follow the same trend as total dissolved solids and generally increase throughout the core hole (appendix K2). The pH of the water quality samples ranges from 6.8 to 8.3 (appendix K1), which is within the typical groundwater range from 6 to 8.5 (Hem, 1985). Field pH is used in analyses because of a 15 minute holding time.

Generally, the major ion concentrations increase with depth, although, concentrations briefly decrease in the upper portion of the Avon Park Formation (fig. 9 and appendix K2). The equivalent weights, percent equivalent weights, and water type for each sample are presented in table 4. The primary cations observed throughout the core hole are calcium, magnesium, and sodium; and the principal anions are bicarbonate, sulfate, and chloride. The water types in the upper



aq., aquifer; perm., permeability

Figure 9. Select cations and anions, and total dissolved solids concentrations for groundwater samples from the ROMP 45.5 – Progress Energy well site in Polk County, Florida. Depth represents the middle of the discrete open interval at the time of sampling.



aq., aquifer; perm., permeable

Figure 10. Select molar ratios with depth for water quality data at the ROMP 45.5 – Progress Energy well site. Depth represents the middle of the discrete open interval at the time of sampling.

Table 4. The equivalent weight and percent equivalent weight for select ions and the water type for each water quality sample collected at the ROMP 45.5 – Progress Energy well site

[No., number; ft, feet; bls, below land surface; meq/L, milliequivalent per liter; %, percent; total alkalinity is used as HCO^{3}_{1-} because it is assumed CO^{3}_{2-} and $H^{2}CO^{3}$ are negligible based on groundwater pH at this site because hydroxyl ions are insignifcant in groundwater and carbonate ions are typically not present if pH is less than 8.3 standard units (SU)]

Water Quality Sample No.	Open Interval (ft bls)	CATIONS						ANIONS						Water Type
		$Ca2^{+}$		Mg^{2+}		Na^{1+}		HCO_3^{1-}		Cl^{1-}		SO_4^{2-}		
		meq/L	%	meq/L	%	meq/L	%	meq/L	%	meq/L	%	meq/L		
2	66-90	2.88	44.1	2.76	42.4	0.857	13.1	4.603	85.7	0.525	9.8	0.246	4.6	Mixed-Cation Bicarbonate
3	95-130	2.89	44.6	2.87	44.3	0.700	10.8	4.660	86.2	0.461	8.5	0.283	5.2	Mixed-Cation Bicarbonate
4	140-170	2.83	45.8	2.71	43.7	0.639	10.3	4.420	85.2	0.65	12.5	0.12	2.3	Mixed-Cation Bicarbonate
5	175-200	2.91	45.7	2.72	42.7	0.726	11.4	4.497	85.1	0.640	12.1	0.1	2.7	Mixed-Cation Bicarbonate
7	195-215	2.71	43.1	2.64	41.9	0.91	14.5	4.302	84.3	0.617	12.1	0.18	3.6	Mixed-Cation Bicarbonate
8	218-245	1.97	35.0	2.1	36.6	1.53	27.2	3.789	83.3	0.71	15.5	0.054	1.2	Mixed-Cation Bicarbonate
10	289-315	1.90	34.1	2.04	36.6	1.56	28.0	3.684	80.0	0.748	16.3	0.17	3.7	Mixed-Cation Bicarbonate
11	340-375	2.26	37.0	2.2	36.4	1.56	25.6	3.826	76.1	1.02	20.4	0.18	3.6	Mixed-Cation Bicarbonate
12	396-415	2.35	37.9	2.21	35.7	1.57	25.4	3.622	70.5	1.29	25.1	0.222	4.3	Mixed-Cation Bicarbonate
13	415-435	2.13	35.6	2.16	36.1	1.62	27.2	3.295	67.8	1.33	27.4	0.233	4.8	Mixed-Cation Bicarbonate
14	440-475	2.10	36.2	2.16	37.3	1.46	25.2	3.359	69.5	1.16	23.9	0.320	6.6	Mixed-Cation Bicarbonate
15	495-515	1.87	33.5	2.1	38.4	1.50	26.9	3.193	70.1	1.06	23.2	0.305	6.7	Mixed-Cation Bicarbonate
16	520-555	1.94	34.8	2.07	37.2	1.50	26.9	3.690	82.2	0.698	15.5	0.10	2.3	Mixed-Cation Bicarbonate
17	565-595	1.92	38.2	1.93	38.4	1.12	22.3	2.983	74.1	0.661	16.4	0.380	9.4	Mixed-Cation Bicarbonate
18	625-665	1.96	58.0	1.12	33.2	0.274	8.1	1.976	71.1	0.23	8.2	0.575	20.7	Calcium Bi-carbonate
20	676-705	1.91	54.4	1.33	38.0	0.244	7.0	1.926	64.1	0.22	7.3	0.862	28.7	Calcium Bi-carbonate
21	725-755	2.50	62.0	1.25	30.9	0.266	6.6	2.026	56.7	0.23	6.5	1.3	36.7	Calcium Bi-carbonate
22	790-810	4.79	62.8	2.30	30.1	0.513	6.7	2.809	44.5	0.355	5.6	3.15	49.9	Calcium Sulfate
23	810-830	4.77	63.2	2.23	29.6	0.513	6.8	2.772	42.0	0.353	5.3	3.48	52.7	Calcium Sulfate
24	868-880	5.29	62.8	2.57	30.5	0.531	6.3	2.926	38.4	0.371	4.9	4.32	56.7	Calcium Sulfate
25	915-940	24.1	67.7	10.9	30.6	0.557	1.6	2.564	7.3	0.526	1.5	32.3	91.3	Calcium Sulfate

Table 4. (Continued) The equivalent weight and percent equivalent weight for select ions and the water type for each water quality sample collected at the ROMP 45.5 – Progress Energy well site

[No., number; ft, feet; bls, below land surface; meq/L, milliequivalent per liter; %, percent; total alkalinity is used as HCO^3_{1-} because it is assumed CO^3_{2-} and H^2CO^3 are negligible based on groundwater pH at this site because hydroxyl ions are insignifcant in groundwater and carbonate ions are typically not present if pH is less than 8.3 standard units (SU)]

Water Quality Sample No.	Open Interval (ft bls)	CATIONS						ANIONS						Water Type
		$Ca2^{+}$		Mg^{2+}		Na^{1+}		HCO_3^{1-}		Cl^{1-}		SO_4^{2-}		
		meq/L	%	meq/L	%	meq/L	%	meq/L	%	meq/L	%	meq/L		
26	975-1,000	24.6	65.2	12.4	33.0	0.579	1.5	2.396	6.3	0.539	1.4	35.0	92.3	Calcium Sulfate
27	1,016-1,040	26.8	67.6	12.2	30.7	0.622	1.6	2.478	6.1	0.570	1.4	37	92.5	Calcium Sulfate
28	1,080-1,100	27.0	67.4	12.4	31.0	0.574	1.4	2.178	5.5	0.558	1.4	37.0	93.1	Calcium sulfate
29	1,111-1,140	26.7	67.9	12.0	30.5	0.548	1.4	2.154	5.4	0.54	1.3	37.2	93.3	Calcium Sulfate
30	1,165-1,200	25.3	67.4	11.4	30.4	0.770	2.0	2.379	6.4	0.799	2.2	33.9	91.4	Calcium Sulfate
31	1,218-1,240	26.6	66.2	12.2	30.3	1.32	3.3	2.060	5.0	1.54	3.8	37.4	91.2	Calcium Sulfate
32	1,270-1,300	29.5	61.9	13.4	28.1	4.65	9.7	2.014	4.2	4.8	10.0	41.3	85.8	Calcium Sulfate
34	1,425-1,480	30.1	37.3	21.5	26.6	28.4	35.2	2.057	2.3	25.89	29.5	59.8	68.2	Mixed-Cation Sulfate
36	1,698-1,749	58.9	12.6	75.5	16.1	327	69.7	4.015	0.8	440.5	89.6	47.121	9.6	Sodium Chlo-ride
37	1,750-1,780	57	13.9	71.7	17.5	275	67.2	3.691	0.8	337.62	76.4	101	22.8	Sodium Chlo-ride
38	1,650-1,700	60	11.7	79.9	17.6	365	80.4	4.480	0.80	425.39	80.7	97.420	18.5	Sodium Chlo-ride
39	1,650-1,700	59	11.9	77.6	15.7	351	70.9	4.970	1.00	406	80.5	93.1	18.5	Sodium Chlo-ride
40	1,751-1,887	56	13.7	71.2	17.4	276	67.3	3.901	0.92	325	76.7	94.8	22.4	Sodium Chlo-ride
41	1,927-2,037	47	17.9	53.7	20.7	156	59.8	3.276	1.4	158	66.0	78.1	32.7	Sodium Chlo-ride
42	2,151-2,237	38.2	25.8	40.1	27.0	67.8	45.8	1.908	1.4	70.8	50.4	67.9	48.3	Mixed-Cation Chloride
43	2,267-2,367	46.4	17.1	51.6	19.0	168	62.1	3.183	1.2	183.9	69.3	78.3	29.5	Sodium Chlo-ride
44	2,395-2,467	55	12.0	68.7	15.0	327	71.4	3.984	1.0	307.5	75.2	91.8	22.8	Sodium Chlo-ride
45	2,467-2,557	42	26.5	29.0	18.2	85.7	53.8	2.448	1.6	90.8	61.0	55.8	37.4	Sodium Chlo-ride
46	2,583-2,647	40.0	42.7	15.5	16.6	37.0	39.5	2.167	2.5	39.5	45.5	45.2	52.0	Mixed-Cation Sulfate
47	2,583-2,697	39.9	42.7	15.1	16.1	37.4	40	2.240	2.5	41	46.1	45.6	51.4	Mixed-Cation Sulfate

Table 5. Select molar ratios for the water quality at the ROMP 45.5 – Progress Energy well site

[No., number; ft, feet; bls, below land surface; total alkalinity is used as HCO_3^{1-} because it is assumed CO_3^{2-} and H_2CO_3 are negligible based on groundwater pH at this site because hydroxyl ions are insignificant in groundwater and carbonate ions are typically not present if pH is less than 8.3 standard units (SU)]

Water Quality Sample No.	Open Interval (ft bls)	Cl^{1-}:SO_4^{2-}	Ca^{2+}:HCO_3^{1-}	Ca^{2+}:Mg_{2+}	Cl^{1-}:HCO_3^{1-}	Na^{1+}:HCO_3^{1-}	Na^{1+}:Cl^{1-}	SO_4^{2-}:HCO_3^{1-}
2	66-90	4.27	0.313	1.04	0.114	0.186	1.63	0.0267
3	95-130	3.26	0.310	1.01	0.099	0.150	1.52	0.0303
4	140-170	11	0.321	1.05	0.15	0.145	0.99	0.014
5	175-200	9	0.324	1.07	0.142	0.162	1.14	0.02
7	195-215	6.7	0.316	1.03	0.143	0.21	1.5	0.021
8	218-245	26	0.259	0.96	0.19	0.403	2.2	0.0071
10	289-315	8.7	0.258	0.932	0.203	0.424	2.09	0.023
11	340-375	11	0.295	1.0	0.268	0.408	1.52	0.023
12	396-415	11.6	0.324	1.06	0.356	0.434	1.22	0.0306
13	415-435	11.4	0.323	0.986	0.403	0.492	1.22	0.0354
14	440-475	7.22	0.313	0.971	0.344	0.435	1.26	0.0477
15	495-515	6.93	0.292	0.87	0.330	0.470	1.42	0.0477
16	520-555	14	0.263	0.936	0.189	0.407	2.15	0.014
17	565-595	3.48	0.321	1.00	0.222	0.375	1.69	0.064
18	625-665	0.797	0.495	1.75	0.12	0.138	1.2	0.145
20	676-705	0.507	0.496	1.43	0.11	0.127	1.1	0.224
21	725-755	0.36	0.618	2.00	0.12	0.131	1.1	0.32
22	790-810	0.226	0.852	2.08	0.126	0.183	1.45	0.560
23	810-830	0.203	0.859	2.14	0.127	0.185	1.46	0.627
24	868-880	0.172	0.904	2.06	0.127	0.181	1.43	0.738
25	915-940	0.0326	4.69	2.21	0.205	0.217	1.06	6.3
26	975-1,000	0.0308	5.12	1.98	0.225	0.241	1.07	7.3
27	1,016-1,040	0.030	5.42	2.20	0.230	0.251	1.09	8
28	1,080-1,100	0.0301	6.20	2.17	0.256	0.264	1.03	8.5
29	1,111-1,140	0.0289	6.21	2.23	0.25	0.254	1.02	8.6
30	1,165-1,200	0.0472	5.33	2.22	0.336	0.324	0.96	7.1
31	1,218-1,240	0.0826	6.45	2.18	0.749	0.640	0.854	9.1
32	1,270-1,300	0.233	7.34	2.20	2.4	2.31	0.97	10.3
34	1,425-1,480	0.866	7.32	1.40	12.58	13.8	1.10	14.5
36	1,698-1,749	18.7	7.33	0.779	109.7	81.5	0.743	5.87
37	1,750-1,780	6.7	7.7	0.79	91.47	74.6	0.816	13.6
38	1,650-1,700	9	7	0.7	94.95	81.4	0.858	10.87
39	1,650-1,700	8.7	5.9	0.76	81.65	70.7	0.866	9.4
40	1,751-1,887	6.9	7.2	0.79	83.4	70.8	0.849	12.1
41	1,927-2,037	4.0	7.1	0.87	48.1	47.5	0.987	11.9
42	2,151-2,237	2.09	10.0	0.954	37.1	35.6	0.958	17.8
43	2,267-2,367	4.70	7.29	0.900	57.79	52.9	0.915	12.3
44	2,395-2,467	6.7	6.9	0.80	77.18	82.1	1.06	11.5
45	2,467-2,557	3.3	8.6	1.5	37.1	35.0	0.943	11.4
46	2,583-2,647	1.75	9.24	2.57	18.2	17.1	0.938	10.4
47	2,583-2,697	1.79	8.91	2.65	18	16.7	0.91	10.2

one-third of the core hole (to about 755 feet bls) are mixed-cation bicarbonate and calcium bicarbonate. The dominant water type in the middle one-third of the core hole is calcium sulfate. The dominant water type in the bottom half of the core hole (beginning about 1,698 feet bls) is sodium chloride. Select molar ratios were calculated to investigate the water quality changes with depth (table 5). The major changes in water quality are chloride, sodium, and sulfate concentrations increase with depth; bicarbonate concentration decreases with depth; and calcium and magnesium concentrations increase in the lower half of the Upper Floridan aquifer but calcium decreases and magnesium predominates in the middle confining unit II (fig. 10). Chloride, sulfate, and sodium concentrations decrease in the second permeable interval of the Lower Floridan aquifer.

Surficial Aquifer

No groundwater samples were collected from the surficial aquifer, therefore, no water quality data are available for this unit. However, the surficial aquifer mainly consists of rainwater that has infiltrated the surficial deposits. The sands and clays that make up the surficial deposits are relatively insoluble; therefore, the water quality is more a function of rainwater infiltration rather than the dissolution of surficial sediments.

One water quality sample was collected from the confining unit located from about 10 to 95 feet bls that separates the surficial aquifer from the Hawthorn aquifer system and the results of this sample are included in the water quality discussion on the surficial aquifer. The water quality sample (WQ 2) was collected from 66 to 90 feet bls. The water is fresh and within secondary drinking water standards with a TDS concentration of 352 mg/L. The chloride-to-sulfate ratio is 4.27, which is similar to the ratio for fresh water (table 5). The water type is mixed-cation bicarbonate, however, calcium and magnesium are the dominant cations with percent weights of 44.1 and 42.4, respectively (table 4). Dissolved silica is 42.7 mg/L because of the sand and clay composing the confining unit.

Hawthorn Aquifer System

The Hawthorn aquifer system extends from 95 to 246 feet bls at the ROMP 45.5 well site. Five water quality samples were collected within this unit from 95 to 245 feet bls. The third water quality sample (WQ 4) taken straddled the boundary between the upper Arcadia aquifer and the confining unit separating the upper Arcadia aquifer and the lower Arcadia aquifer. No samples were collected from the confining unit located from 246 to 290.5 feet bls that hydraulically separates the Hawthorn aquifer system from the Floridan aquifer system because the confining unit did not produce a sufficient volume of water.

The water quality results indicate the water type in the Hawthorn aquifer system, from 95 to 215 feet bls, is mixed-cation bicarbonate with dominant cations of calcium and magnesium and the water type from 218 to 245 feet bls is mixed-cation bicarbonate (table 4). The heterogeneity of the lithology of the aquifer units composing the Hawthorn aquifer system probably contributes to the lack of a single dominant cation. The dominant anion is bicarbonate (HCO_3^{1-}) as is expected because bicarbonate is formed from the dissolution of carbonate rocks such as limestone ($CaCO_3$) and dolostone [$CaMg(CO_3)^2$] and limestone is the predominant rock composing the lower portion of the Hawthorn aquifer system. In general, the major ion concentrations do not vary a lot. In the Hawthorn aquifer system, dissolved silica is highest with a range from 38.8 to 49.0 mg/L because of the abundant sand and clay in the Hawthorn Group. The water is fresh throughout the Hawthorn aquifer system with an average TDS concentration of 339 mg/L. Only one sample collected from the upper Arcadia aquifer from 140 to 170 feet bls exceeds secondary drinking water standards for iron.

Upper Arcadia Aquifer

Two water quality samples with intervals from 95 to 130 feet bls and 140 to 170 feet bls (WQ 3 and WQ 4) were collected and analyzed from the upper Arcadia aquifer (appendix K). The sample from 140 to 170 feet bls penetrated 19 feet into the underlying confining unit. The water is fresh in this aquifer with TDS concentrations of 346 and 341 mg/L. The laboratory results for WQ 3 indicate the water meets secondary drinking water standards but WQ 4 does not because it exceeds secondary standards for iron with a concentration of 2,290 µg/L. The WQ 4 sample was collected with a wireline bailer; therefore, this iron concentration is most likely the best representative estimate for iron concentration in this aquifer. In this aquifer, mixed-cation bicarbonate type water is present, however, calcium and magnesium are the dominant cations with calcium-to-magnesium ratios of 1.01 and 1.05 (tables 2 and 3). The chloride-to-sulfate ratio increased in WQ 4 because the chloride concentration increased and the sulfate concentration decreased substantially (table 4).

Lower Arcadia Aquifer

Three water quality samples (WQ 5, WQ 7, and WQ 8) were collected from the lower Arcadia aquifer. The sample intervals for WQ 5, WQ 7, and WQ 8 were from 175 to 200 feet bls, from 195 to 215 feet bls, and from 218 to 245 feet bls, respectively. The water quality is fresh within this aquifer and becomes progressively fresher with depth. The TDS concentrations are 353 mg/L, 348 mg/L and 307 mg/L for WQ 5, WQ 7, and WQ 8, respectively. The slight freshening may be due to an increase in siliciclastic sediments. All three samples meet secondary standards for drinking water. The water type for WQ 5 and WQ 7 is mixed-cation bicarbonate with dominant calcium and magnesium cations and the water type for WQ 8 is mixed-cation bicarbonate. The water type changed from a calcium and magnesium rich mixed-cation bicarbonate to a mixed-cation bicarbonate because the relative abundance of sodium increased causing calcium and magnesium to decrease. The sodium-to-bicarbonate ratio also nearly doubled. The chloride concentration increased and the sulfate concentration decreased causing the chloride-to-sulfate ratio to almost quadruple to 26. This ratio is higher than the chloride-to-sulfate ratio of seawater (19).

Floridan Aquifer System

Thirty-six water quality samples were collected within the Floridan aquifer system from 290.5 to 2,697 feet bls. The laboratory results indicate the water in the Upper Floridan aquifer is fresh and meets secondary drinking water standards from 290.5 to 830 feet bls. From 868 to 1,299 feet, the water quality does not meet secondary drinking water standards for TDS, sulfate, and/or iron. The water types present in the Upper Floridan aquifer, in descending order, are mixed-cation bicarbonate, calcium bicarbonate, and calcium sulfate.

The middle confining unit II extends from 1,299 to 2,255 feet bls. Eight representative water quality samples were collected from this unit and the results indicate the water is brackish (TDS concentrations range from 500 to 30,000 parts per million) to saline (TDS concentrations range from 30,000 to 50,000 parts per million) and secondary drinking water standards are exceeded for either chloride, sulfate, TDS, or iron. The water types in this unit are mixed-cation sulfate, sodium chloride, and mixed-cation chloride.

Below the middle confining unit II is the Lower Floridan aquifer from 2,255 feet bls beyond the total depth of exploration of 2,707 feet bls. Five water samples were analyzed from this aquifer and the results show that the water is brackish and exceeds secondary drinking water standards for either chloride, sulfate, TDS, or iron. The water types in the Lower Floridan aquifer are sodium chloride and mixed-cation sulfate.

Upper Floridan Aquifer

A total of 22 water quality samples (WQ 10 - WQ 32) were collected throughout this unit. Total dissolved solids concentrations ranged from 194 to 3,331 mg/L and slightly decreased at the top of the Avon Park Formation but then increased with depth (fig. 9 and appendix K2). The laboratory results for the groundwater samples collected from 290.5 to 830 feet bls (WQ 10 - WQ 23) indicate the water is fresh and meets secondary drinking water standards (appendix K2) with TDS concentrations ranging from 194 to 458 mg/L. The TDS concentrations continually decrease from the top of the Upper Floridan aquifer to 705 feet bls. The freshest water is located from 625 to 705 feet bls. This freshening may result because of fresh water from the more permeable Avon Park Formation that begins at 605 feet bls. The groundwater sample results from 790 to 810 feet bls (WQ 22) and from 810 to 830 feet bls (WQ 23) show an increase in TDS concentrations indicating a transition toward poorer water quality (fig. 9). The first groundwater sample to not meet secondary drinking water standards for TDS is WQ 24 (sample interval from 868 to 880 feet bls) with a concentration of 549 mg/L. Total dissolved solids continually increase throughout the remainder of the Upper Floridan aquifer and indicate brackish conditions. From 915 to 940 feet bls (WQ 25), sulfate concentration also exceeds secondary drinking water standards with a value of 1,550 mg/L. Additionally, iron exceeds secondary standards from 1,165 to 1,200 feet bls (WQ 30) and from 1,218 bls to 1,240 feet bls (WQ 31) with concentrations of 394 µg/L and 300 µg/L, respectively.

Generally, all ion concentrations increase with depth but briefly decrease near the top of the Avon Park most likely because the permeability increases. Chloride concentration ranged from 7.7 to 170 mg/L. Chloride concentration substantially increased from 54.7 to 170 mg/L near the contact with the middle confining unit II. Sulfate concentration ranged from 4.9 to 1,980 mg/L and generally increased with depth. Magnesium concentration increased with depth because dolostones increase with depth.

The water type is mixed-cation bicarbonate from the top of the Upper Floridan aquifer (290.5 feet bls) to 595 feet bls. Bicarbonate is expected to be the dominant anion because the lithology is limestone within the interval. The major cations are calcium, magnesium, and sodium where calcium and magnesium have a higher concentration than sodium and a molar ratio near 1 (table 4-5).

From 625 to 755 feet bls the water type is calcium bicarbonate. Calcium is the dominant cation from 625 to 755 feet bls (WQ 18 - WQ 21) because magnesium concentrations decreased by almost half and sodium concentrations substantially dropped (appendix K2). From 790 to 810 feet bls (WQ 22) calcium, magnesium, and sodium concentrations increased substantially, however, calcium remains the dominant cation because it had a higher increase relative to the other cations. The calcium-to-magnesium ratio is nearly 1 from the top of the Upper Floridan aquifer to about 600 feet bls (table 5). These ratios are similar to the ratios of the Hawthorn aquifer system. Magnesium concentration increases substantially below 755 feet bls because dolostone becomes the predominant lithology. However, the calcium-to-magnesium ratio increases substantially in the water samples collected from about 600 feet bls and below because the calcium concentration has a higher increase relative to magnesium (fig. 10 and table 4). This additional source of calcium is likely the result of upwelling of the dissolution of evaporite sediments found in the underlying middle confining unit II.

In general, the bicarbonate anion decreases and the sulfate anion increases with depth throughout the Upper Floridan aquifer, therefore, the sulfate-to-bicarbonate ratio increases (table 5 and fig. 10). This result is noticeable beginning with the first sample taken from the top of the Avon Park Formation at 625 feet bls, in which the ratio more than doubles, and continues to increase throughout the remainder of the Upper Floridan aquifer. The sulfate-to-bicarbonate ratio from 915 to 940 feet bls (WQ 25) increases by nearly an order of magnitude to 6.3. The increasing sulfate concentration also is likely the result of the dissolution of evaporite sediments found in the underlying middle confining unit II. From 790 to 810 feet bls (WQ 22) the water type changes from calcium bicarbonate water to calcium sulfate water and sulfate remains the dominant anion throughout the rest of the Upper Floridan aquifer.

The geometric mean of chloride-to-sulfate ratios from the top of the Upper Floridan aquifer to 625 feet bls is 8.7 because chloride concentration is higher than the sulfate concentration. The geometric mean of chloride-to-sulfate ratios decrease nearly two orders of magnitude below 625 feet to 0.11 because of sulfate concentration increases (table 5 and fig. 10).

The calcium-to-bicarbonate ratio increases from 915 feet bls through the remainder of the Upper Floridan with ratios similar to seawater. Sodium increases almost four-fold in the sample collected from 1,270 to 1,300 feet bls that penetrates the middle confining unit II by 1foot,. This increase in sodium possibly is from connate water inclusion or from seawater. The sodium-to-bicarbonate ratio substantially increases as a result of the sodium concentration increase. This shows a transitioning toward water with a strong deepwater and/or seawater effect (Tihansky, 2005). In addition, the sodium-to-chloride ratio generally decreases throughout the Upper Floridan aquifer and moves toward the sodium-to-chloride ratio of seawater (~0.86).

The trends of the relative abundances of each major cation and anion species observed in the water quality samples collected at ROMP 45.5 well site are presented on a Piper (1944) diagram in figure 11 as percent milliequivalents. In the diagram it is apparent that the Upper Floridan aquifer samples have a mixed cation or calcium cation character and a sulfate or bicarbonate anion character and plot along the freshwater/deepwater mixing line. This result indicates the water has a calcium and sulfate effect that is typical of the middle confining unit II and representative of a deepwater source that is upwelling and mixing with the freshwater (Tihansky, 2005). However, the groundwater samples collected from the upper portion of the Upper Floridan aquifer plot more towards the middle of the Piper diagram, indicating they are less affected by the deepwater. The change in relative anion abundance from bicarbonate to sulfate in the Upper Floridan aquifer is evident because the samples plot along the CO_3^{2-}+HCO_3^{1-} axis of the anion trilinear diagram.

Middle Confining Unit II

Eight representative water quality samples (WQ 34 and WQ 36 - WQ 42) were collected in the middle confining unit II from 1,425 to 2,237 feet bls. The water quality sample collected from 1,545 to 1,600 feet bls (WQ 35) is not used because the bailer check valve malfunctioned during sampling. The water quality samples in this unit are from core hole 2 and core hole 3, therefore, the sample intervals overlap for WQ 36 through WQ 39.

All of the major ions increased substantially in the middle confining unit II (fig. 9) especially near the top (1,658.5 feet bls) of the Oldsmar Formation. The laboratory results from WQ 34, collected from 1,425 to 1,480 feet bls indicate the water is brackish with a TDS concentration of 2,767 mg/L. The sample does not meet secondary drinking water standards for TDS, sulfate, iron, and chloride. This is the first sample to exceed secondary drinking water standards for chloride with a concentration of 917.80 mg/L. The water type for this sample is mixed-cation sulfate, however, the water begins to show a transition toward sodium and chloride dominated water (table 4). The mixed-cation character results because the relative abundance of sodium increases almost fourfold to 35.2 percent and calcium decreases by almost half to 37.3 percent (table 4). The additional source of sodium and chloride is likely an effect from seawater and/or connate (relict) water. Sulfate is the dominant anion likely because of the dissolution of the abundant gypsum and anhydrite found within the middle confining unit II.

The laboratory results for WQ 36 through WQ 42 indicate the water is brackish to saline in the middle confining unit II below about 1,650 to 2,237 feet bls with TDS concentrations that range from 9,610 to 31,900 mg/L. These samples also exceed secondary drinking water standards for chloride and sulfate with chloride concentrations that range from 2,510 to 15,613.75 mg/L and sulfate concentrations that range from 2,260 to 4,828.38 mg/L. The secondary drinking water standard for iron is exceeded in samples WQ 36 through WQ 40. All of the ions and TDS decrease in samples WQ 41 and WQ 42 near the base of the middle confining unit II (fig. 9 and appendix K2). The water type from below 1,650 feet to about 2,037 feet bls is sodium chloride as sodium and chloride concentrations increased by over an order of magnitude (table 4). This addition of sodium and chloride presumably is from seawater mixing and/or connate water. Sulfate and magnesium concentrations increased substantially and are probably the result of the addition of mineralized water (from dolostone and evaporite interaction) and connate water.

Overall, the chloride-to-sulfate ratio increased in the middle confining unit II because of an increase in chloride concentration relative to the increase in sulfate concentration (table 4). The chloride-to-sulfate ratio for sample WQ 36 increased to 18.7, which is similar to seawater. However, the

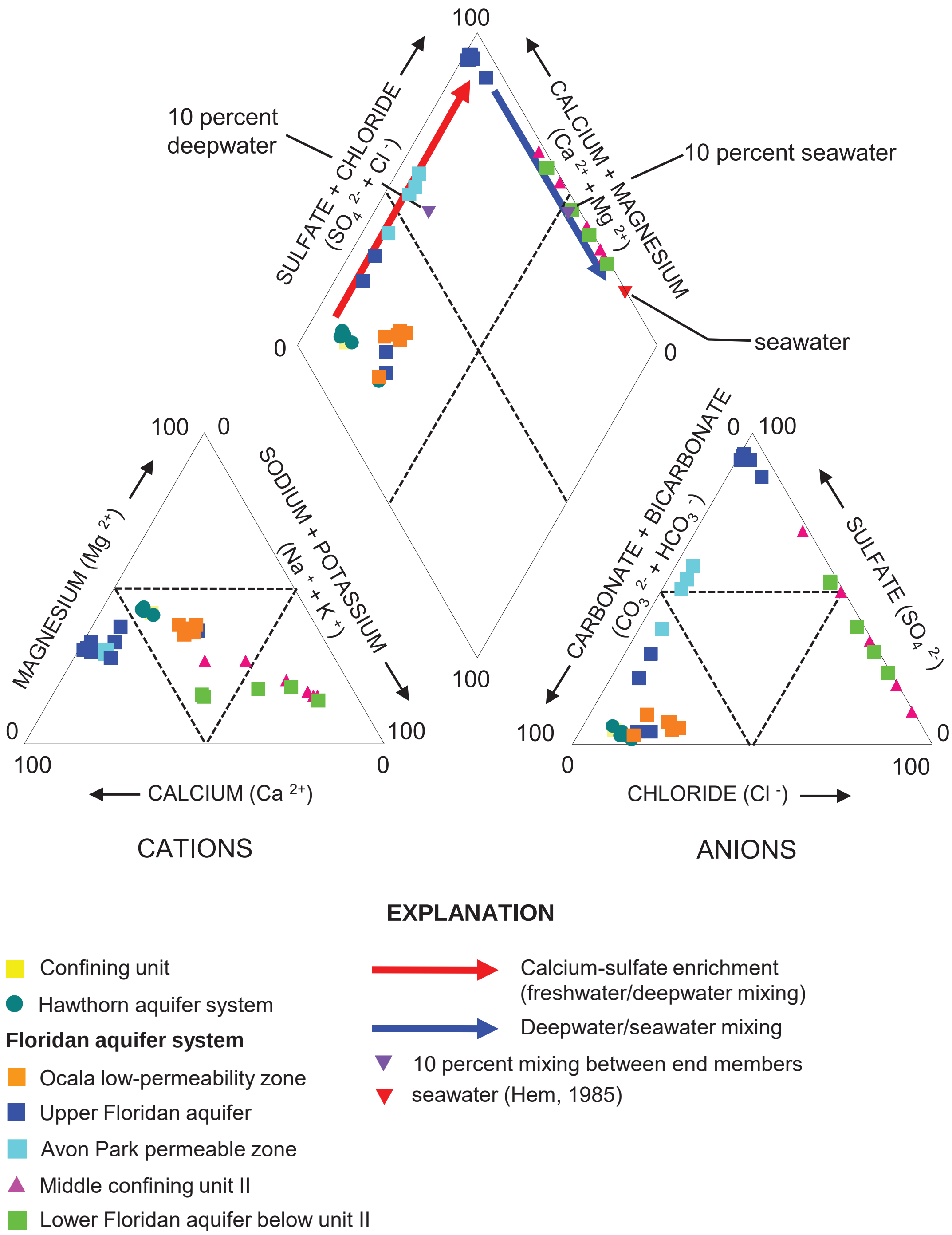


Figure 11. Piper diagram displaying the laboratory data from the water quality samples collected at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

ratio decreased in samples WQ 37 through WQ 42 because sulfate nearly doubled (fig. 10 and table 5). This ratio is still an order of magnitude higher than the same ratio in the Upper Floridan aquifer. The sulfate increase may result because of a higher effect of deep mineralized and/or connate water. The calcium-to-magnesium ratio decreased by almost half because magnesium concentration increased more substantially relative to the increase in calcium concentration. Mineralized and connate water mixing is likely the cause of the increase in magnesium concentration. The chloride-to-bicarbonate ratio substantially increased because the chloride concentration increased by more than an order of magnitude. Likewise, the sodium-to-bicarbonate and the sulfate-to-bicarbonate ratios increased (table 5).

It is evident on the Piper diagram (fig. 11) that the water quality samples for the middle confining unit II are affected by connate and mineralized water (deepwater) and seawater because these samples plot along the deepwater/seawater mixing line (Tihansky, 2005).

Lower Floridan Aquifer

The Lower Floridan aquifer begins at 2,255 feet bls and extends beyond the total depth of exploration. According to Ryder (1985) the Lower Floridan aquifer contains poor water quality. The highly mineralized water in the Lower Floridan aquifer suggests poor interconnection from the freshwater of the Upper Floridan aquifer (Miller, 1986). Five groundwater samples (WQ 43 - WQ 47) were collected while core drilling in the Lower Floridan aquifer. The laboratory results indicate the water is brackish and similar to the water within the middle confining unit II. The water quality freshens within the permeable intervals of the Lower Floridan aquifer; however, the water quality is still poor and exceeds secondary drinking water quality standards for chloride, sulfate, and TDS (fig. 9 and appendix K2). Only water quality sample WQ 46 exceeds secondary drinking water quality standards for iron.

Water quality results from 2,267 to about 2,583 feet bls indicate the water type is sodium chloride. From about 2,583 to 2,697 feet bls the water type is mixed-cation sulfate. The water type changes because sodium and chloride concentrations decrease substantially. This change in water type suggests that deepwater and/or connate water has a greater effect than seawater on this sample. The latter interval corresponds to the most permeable interval within the Lower Floridan aquifer and could indicate a hydraulic connection to a deepwater source. Magnesium concentration also increases; however, it is most likely the result of dolostone becoming more abundant within the Cedar Keys Formation. All five water quality samples plot parallel to the calcium plus magnesium (Ca^{2+}+Mg^{2+}) axis on the Piper diagram (fig. 11). This axis corresponds to the deepwater/seawater mixing line (Tihansky, 2005).

Summary

The ROMP 45.5 well site, located on the Progress Energy, Hines Energy Complex in central Polk County, Florida was constructed for a dedicated groundwater monitoring station. The site location was selected to evaluate current groundwater resources in the area, with emphasis on future availability of supply from the Floridan aquifer system, especially from the Lower Floridan aquifer. The ROMP 45.5 well site Phase 1 - shallow exploratory core drilling and testing began in September 2005 and was completed in August 2006 from land surface to 1,780 feet bls. Phase 2 - monitor well construction began in October 2006 and ended in September 2007. Phase 3 - deep exploratory core drilling and testing from 1,717 to 2,707 feet bls began in October 2007 and ended in March 2008. Phase 4 - aquifer pumping testing was performed between July 2008 and September 2008.

Seven permanent monitor wells were constructed on the permanent easement and are part of the long-term monitoring network. District staff also constructed a surficial aquifer monitor well (SURF AQ MONITOR) on the permanent easement in October 2005. From October 2006 to September 2007, DDC installed the Hawthorn confining unit monitor well (HAWT CU MONITOR), the upper Arcadia aquifer monitor well (U ARCA AQ MONITOR), the lower Arcadia aquifer monitor well (L ARCA AQ MONITOR), the Upper Floridan aquifer monitor well (U FLDN AQ MONITOR), the Avon Park permeable zone monitor well (AVPK PZ MONITOR), and the Lower Floridan aquifer monitor well (L FLDN AQ MONITOR). The permanent wells were used as production wells during the APTs. Two temporary wells were constructed on the tempoary construction easement. From September 2005 to October 2005, District staff converted core hole 1 into a drilling water supply well that later served as the lower Arcadia aquifer observation well (L ARCA OB TEMP) during the APT. DDC modified core hole 2 into a dual-zone Upper Floridan aquifer (U FLDN AQ OB TEMP) and Avon Park permeable zone (AVPK PZ OB TEMP) observation well.

From August 2009 to October 2009, District staff lined the lower Arcadia aquifer monitor well (L ARCA AQ MONITOR), the Upper Floridan aquifer monitor well (U FLDN AQ MONITOR), and the Avon Park permeable zone monitor well (AVPK PZ MONITOR) with 6-inch schedule 40 PVC casing. District staff also plugged the dual-zone Upper Floridan aquifer (U FLDN AQ OB TEMP) and Avon Park permeable zone (AVPK PZ OB TEMP) observation well and the lower Arcadia aquifer observation well (L ARCA OB TEMP).

The exploratory core drilling and testing phases included water sampling, core collection, hydraulic testing, and geophysical logging and was used to define the hydrogeology and water quality at the well site. The geologic units encountered at the well site include, in ascending order: the Cedar Keys Formation, Oldsmar Formation, Avon Park Formation, Ocala Limestone, Suwannee Limestone, Hawthorn Group, and the undifferentiated sands and clay deposits. Because the site was previously mined, the unit horizons in the upper 30 feet may be altered. The hydrogeologic units defined at the well site include, in descending order: the surficial aquifer; the Hawthorn aquifer system including the upper Arcadia aquifer, a confining unit, and the lower Arcadia aquifer; and the Floridan aquifer system including the Upper Floridan aquifer, middle confining unit II, and the Lower Floridan aquifer below unit II.

The surficial aquifer extends from land surface to about 10 feet bls and corresponds with the undifferentiated sand and clay deposits. The surficial sediments remained saturated throughout exploration and appeared to be a competent aquifer; however, a slug test was not performed to determine its hydraulic properties. A confining unit extends from about

10 to 95 feet bls that separates the surficial aquifer from the Hawthorn aquifer system.

The Hawthorn aquifer system extends from 95 to 246 feet bls and is within in the Hawthorn Group. It consists of the upper Arcadia aquifer and lower Arcadia aquifer separated by a confining unit. The slug test performed in the upper Arcadia aquifer yielded an estimated hydraulic conductivity value of 2 ft/d. The lower Arcadia aquifer is the most productive unit in the Hawthorn aquifer system at the well site with hydraulic conductivity estimates that range from 90 to 110 ft/d. An APT conducted in September 2008 yielded a transmissivity value of 25,000 ft^2/day, storativity value of 0.003, and leakance value of 0.0006 day^{-1}. Beneath the lower Arcadia aquifer is another confining unit that separates the Hawthorn aquifer system from the Floridan aquifer system.

The Floridan aquifer system extends from 290.5 feet bls past the total depth of exploration and consists of the Upper Floridan aquifer, the middle confining unit II, and the Lower Floridan aquifer below unit II. The Upper Floridan aquifer extends from 290.5 to 1,299 feet bls. The first permeable interval within the Upper Floridan aquifer corresponds with the Suwannee Limestone. Two slug tests were performed within this interval and the estimated hydraulic conductivity values are 2 and 36 ft/d. An APT was conducted in September 2008 and yielded a transmissivity value of 26,000 ft^2/day, a storativity estimate of 0.003, and a leakance value of 0.007 day^{-1}. The Ocala Limestone portion of the Upper Floridan aquifer is a low-permeability zone with estimated hydraulic conductivity values that range from 0.08 to 0.9 ft/d. A portion of the Avon Park Formation within the Upper Floridan aquifer is a highly permeable zone of highly fractured dolostones from 730 to 912 feet bls. Estimated hydraulic conductivity values in the Avon Park permeable zone range from 200 to 490 ft/d. An APT was attempted in September 2008, however, no drawdown was observed in the observation well and, as a result, transmissivity and storativity values could not be estimated. The APT recovery data was analyzed as a slug test and yielded a hydraulic conductivity estimate of 2,300 ft/d. The lack of drawdown likely results because the aquifer was not pumped at a rate high enough to sufficiently stress the aquifer.

The middle confining unit II extends from 1,299 to 2,255 feet bls and is anomalously thick at the well site compared to nearby areas. Seven slug tests were performed within this unit and the estimated hydraulic conductivity values range from 0.01 to 0.1 ft/d.

The Lower Floridan aquifer extends from 2,255 feet to beyond the total depth of exploration of 2,707 feet bls. The five slug tests performed in the Lower Floridan aquifer indicate there are two permeable intervals separated by a low-permeability interval and, in general, the aquifer is not productive. There is another low-permeability interval below the second permeable interval. The first permeable interval extends from 2,255 to about 2,394.8 feet bls with an estimated hydraulic conductivity value of 4 ft/d. The first low-permeability interval extends from 2,394.8 to about 2,583 feet bls. The hydraulic conductivity values estimated from the two slug tests performed in this interval are 0.02 and 0.1 ft/d. The second permeable interval extends from 2,583 to about 2,267 feet bls with an estimated hydraulic conductivity value of 16 ft/d.

Forty-seven water quality samples were collected from the well site throughout exploratory core drilling and were analyzed for major chemical constituents. One water quality sample was not used in analyses because of a bailer check valve failure. Generally, the groundwater quality degrades with depth. No water quality data are available for the surficial aquifer because no samples were collected. All samples are fresh to 830 feet bls with TDS concentrations under 500 mg/L. A sample collected from 140 to 170 feet bls exceeds secondary drinking water standards for iron. All samples collected below 868 feet do not meet secondary drinking water standards for TDS, chloride, sulfate and/or iron. The water quality of the Upper Floridan aquifer plots along the freshwater/deepwater mixing line on the Piper diagram. The groundwater quality substantially declines in the middle confining unit II and the Lower Floridan aquifer. The water in the middle confining unit II shows effects from deepwater and seawater and plots along the deepwater/seawater mixing line on the Piper diagram. The Lower Floridan aquifer water also appears to be affected by deepwater and seawater and plots along the deepwater/seawater mixing line on the Piper diagram. The laboratory results from the last two water quality samples collected from the Lower Floridan aquifer show most major ion concentrations decreased, although these concentrations are still high. The water types in the upper one-third of the core hole are mixed-cation bicarbonate and calcium bicarbonate. The dominant water type in the middle one-third of the core hole is calcium sulfate. The dominant water type in the bottom half of the core hole is sodium chloride.

Generally, groundwater in the Hawthorn aquifer system and the Upper Floridan aquifer is suitable for water supply. The groundwater quality begins to degrade in the lower portion of the Upper Floridan aquifer between 830 and 868 feet bls where deepwater mixing is evident. The water quality in the middle confining unit II and the Lower Floridan aquifer below unit II is poor. At this time, the Lower Floridan aquifer below unit II is not a viable water supply source because of poor quality water and small yield potential.

Selected References

Arthur, J.D., Fischler, C., Kromhout, C., Clayton, J.M., Kelley, G. M., Lee, R.A., Li, L., O'Sullivan, M., Green, R.C., and Werner, C.L., 2008, Hydrogeologic Framework of the Southwest Florida Water Management District: Florida Geological Survey Bulletin 68, 175 p.

Barr, G.L., 1996, Hydrogeology of the Surficial and Intermediate Aquifer Systems in Sarasota and Adjacent Counties, Florida: U.S. Geological Survey Water-Resources Investigations Report 96-4063, 81 p.

Boggess, D.M., and Watkins, F.A., Jr., 1986, Surficial aquifer system in eastern Lee County, Florida: U.S. Geological Survey Water-Resources Investigations Report 85-4161, 59 p.

Bryan, J.R., 2005, Larger Foraminifera: common taxa, Late Middle Eocene to Oligocene, Florida Fossil Invertebrates Part 7: Gainesville, Florida, Florida Paleontological Society, p. 3.

Bush, P. W., 1982, Predevelopment Flow in the Tertiary limestone aquifer, southeastern United States; A Regional Analysis from Digital Modeling: U.S. Geological Survey Water-Resources Investigations Report 82-905, 56 p.

Butler, J.J., Jr., 1998, The Design, Performance, and Analysis of Slug Tests: Boca Raton, Florida, Lewis Publishers, 252 p.

Campbell, K. M., 1986, Geology of Polk County, Florida: Florida Geological Survey Open File Report 13, 17 p.

Chen, C.S., 1965, The Regional Lithostratigraphic Analysis of Paleocene and Eocene Rocks of Florida: Florida Geological Survey Bulletin No. 45, 105 p.

Clarke, WE., Musgrove, R.M., Menke, G.C., and Cagle, J.W., Jr., 1964, Water resources of Alachua, Bradford, Clay, and Union Counties, Florida: Florida Geological Survey Report of Investigations 35, 170 p.

Cooper, H.H., Bredehoeft, J.D., and Papadopulos, S.S., 1967, Response of a finite-diameter well to an instantaneous charge of water: Water Resources Research, v. 3, no. 1, p. 263-269.

DeWitt, D. J. and Mallams, J. L., 2007, The Hawthorn Aquifer System: A Proposal for Hydrostratigraphic Nomenclature Revision in Southwest Florida, in Geological Society of America, Abstracts with Programs, 2007: Southeastern Section 56th Annual Meeting, v. 39, no. 2, 89 p.

Driscolll, F.G., 1986, Groundwater and Wells, 2d ed: St. Paul, Minnesota, Johnson Division, 1089 p.

Duerr, A.D., 2002, Potentiometric surfaces of the intermediate aquifer system, west-central Florida, September 2001: U.S. Geological Survey Open-File Report 2002-187, 1 sheet.

Duffield, G. M., 2007, AQTESOLV for Windows, Professional Version 4.5 [software]: Reston, VA, HydroSOLV, Inc.

Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, New Jersey, Prentice-Hall Inc., 604 p.

Halford, K.J., and Kuniansky, E.L., 2002, Documentation of Spreadsheets for the Analysis of Aquifer-Test and Slug-Test Data: U.S. Geological Survey Open-File Report 02-197, 51 p.

Hantush, M.S., 1964, Hydraulics of wells, *in* Advances in Hydroscience, V.T. Chow (editor): New York, Academic Press, p. 281-442.

Hantush, M.S., and Jacob, C.E., 1955, Non-steady radial flow in an infinite leaky aquifer, American Geophysical Union Transactions, v. 36, p. 95-100.

Helander, D.P., 1983, Fundamentals of formation evaluation: Tulsa, Oklahoma, Oil and Gas Consultants International, 332 p.

Hem, J. D., 1985, Study and Interpretation of the Chemical Characteristics of Natural Water (3d ed.): U.S. Geological Survey Water-Supply Paper 2254, 264 p.

Hutchinson, C.B., 1992, Assessment of hydrogeologic conditions with emphasis on water quality and water injection, southwest Sarasota and west Charlotte Counties, Florida: U.S. Geological Survey Water-Supply Paper 2371, 74 p.

Hvorslev, M.J., 1951, Time Lag and Soil Permeability in Ground-Water Observations: U.S. Army Corps of Engineers Waterways Experiment Station Bulletin 36, Vicksburg, Mississippi, 49 p.

Hyder, Z, Butler, J. J. Jr., McElwee, C.D., and Liu, W., 1994, Slug tests in partially penetrating wells: Water Resources Research, v. 30, no. 11, p. 2945-2957.

Joyner, B.F., and Sutcliffe, H. Jr., 1976, Water Resources of the Myakka River Basin Area, Southwest Florida: U.S. Geological Survey Water-Resources Investigations Report 76-58, 87 p.

Keys, W.S., 1990, Borehole geophysics applied to groundwater investigations: U. S. Geological Survey Techniques of Water-Resources Investigations, Book 2, Chap. E 2, 150 p.

Knochenmus, Lari A., 2006, Regional Evaluation of the Hydrogeologic Framework, Hydraulic Properties, and Chemical Characteristics of the Intermediate Aquifer System Underlying Southern West-Central Florida: U.S. Geological Survey Scientific Investigations Report 2006-5013, 52 p.

Laney, Robert L., and Davidson, Claire B., 1986, Aquifer-Nomenclature Guidelines: U.S. Geological Survey Open-File Report 86-534, 60 p.

Leve, G.L., 1966, Ground water in Duval and Nassau Counties, Florida: Florida Geological Survey Report of Investigations 43, 91 p.

Lichtler, W.F., 1960, Geology and ground-water resources of Martin County, Florida: Florida Geological Survey Report of Investigations 23, 149 p.

Miller, J. A., 1982, Geology and configuration of the base of the Tertiary limestone aquifer system, southeastern United States: U.S. Geological Survey Water-Resources Investigations Report 81-1176, 1 map sheet.

Miller, J.A., 1986, Hydrogeologic Framework of the Floridan Aquifer System in Florida and in Parts of Georgia, Alabama, and South Carolina: U.S. Geological Survey Professional Paper 1403-B, 91 p.

Miller, J.A., 1990, Ground Water Atlas of the United States: Alabama, Georgia, and South Carolina: U.S. Geological Survey Hydrologic Atlas 730-G, 28 p.

North American Commission on Stratigraphic Nomenclature, 2005, North American Stratigraphic Code: American Association of Petroleum Geologists Bulletin, v. 89, no. 11, p. 1547-1591.

Ortiz, A.G., 2006, Potentiometric surface of the Upper Floridan aquifer, west-central Florida, September 2005: U.S. Geological Survey Open-File Report 2006-1128, 1 sheet.

Parker, G.G., Ferguson, G. E., Love, S.K., and others, 1955, Water resources of southeastern Florida: U.S. Geological Survey Water-Supply Paper 1255, 965 p.

Piper, A.M., 1944, A graphic procedure in the geochemical interpretation of water analyses: American Geophysical Union Transactions, v. 25, p. 914-923.

Reese, R.S., and Richardson, E., 2008, Synthesis of the Hydrogeologic Framework of the Floridan Aquifer System and Delineation of a Major Avon Park Permeable Zone in Central and Southern Florida: U.S. Geological Survey Scientific Investigations Report 2007-5207, 60 p., 4 pls., plus apps. (on CD).

Ryder, P. D., 1985, Hydrology of the Floridan aquifer system in west-central Florida: U.S. Geological Survey Professional Paper 1403-F, 63 p.

Schreuder, Inc., 2006, Results of Aquifer Performance Test on Production Well p-1 at the Hines Energy Complex: Tampa, Florida, Schreuder, Inc., Project Report, 37 p.

Scott, T.M., 1988, The Lithostratigraphy of the Hawthorn Group (Miocene) of Florida: Florida Geological Survey, Bulletin No. 59, 148 p.

Southwest Florida Water Management District, 2009, Quality Control for Southwest Florida Water Management District: Brooksville, Florida, Southwest Florida Water Management District, 125 p.

Spechler, Rick M. and Kroening, Sharon, 2007, Hydrology of Polk County, Florida: U.S. Geological Survey Scientific Investigations Report 2006-5320, 114 p.

Sproul, C.R., Boggess, D.H., and Woodward, H.J., 1972, Saline-water intrusion from deep artesian sources in the McGregor Isles area of Lee County, Florida: Florida Bureau of Geology Information Circular 75, 30 p.

Stringfield, V.T., 1936, Artesian water in the Floridan peninsula: U.S. Geological Survey Water-Supply Paper 773-C, p. C115-C195.

Stringfield, V. T., 1966, Artesian water in Tertiary limestone in the Southeastern States: U.S. Geological Survey Professional Paper 517, 226 p.

Tihansky, A.B., 2005, Effects of Aquifer Heterogeneity on Groundwater Flow and Chloride Concentrations in the Upper Floridan Aquifer near and within an Active Pumping Well Field, West-Central Florida: U.S. Geological Survey Scientific Investigations Report 2004-5268, 75 p.

Tihansky, A.B., and Knochenmus, Lari A., in Kuniansky, Eve L., ed., 2001, U.S. Geological Survey Karst Interest Group Proceedings: U.S. Geological Survey Water-Resources Investigations Report 01-4011, p. 198-211.

Torres, A.E., Sacks, L.A., Yobbi, D.K., Knochenmus, L.A., and Katz, B.G., 2001, Hydrogeologic Framework and Geochemistry of the Intermediate Aquifer System in Parts of Charlotte, De Soto, and Sarasota Counties, Florida: U.S. Geological Survey Water-Resources Investigations Report 01-4015, 74 p.

U.S. Environmental Protection Agency, 2009, 2009 Edition of the Drinking Water Standards and Health Advisories: U.S. Environmental Protection Agency Office of Water Publication no. EPA 822-R-09-011, 18 p.

Wedderburn, L.A., Knapp, M.S., Waltz, D.P., and Burns, W.S., 1982, Hydrogeologic Reconnaissance of Lee County, Florida: South Florida Water Management District Technical Publication 82-1, pts. 1, 2, and 3, 192 p.

White, W.A., 1970, The Geomorphology of the Florida Peninsula: Florida Geological Survey Geological Bulletin No. 51, 164 p.

Wolansky, R.M., 1978, Feasibility of water-supply development from the unconfined aquifer in Charlotte County, Florida: U.S. Geological Survey Water-Resources Investigations Report 78-26, 34 p.

Wolansky, R.M., 1983, Hydrogeology of the Sarasota-Port Charlotte Area, Florida: U.S. Geological Survey Water-Resources Investigations Report 82-4089, 54 p.

Wyrick, G.G., 1960, Ground-water resources of Volusia County, Florida: Florida Geological Survey Report of Investigations 22, 65 p.

Appendix A. Methods of the Regional Observation and Monitor-well Program

The Southwest Florida Water Management District (District) collects the majority of the hydrogeologic data during the exploratory core drilling phase of the project. Lithologic samples will be collected during the core drilling process. Hydraulic and water quality data are collected primarily during packer tests as the core hole is advanced. Geophysical logging will be conducted on the core hole providing additional hydrogeologic data. After well construction, an aquifer pumping test (APT) will be conducted on each of the major freshwater aquifers or producing zones encountered at the project site. These data will be uploaded into the District's Water Management Information System (WMIS).

Collection of Lithologic Samples

The District conducts hydraulic rotary core drilling, referred to as diamond drilling, with a Central Mining Equipment (CME) 85 core drilling rig and the Universal Drilling Rigs (UDR) 200D LS. The basic techniques involved in hydraulic rotary core drilling are the same as in hydraulic rotary drilling (Shuter and Teasdale, 1989). The District applies a combination of HW and NW gauge working casings along with NQ core drilling rods, associated bits, and reaming shells from Boart Longyear®. The HW and NW working casings are set and advanced as necessary to maintain a competent core hole. The NQ size core bits produce a nominal 3-inch hole. The HW and NW working casings and NQ coring rods are removed at the end of the project. Details on the core drilling activities are recorded on daily drilling logs completed by the District's drilling crew and hydrologists.

Recovery of the core samples is accomplished using a wireline recovery system (fig. A1). The District's drilling crew uses the Boart Longyear® NQ wireline inner barrel assembly. This system allows a 1.87-inch by 5-foot section and a 1.99-inch by 10-foot section of core to be retrieved with the CME 85 rig and UDR 200D LS rig, respectively. The core is retrieved without having to remove the core rods from the core hole. Grab samples of core hole cuttings are collected and bagged where poor core recovery occurs because of drilling conditions or where the formation is unconsolidated or poorly indurated. The core samples are placed in core boxes, depths marked, and recovery estimates calculated. Core descriptions are made in the field using standard description procedures. Rock color names are taken from the "Rock-Color Chart" of the National Research Council (Goddard and others, 1948). The textural terms used to characterize carbonate rocks are based on the classification system of Dunham (1962). The core samples are shipped to the Florida Geological Survey for detailed lithologic descriptions of core, cuttings, and unconsolidated sediments. All lithologic samples will be archived at the Florida Geological Survey in Tallahassee, Florida.

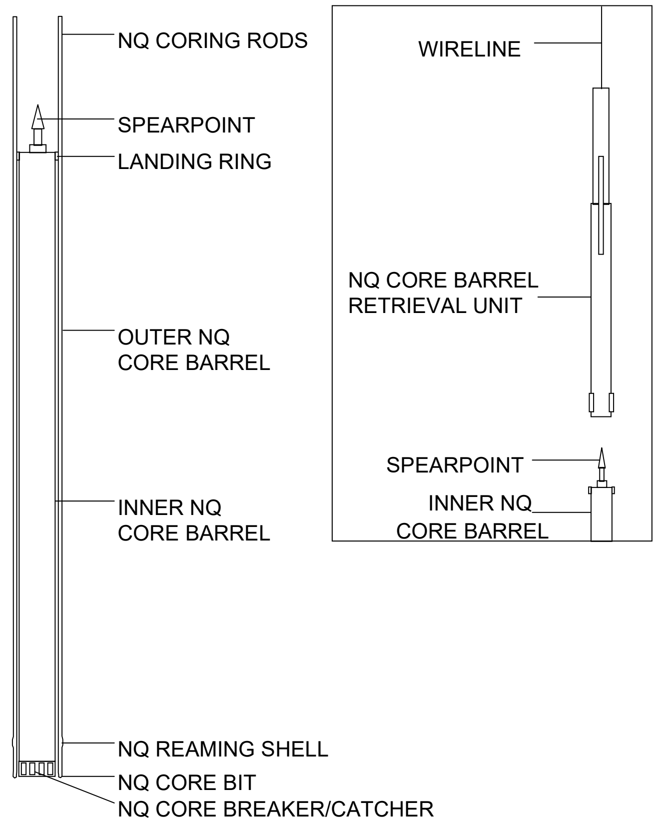


Figure A1. Boart Longyear® NQ Wireline Coring Apparatus.

Unconsolidated Coring

Various methods exist for obtaining core of unconsolidated material, which is extremely difficult as compared to rock coring (Shuter and Teasdale, 1989). To ensure maximum sample recovery, the District drilling crew utilizes a punch shoe adapter on the bottom of the inner barrel along with an unconsolidated core catcher. The punch shoe extends the inner barrel beyond the bit allowing collection of the sample prior to disturbance by the bit or drilling fluid. A variety of bottom-discharge bits are used during unconsolidated coring. A thin bentonite mud may be used to help stabilize the unconsolidated material.

Rock Coring

During rock coring, the District drilling crew utilizes HW and NW working casings as well as permanent casings to stabilize the core hole. NQ core drilling rods and associated products are employed during the core drilling process. Core drilling is conducted by direct-circulation rotary methods using fresh water for drilling fluid. Direct water is not effective in removing the cuttings from the core hole, therefore, a reverse-air (air-lift) discharge method (fig. A2) is used to develop the core hole every 20 feet or as necessary. The District typically uses face-discharge bits for well indurated rock core drilling.

Formation Packer Testing

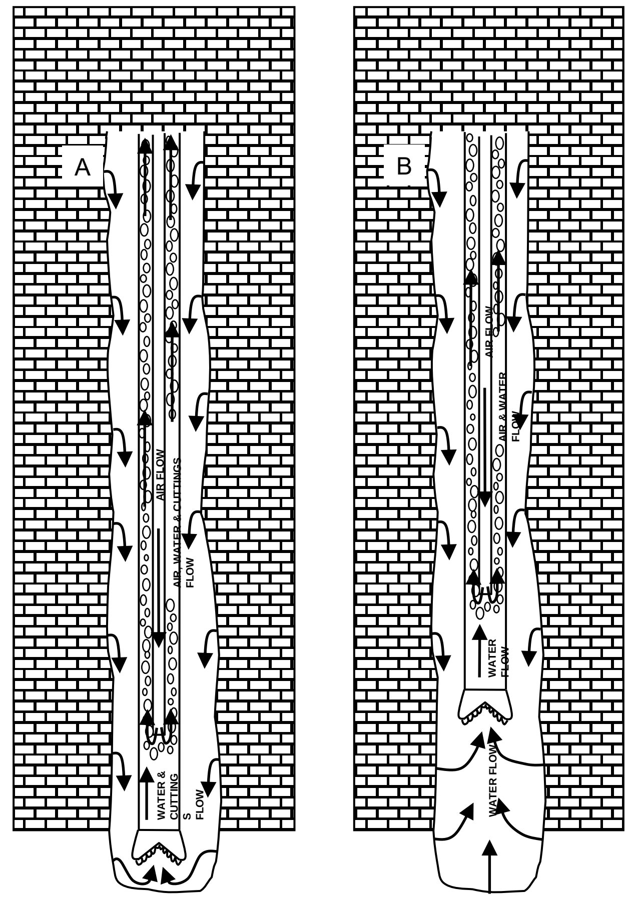
Formation (off-bottom) packer testing allows discrete testing of water levels, water quality, and hydraulic parameters. A competent core hole is necessary for packer testing, meaning unconsolidated sediments and some of the shallow weathered limestone cannot be tested using this technique. The packer assembly (fig. A3) is employed by raising the NQ coring rods to a predetermined point, lowering the packer to the bottom of the rods by using a combination cable/air inflation line, and inflating the packer with nitrogen gas. This process isolates the test interval, which extends from the packer to the total depth of the core hole. Sometimes, the working casing may be used in place of the packer assembly. Test intervals are selected based on a regular routine of testing or at any distinct hydrogeologic change that warrants testing.

Collection of Water Level Data

Water level data is collected daily before core drilling. Additionally, water levels are recorded during each formation packer test after the necessary equilibration time. Equilibration is determined when the change in water level per unit time is negligible. Water levels are measured using a Solinst® water level meter. The water level is measured relative to an arbitrary datum near land surface which is maintained throughout the project. These data provide a depiction of water level with core hole depth. However, these data are normally collected over several months and will include temporal variation.

Collection of Water Quality Data

Water quality samples are collected during each formation packer test. Sampling methods are consistent with the "Standard Operating Procedures for the Collection of Water Quality Samples" (Water Quality Monitoring Program, 2009). The procedure involves isolating the test interval with the off-bottom packer (fig. A3) as explained above, and air-lifting the water in the NQ coring rods. To ensure a representative sample is collected, three core hole volumes of water are removed and temperature, pH, and specific conductance are monitored for stabilization using a YSI® multi-parameter meter. Samples



Reverse-air drilling and water sampling procedure: Reverse-air drilling allows cuttings to be removed without introduction of man-made drilling fluids. As air bubbles leave the airline and move up inside the rods, they expand and draw water with them, creating a suction at the bit. The water, which serves as the drilling fluid, comes from up-hole permeable zones and is natural formation water. Suction at the bit draws water and drill cuttings up the rods to be discharged at the surface (A). After cuttings are cleaned from the hole and the water clears up, a reverse-air discharge water quality sample can be collected at the surface. If a bottom-hole bailer (non-aerated) sample is desired, the rods are raised the length of a drill rod in preparation for adding another rod and airlifting is continued. This draws water from the lower portion of the hole into the wellbore (B). Airlifting is ceased and the drill rods are lowered back to bottom, filling the lower rod with bottom-hole water. After the airline is removed, the bailer is lowered inside the rods by wireline to the bottom to collect, theoretically, a bottom-hole water sample.

Figure A2. Reverse-air drilling and water sampling procedure.

are collected either directly from the air-lift discharge point, with a wireline retrievable stainless steel bailer (fig. A4), or with a nested bailer. When sampling a poorly producing interval, the purge time may be substantial. The nested bailer is an alternative that is attached directly to the packer orifice thereby reducing the volume of water to be evacuated from the core hole because it collects water directly from the isolated interval through the orifice. Bailers may also be used to obtain non-aerated samples because aerated samples may have elevated pH and consequently iron precipitation.

Once the water samples are at the surface, they are transferred into a clean polypropylene beaker. A portion of the sample is bottled according to standard District procedure for laboratory analysis (Southwest Florida Water Management District, 2009). Two bottles, one 250 ml and one 500 ml, are filled with water filtered through a 0.45-micron filter. Another 500 ml bottle is filled with unfiltered water. A Masterflex® console pump is used to dispense the water into the bottles. The sample in the 250 ml bottle is acidified with nitric acid to a pH of 2 in order to preserve metals for analysis. The remainder is used to collect field parameters including specific conductance, temperature, pH, and chloride and sulfate concentrations. Temperature and specific conductance are measured using a YSI® multi-parameter handheld meter. Chloride and sulfate concentrations, and pH are analyzed with a YSI® 9000 photometer. The samples are delivered to the District's environmental chemistry laboratory for additional analysis. A "Standard Complete" analysis that includes pH, calcium, chloride, ion balance, iron, magnesium, potassium, silica, sodium, strontium, specific conductance, sulfate, total dissolved solids (TDS), and total alkalinity is performed on each set of samples (SWFWMD, 2009). Chain of Custody forms are used to track the samples.

The analysis of the water quality data includes the evaluation of relative ion abundance and ion or molar ratios, and the determination of water type(s). The laboratory data are used to calculate milliequivalents per liter (meq/L) and percent meq/L. Using the criteria of 50 percent or greater of relative abundance of cations and anions, the water type for each sample is determined (Hem, 1985). The data is plotted on a Piper diagram to give a graphical depiction of the relative abundance of ions in an individual sample (Domenico and Schwartz, 1998) as well as how the individual samples compare to each other. Select ion ratios are calculated for each sample to further evaluate chemical similarities or differences among waters and to help explain why certain ions change with depth. Field pH is used in analyses because it is more likely to represent the actual conditions in the water since pH is sensitive to environmental changes (Driscolll, 1986; Fetter, 2001). Additionally, total alkalinity is used as bicarbonate concentration because hydroxyl ions generally are insignificant in natural groundwater and carbonate ions typically are not present in groundwater with a pH less than 8.3 (Fetter, 2001).

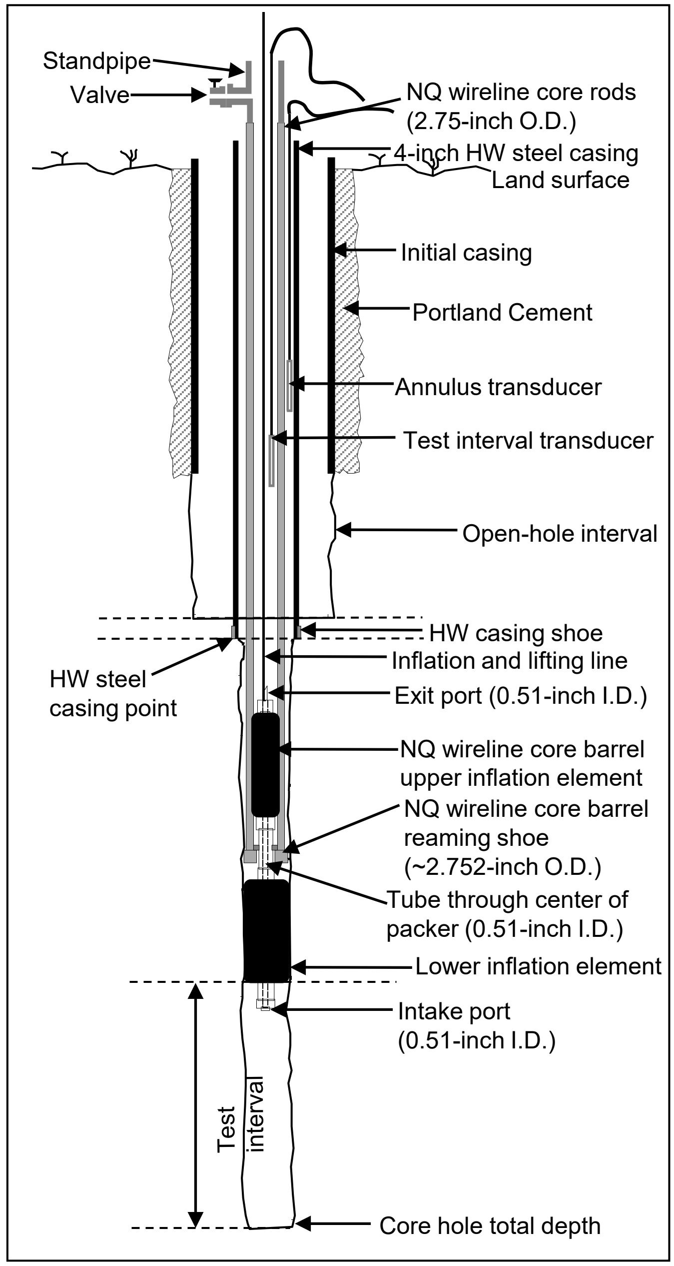


Figure A3. Formation (off-bottom) packer assembly deployed in the core hole.

Collection of Slug Test Data

Some hydraulic properties can be estimated by conducting a series of slug tests. During slug tests, the static water level in the test interval is suddenly displaced, either up or down, and the water level response is recorded as it returns to a static state. Typically, the slug tests are conducted using the off-bottom packer assembly to isolate test intervals as the core hole is advanced. KPSI® pressure transducers are used to measure the water level changes in the test interval and the annulus between the HW casing and the NQ coring rods. The annulus pressure transducer is used as a quality control device

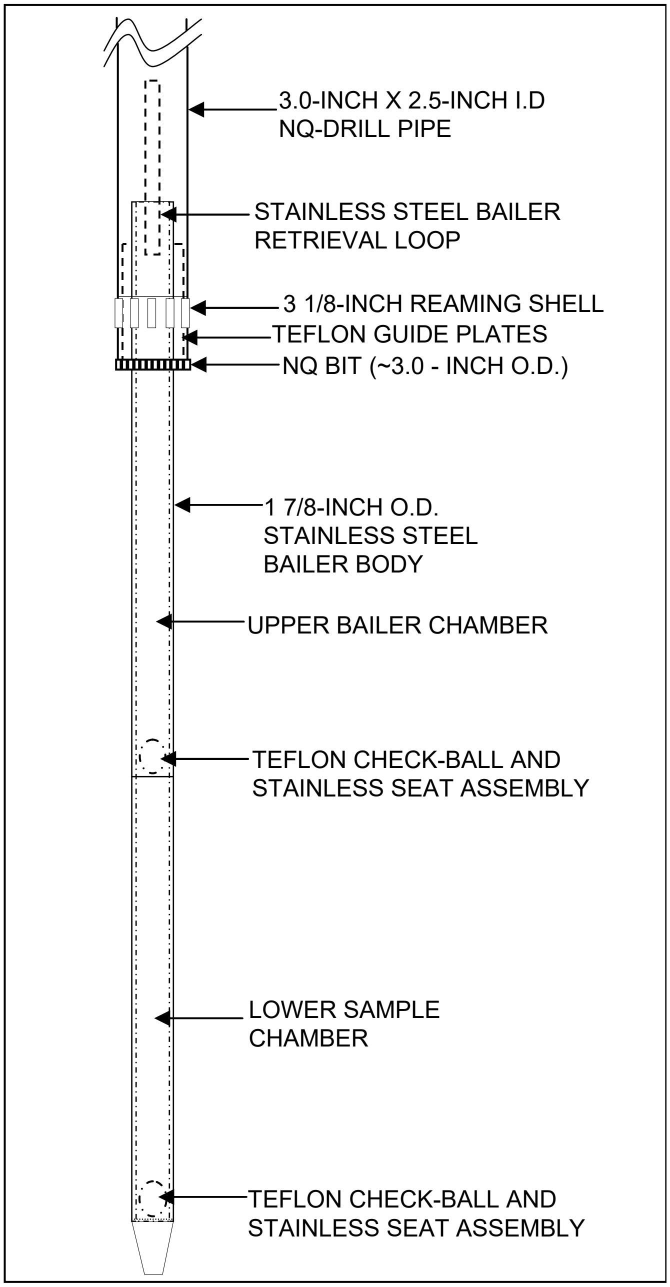


Figure A4. Diagram of the wireline retrievable bailer.

to detect water level changes indicative of a poorly seated packer or physical connection (i.e. fractures or very permeable rocks) within the formation. A third pressure transducer is used to measure air pressure during pneumatic slug testing. All pressure transducer output is recorded on a Campbell Scientific, Inc CR800 datalogger. Prior to all slug tests, the test interval is thoroughly developed.

Slug tests can be initiated several ways. The primary methods used by the District are the pneumatic slug method and the drop slug method. Core hole conditions and apparent formation properties dictate which method is used. The pneumatic slug method is used for moderate to high hydraulic conductivity formations due to the near instantaneous slug initiation. The pneumatic slug method uses a NQ rod modified to include a pressure gauge and regulator, and an electronic or manual valve. The opening is sealed with compression fittings. Air pressure is used to depress the static water level. The water level is monitored for equilibration and once it returns to the initial static water level the test is initiated. The electronic or manual valve is opened to release the air pressure causing the water level to rise (rising head test). The water level is recorded until it reaches the initial static water level. The drop slug method is used for low hydraulic conductivity formations due to the slow slug initiation. This test initiation method is slower than the pneumatic method because the water has to travel down the core hole before reaching the test interval. The drop slug method involves adding a predetermined volume of water into the NQ rods raising the static water level. A specially designed PVC funnel fitted with a ball valve placed over the NQ rods is used to deliver the water. The valve is opened releasing the water causing the water level to rise. The water level is recorded until the raised level falls (falling head test) back to static level.

Several quality assurance tests are conducted in the field in order to identify any potential sources of error in the slug test data. The quality assurance tests include evaluation of the discrepancy between the expected and observed initial displacements (Butler, 1998), evaluation of the normalized plots for head dependence and evolving skin effects, and the evaluation of the annulus water level for movement. Lastly, estimates of the hydraulic conductivity values are made based on the slug test data using AQTESOLVE® (Duffield, 2007) software by applying the appropriate analytical solution.

Slug tests in which the formation packer assembly is used all have one common source of error resulting from the orifice restriction (fig. A3). The water during the slug tests moves through NQ coring rods with an inner diameter of 2.38-inches, the orifice on the packer assembly that has an inner diameter of 0.75-inch, and the core hole that has a diameter of approximately 3-inches. The error associated with this restriction is evident as head dependence in the response data of multiple tests conducted on the same test interval with varying initial displacements. The error associated with the orifice restriction will result in an underestimation of the hydraulic conductivity values. In order to reduce the error associated with the orifice restriction, the District inserts a spacer within the zone of water level fluctuation thereby reducing the effective casing radius from 1.19 inches to 0.81 inch. A second technique used to minimize the effects caused by the orifice restrict is the use of initial displacements (slugs) of less than 1.5-feet in height. Also, if the working casing is used instead of the packer, the error is eliminated.

Geophysical Logging

Geophysical logs are useful in determining subsurface geologic and groundwater characteristics (Fetter, 2001). Geophysical logs provide three major types of information from water wells: hydrologic (water quality, aquifer characteristics, porosity, and flow zone detection), geologic (lithology, formation delineation), and physical characteristics (depth, diameter, casing depth, texture of well bore, packer points, and integrity of well construction).

Geophysical logging entails lowering the geophysical tool into the monitor well on a wireline and measuring the tool's response to the formations and water quality in and near the core hole during retrieval. Core hole geophysical logs are run during various stages of core drilling. When feasible, geophysical logs are run prior to casing advancements, while the core hole is still open to the formation.

The District uses Century® geophysical logging equipment. The three types of geophysical probes used are the caliper/gamma, induction, and multifunction. The multifunction tool measures natural gamma-ray [GAM (NAT)], spontaneous potential (SP), single-point resistivity (RES), short [RES(16N)], long [RES(64N)] normal resistivity, fluid temperature (TEMP) and fluid specific conductance (SP COND). Each log type is explained below.

Caliper (CAL)

Caliper logs are used to measure the diameter of the borehole. This log can identify deviations from the nominal borehole diameter and, in turn, locate cavities, washouts, and build-up. This log is useful for determining packer and casing placement because competent, well-indurated layers can be located.

Gamma [GAM(NAT)]

Natural gamma logs measure the amount of natural radiation emitted by rocks in the borehole. Radioactive elements present in certain types of geologic materials emit natural gamma radiation, thus specific rock materials can be identified from the log. Typically, clays contain high amounts of radioactive isotopes in contrast to more stable rock materials like carbonates and sands, therefore, can be identified easily. One advantage using natural gamma radiation is that it can be measured through PVC and steel casing, although it is subdued slightly by steel casing. Gamma is used chiefly to identify rock lithology and correlate stratigraphic units because it can be measured through casing and is relatively consistent.

Spontaneous Potential (SP)

Spontaneous potential logs measure the electrical potential (voltages) that result from chemical and physical changes at the contacts between different types of geological materials (Driscoll, 1986). They must be run in fluid-filled, uncased boreholes. They are useful in identifying contacts between different lithologies and stratigraphic correlation.

Single-Point Resistance (RES)

Single-point resistance logs measures the electrical resistance from rocks and fluids in the borehole to a point at land surface. Electrical resistance of the borehole materials is a measure of the current drop between the current electrode in the borehole and the electrode at land surface. The log must be run in a fluid-filled, uncased borehole.

Short-Normal [RES (16N)] and Long-Normal [RES (64N)]

Short-normal and long-normal resistivity logs measure the electrical resistivity of the borehole materials and the surrounding rocks and water by using two electrodes. The 16 and 64 refers to the space, in inches, between the potential electrodes on the logging probe. The short-normal curve indicates the resistivity of the zone close to the borehole and the long-normal has more spacing between the electrodes, therefore measures the resistivity of materials further away from the borehole (Fetter, 2001). Short-normal and long-normal logs are useful in locating highly resistive geologic materials such as limestone, dolostone, and pure, homogenous sand and low resistivity materials like clay or clayey, silty sand. Also, the logs indicate water quality changes because fresh water has high resistivity whereas poor quality water has low resistivity. Resistivity logs must be run in fluid-filled, open boreholes.

Temperature (TEMP)

Temperature logs record the water temperature in the borehole. Temperature variations may indicate water entering or exiting the borehole from different aquifers. Thus, the log is useful in locating permeable zones. The log must be run in fluid-filled boreholes.

Specific Conductance (SP COND)

Specific Conductance logs measure the capacity of borehole fluid to conduct an electrical current with depth. The log indicates the total dissolved solids concentration of the borehole fluid. The specific conductance log may be useful in determining permeable zones because zones of increased inflow or outflow may show a change in water quality.

Aquifer Pumping Tests

An APT is a controlled field experiment conducted to determine the hydraulic properties of water-bearing (aquifers) units (Stallman, 1976). APTs can be either single-well or multi-well and may partially or fully penetrate the aquifer. An APT involves pumping the aquifer at a known rate and monitoring the water level response. The general procedure, applied by the District, for conducting an APT involves design, field observation, and data analysis. Test design is based on the geologic and hydraulic setting of the site, such as knowledge of the aquifer thickness, probable range in transmissivity and storage, the presence of uncontrolled boundaries (sources/sinks), and any practical limitations imposed by equipment. Field observations of the discharge and water levels are recorded to ensure a successful test. The District measures the discharge rate using an impeller meter and circular orifice weir. The District measures water levels using pressure transducers and an electric tape. All the recording devices are calibrated and traceable to the National Institute of Standards and Technology.

Data analysis includes first making estimates of drawdown observed during the test and then using analytical and numerical methods to estimate hydraulic properties of the aquifer and adjacent confining units. Diagnostic radial flow plots and derivative analyses of APT data are utilized and are valuable tools in characterizing the type of aquifer present and specific boundary conditions that may be acting on the system during an APT.

Single-Well Aquifer Pumping Test

Single-well APTs includes one test (pumped) well within the production zone used for both pumping and monitoring the water level response. A single-well APT may include monitoring the background water level in the test well for a duration of at least twice the pumping period (Stallman, 1976). Background data collection may not be necessary if the duration of the single-well test is short and the on-site hydrogeologist does not consider background data necessary. After background data collection is complete and it is determined that a successful test can be accomplished, pumping is started. During the test, the discharge rate is monitored and controlled to less than 10 percent fluctuation to ensure a constant rate test. The water level is recorded in the test well during the drawdown (pumping) and recovery phases. Other wells outside of the production zone may be monitored in order to provide additional information on the flow system. The response data are used to estimate drawdown and then analyzed using analytical methods to estimate the hydraulic properties of the aquifer and adjacent confining units. Typically, response data is analyzed using AQTESOLVE® (Duffield, 2007) software by applying the appropriate analytical solution.

Multi-Well Aquifer Pumping Test

Multi-well APTs involve a test (pumped) well and at least one observation well for monitoring the water level response in the production zone. Background water level data is collected for a period of at least twice the planned pumping period (Stallman, 1976). The background data allows for the determination of whether a successful test can be conducted and permits the estimation of drawdown. After the background data collection period is complete and it is determined that a successful test can be completed, pumping is started. During the test, the discharge rate is monitored and controlled to less than 10 percent fluctuation. The water level response is recorded in both the test well and the observation well(s) during the drawdown (pumping) and recovery phases. Other wells outside of the production zone may be monitored in order to provide additional information on the flow system. The response data are used to estimate drawdown and then analyzed using analytical or numerical methods to estimate the hydraulic properties of the aquifer and adjacent confining units. Typically, response data is analyzed using AQTESOLVE® (Duffield, 2007) software by applying the appropriate analytical solution.

References

Butler, J.J. 1998, The Design, Performance, and Analysis of Slug Testing: Boca Raton, Florida, Lewis Publishers, 252 p.

Domenico, P.A., and Schwartz, F.A. 1998, Physical and Chemical Hydrogeology (2d ed.): New York, John Wiley & Sons, Inc., 528 p.

Driscolll, Fletcher G., 1986, Groundwater and Wells (2d ed.): St. Paul, Minnesota, Johnson Division, 1089 p.

Duffield, G. M., 2007, AQTESOLV for Windows, Professional Version 4.5 [software]: Reston, VA, HydroSOLV, Inc.

Dunham, R. J., 1962, Classification of carbonate rocks according to depositional texture, in Ham, W. E. ed., Classification of carbonate rocks: American Association of Petroleum Geologists Memoir 1, p. 108-121.

Fetter, C.W. 2001, Applied Hydrogeology: Upper Saddle River, New Jersey, Prentice Hall, 598 p.

Goddard, E.N., and others, 1948, Rock-Color Chart: Washington, D.C., National Research Council, 6p. (Republished by Geological Society of America, 1951; reprinted 1963, 1970, 1975).

Hem, J. D. 1989, Study and interpretation of the chemical characteristics of natural water (3d ed.): U.S. Geological Survey Water-Supply Paper 2254.

Shuter, Eugene, and Teasdale, W.E. 1989, Applications of Drilling, Coring, and Sampling Techniques to Test Holes and Wells: U.S. Geological Survey Techniques of Water-Resources Investigations Report 02-F1.

Southwest Florida Water Management District, 2009, Quality Control for Southwest Florida Water Management District: Brooksville, Florida, Southwest Florida Water Management District, 125 p.

Stallman, 1976, Aquifer-Test Design, Observation and Data Analysis: U.S. Geological Survey Techniques of Water-Resource Investigations Report 03-B1.

Water Quality Monitoring Program, 2009, Standard Operating Procedures for the Collection of Water Quality Samples (rev. 8): Brooksville, FL., Southwest Florida Water Management District. 54 p.

Appendix B. Well As-Built Diagrams for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

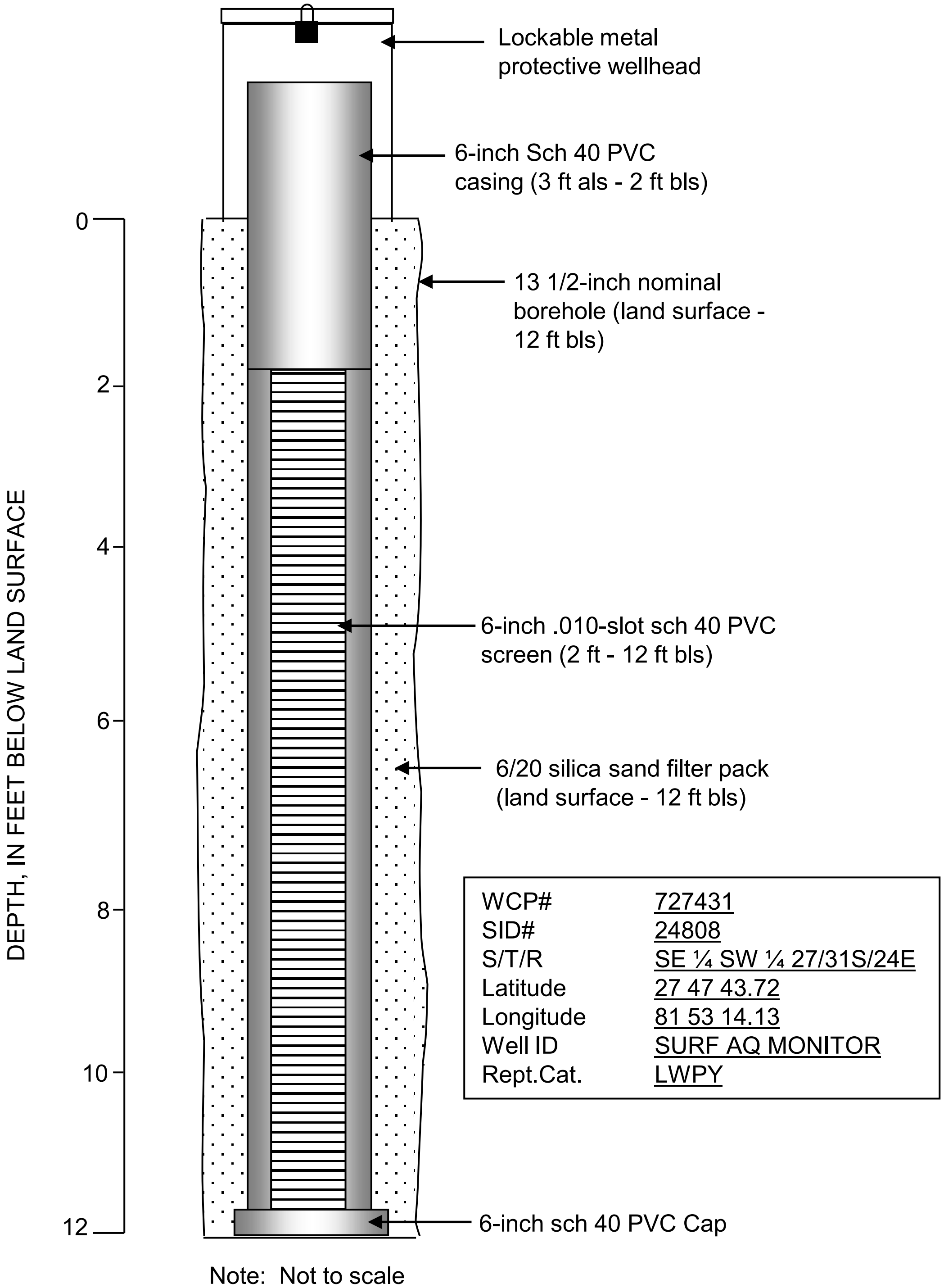


Figure B1. Well as-built diagram for the surficial aquifer monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

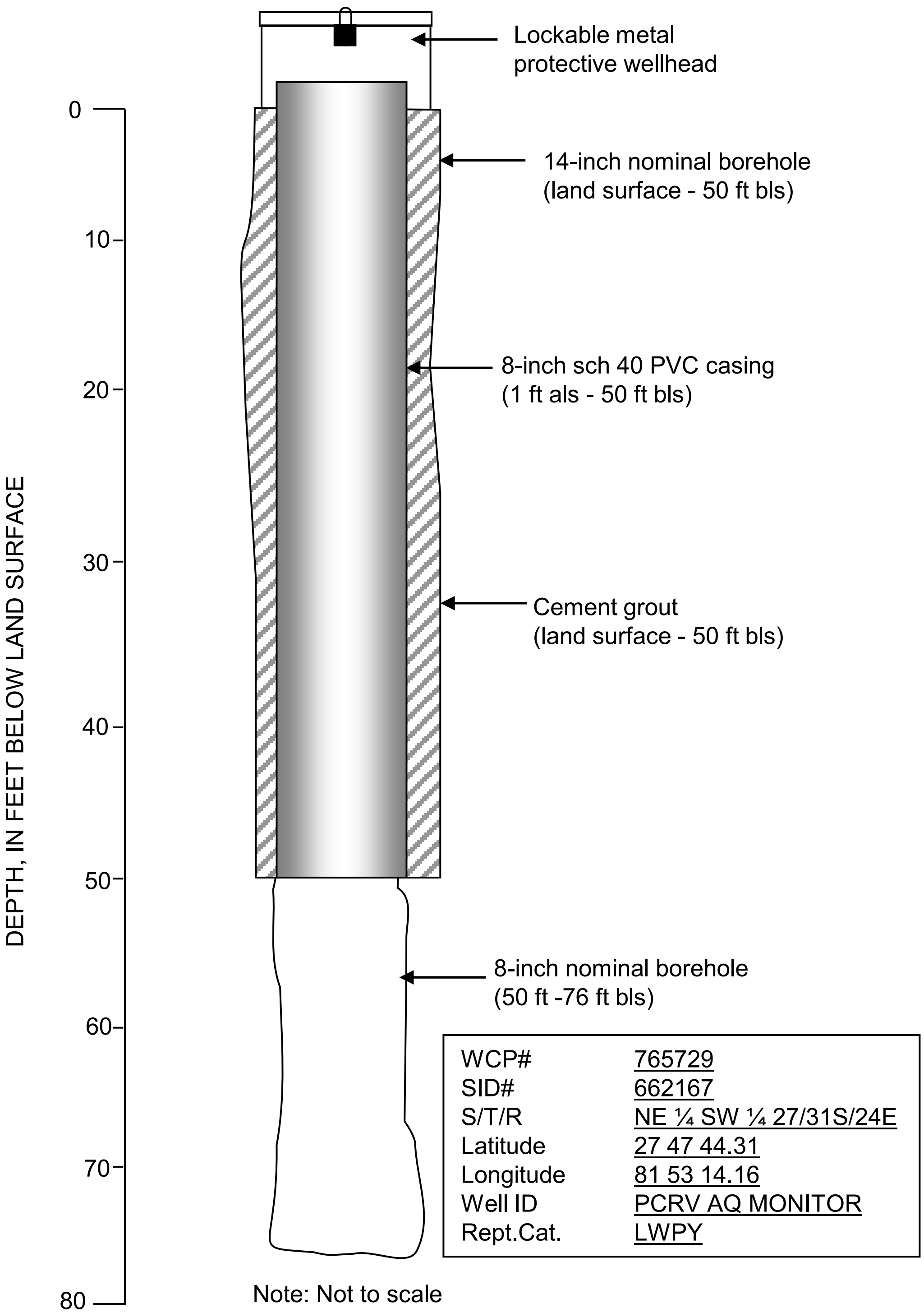


Figure B2. Well as-built diagram for the Hawthorn confining unit monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

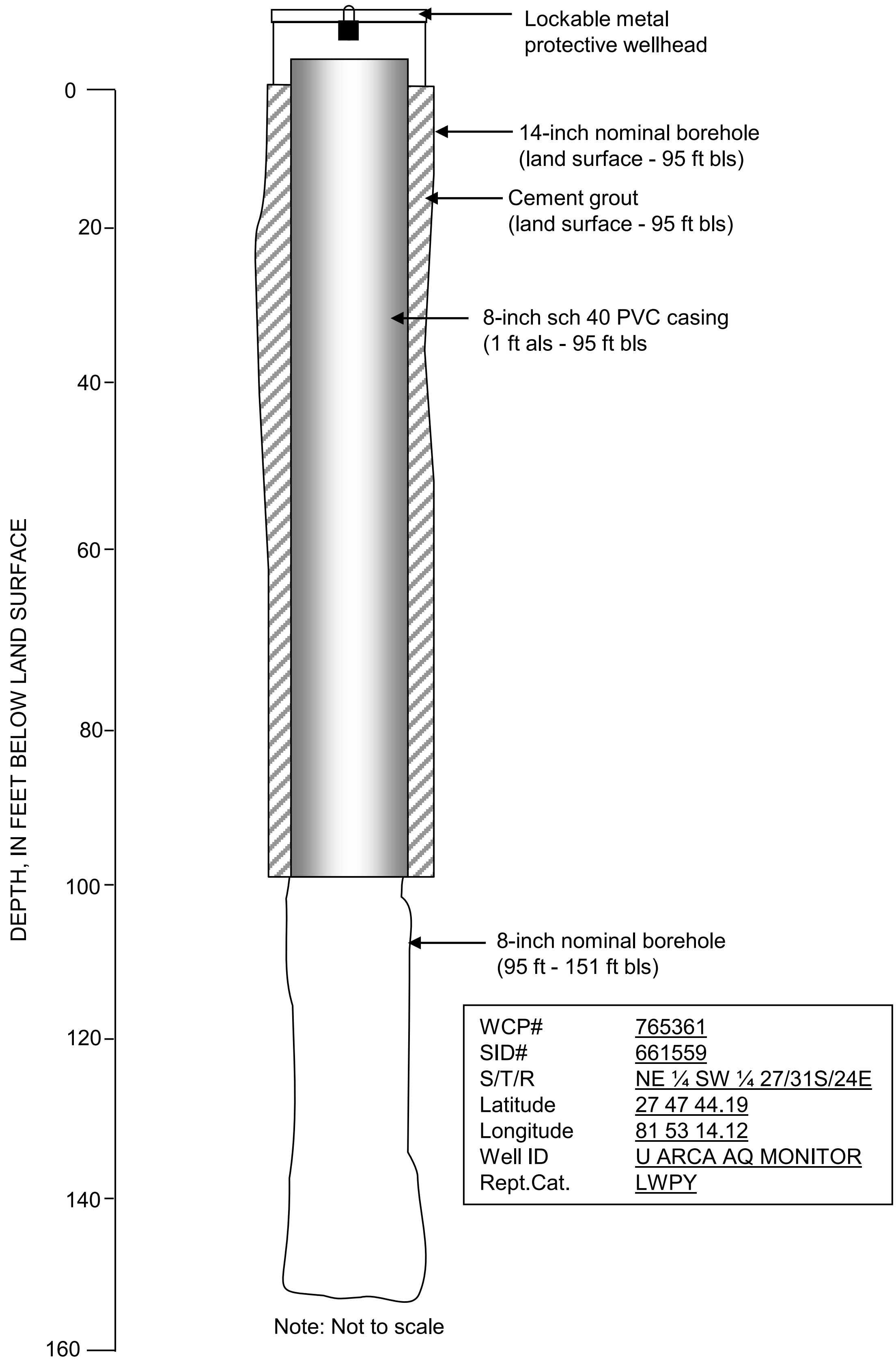


Figure B3. Well as-built diagram for the upper Arcadia aquifer monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

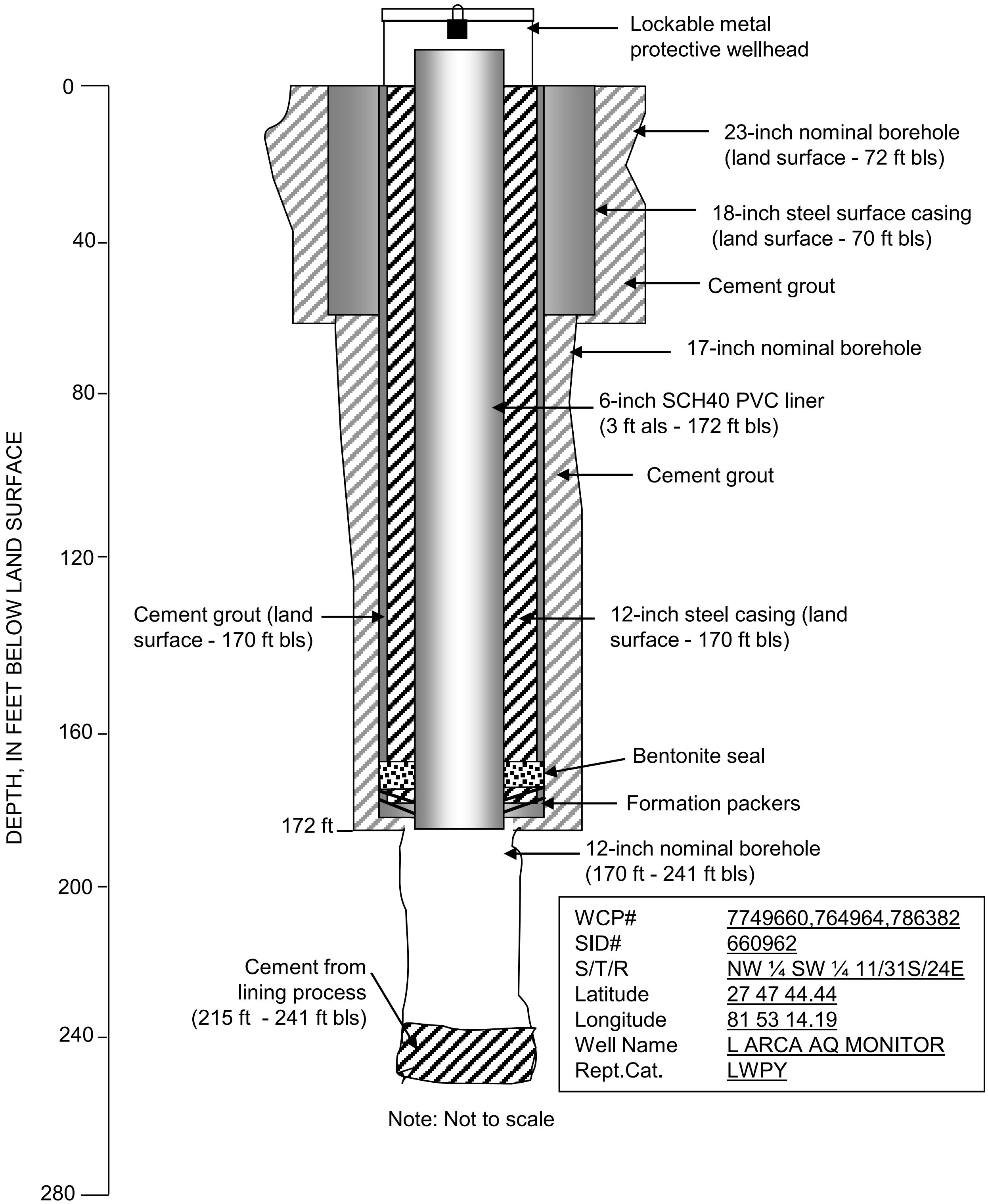


Figure B4. Well as-built diagram for the lower Arcadia aquifer monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

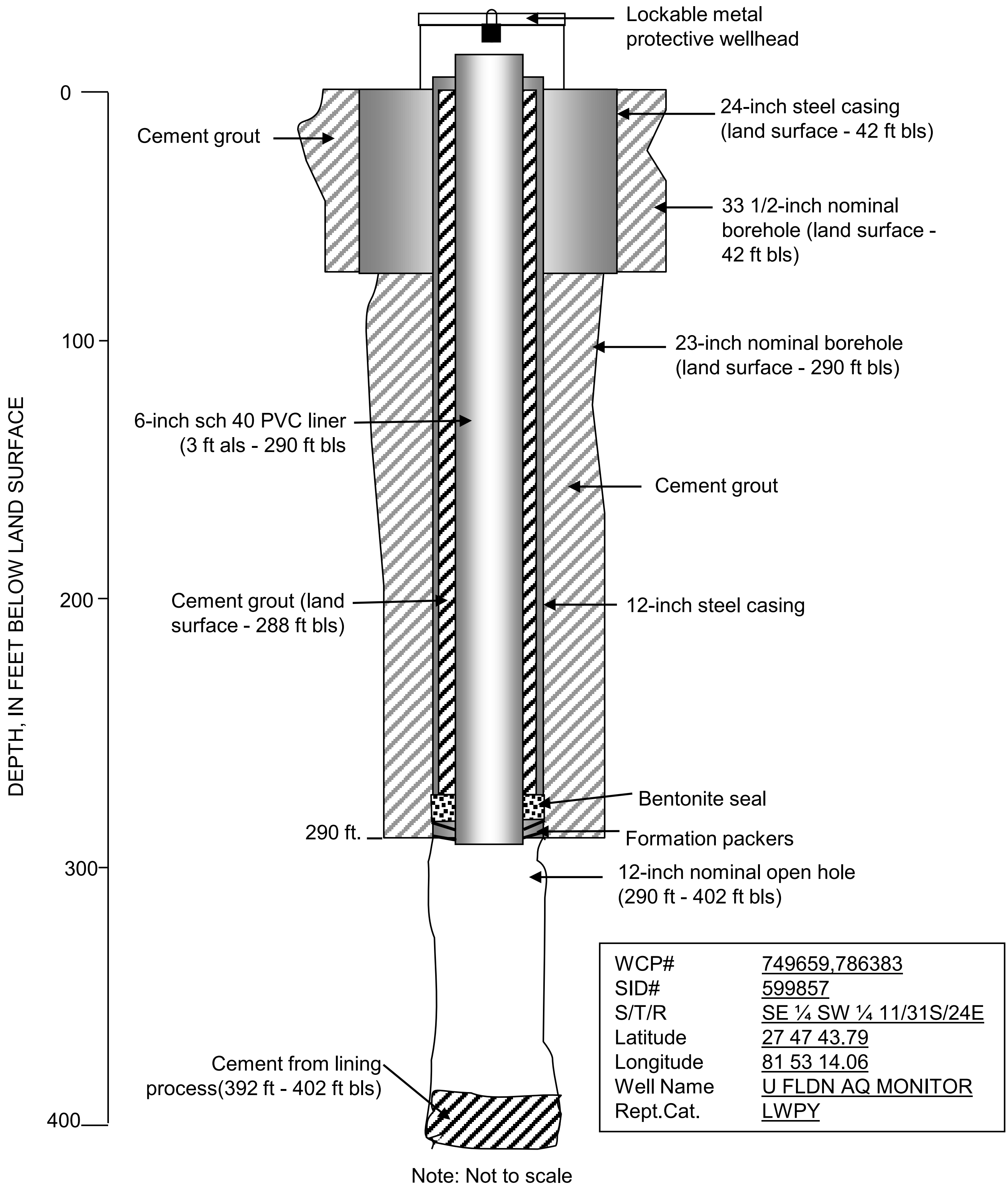


Figure B5. Well as-built diagram for the Upper Floridan aquifer monitor well within the Suwannee Limestone constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

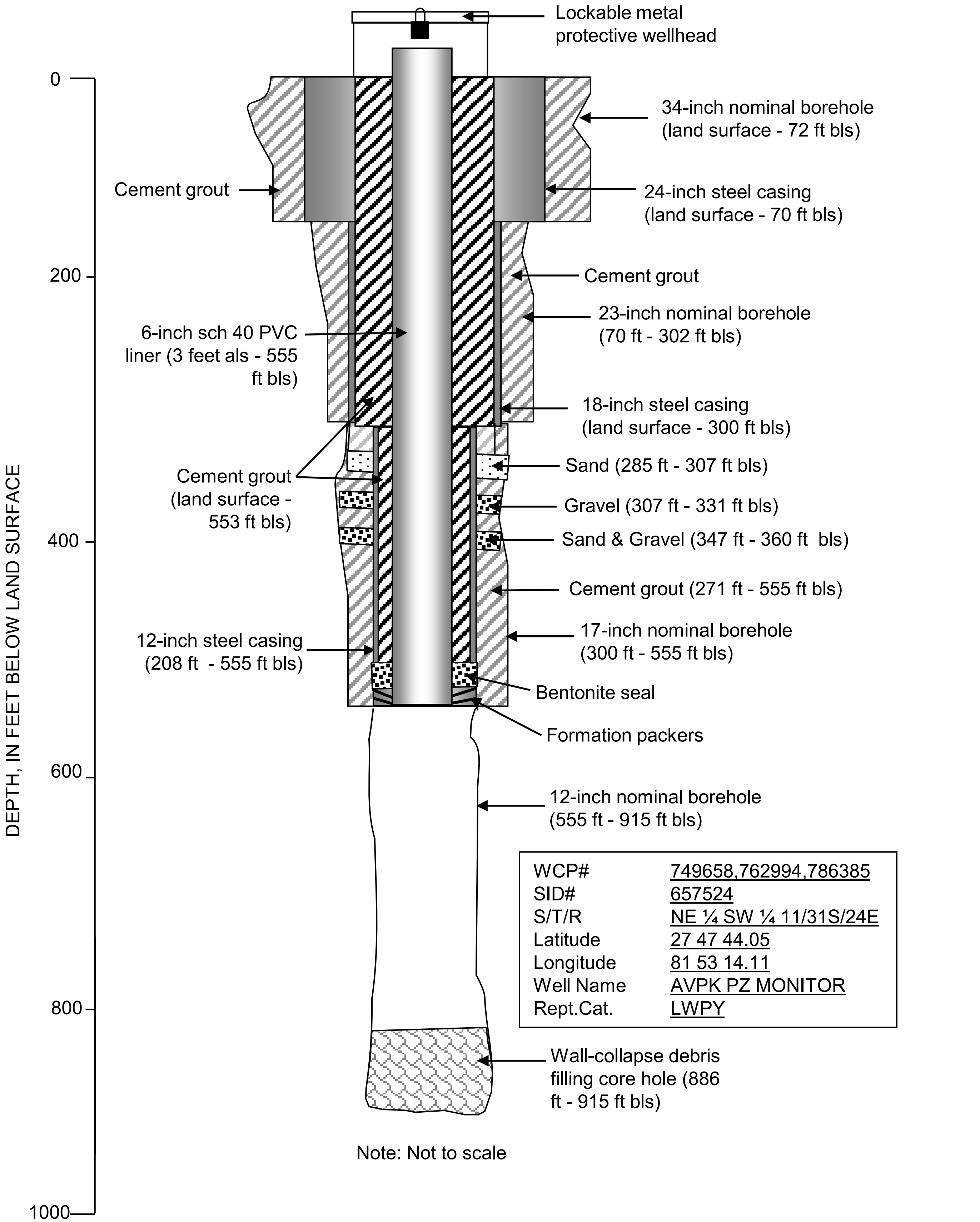


Figure B6. Well as-built diagram for the Avon Park permeable zone monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

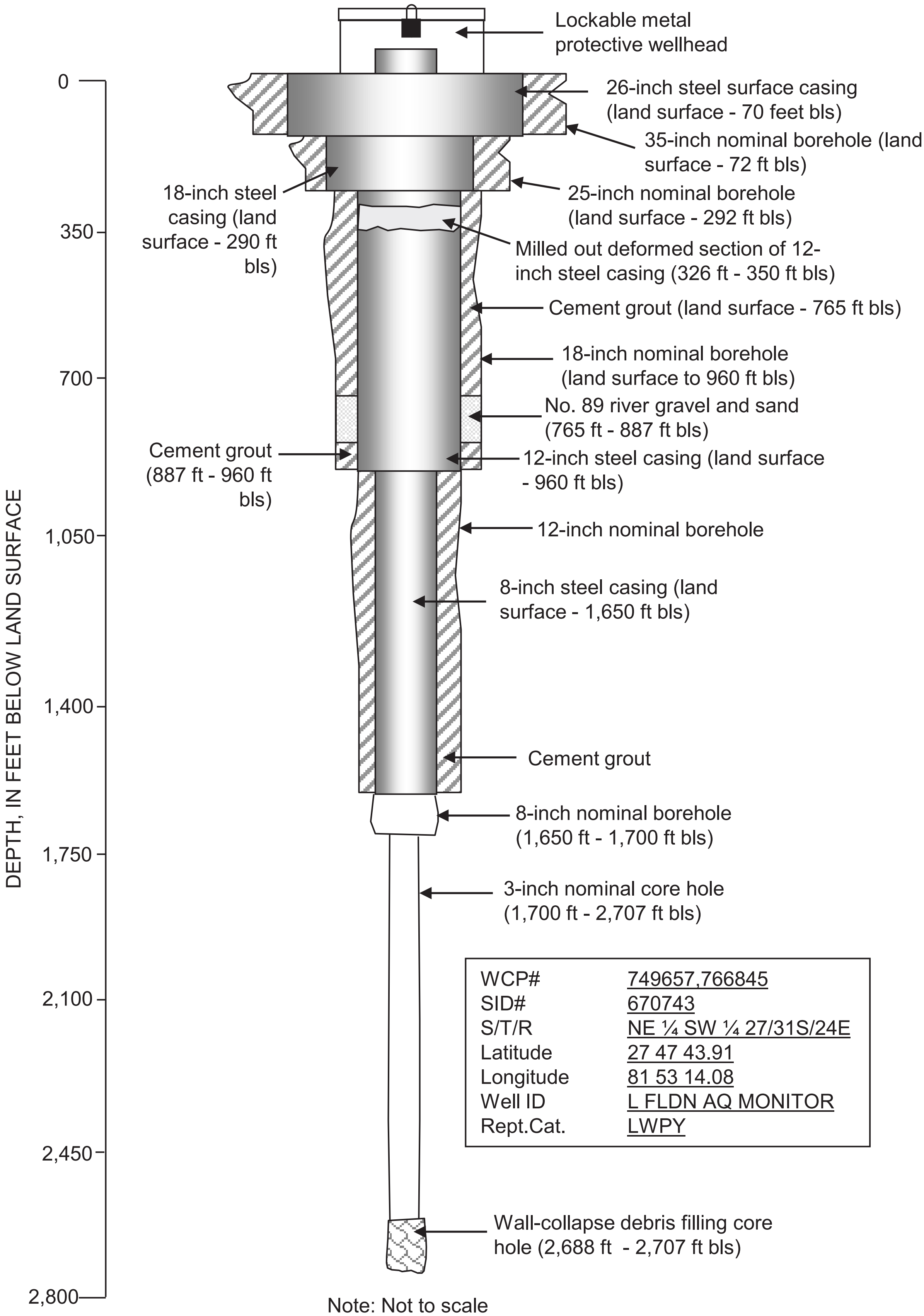


Figure B7. Well as-built diagram for the Lower Floridan aquifer monitor well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

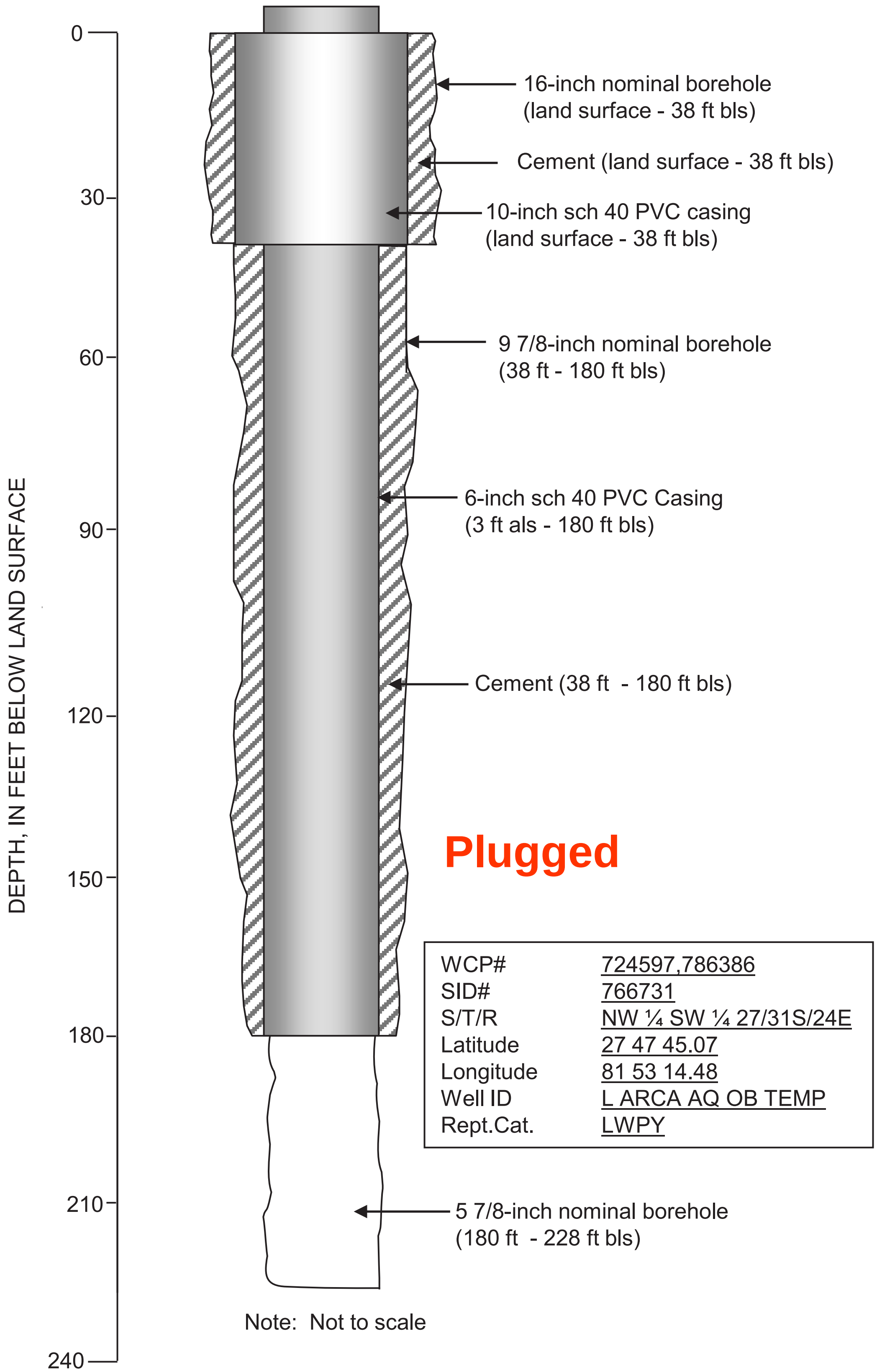


Figure B8. Well as-built diagram for the lower Arcadia aquifer temporary observation well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

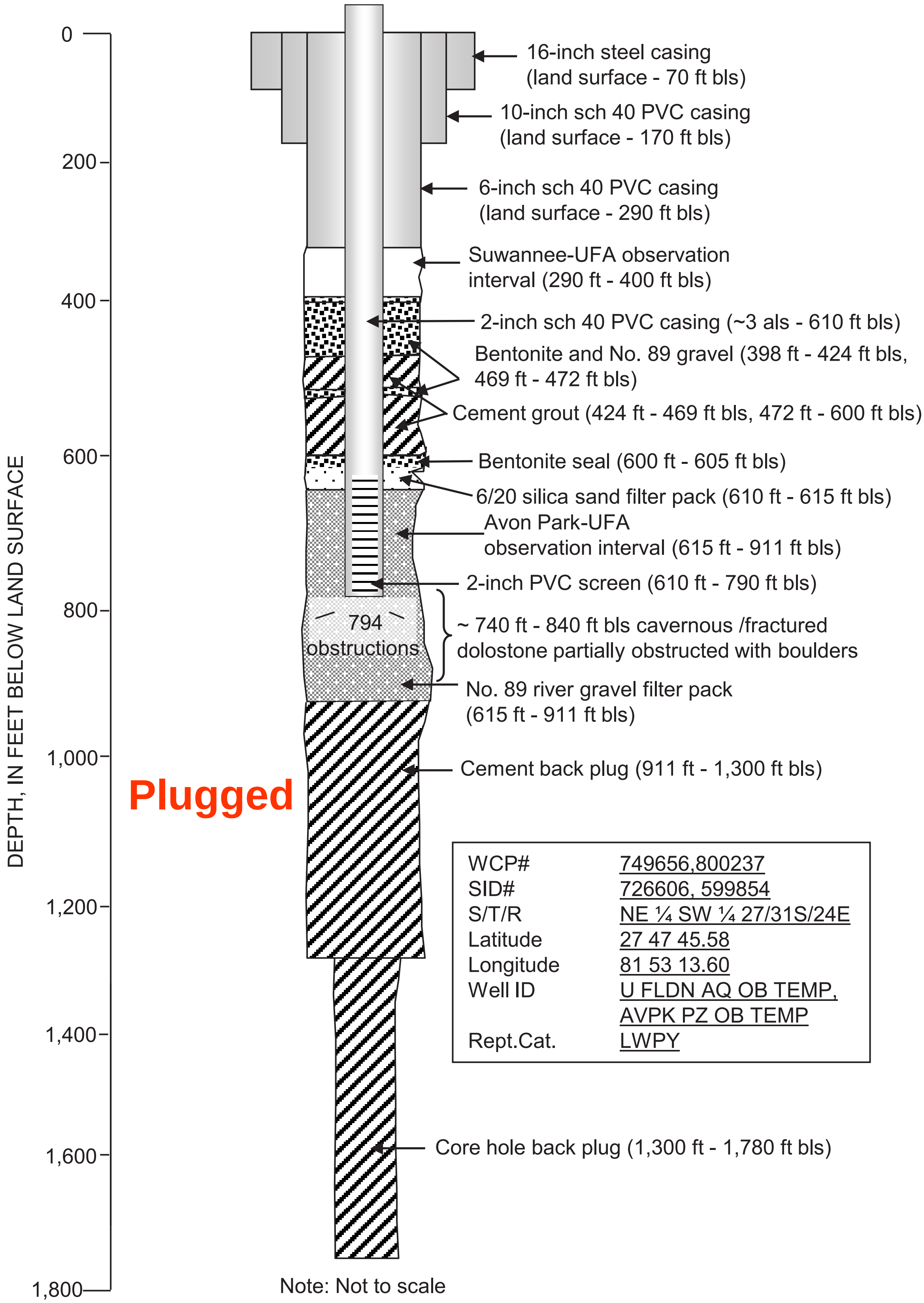


Figure B9. Well as-built diagram for the dual-zone Upper Floridan aquifer within the Suwannee Limestone and Avon Park permeable zone temporary observation well constructed at the ROMP 45.5 – Progress Energy well site in Polk County, Florida.

Appendix C1. Lithologic Log for Core Hole 1 at the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

LITHOLOGIC WELL LOG PRINTOUT   SOURCE - FGS

WELL NUMBER: W-18803   COUNTY - POLK
TOTAL DEPTH: 200 FT.   LOCATION: T.31S R.24E S.11
SAMPLES - NONE   LAT = 27D 47M 45S
LON = 81D 53M 14S
COMPLETION DATE: N/A   ELEVATION: 168 FT
OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER:ROMP 45.5 CORE HOLE 1

WORKED BY:JOSUE GALLEGOS: MARCH TO MAY 2009.
FORMATION PICKS MADE WITH ASSISTANCE FROM CLINT KROMHOUT.
INTERVAL ? - 30 FT: SEDIMENT IS REWORKED, POSSIBLY AS A RESULT
OF HISTORIC MINING ACTIVITIES. CONTINUOUS CORE 0 - 200 FT.

0.0 - ? . 090UDSC UNDIFFERENTIATED SAND AND CLAY
.? - 30.0 122PCRV PEACE RIVER FM.
.? - 30.0 122BNVL BONE VALLEY MEMBER OF PEACE RIVER FM.
30.0 - TD. 122ARCA ARCADIA FM.
186.5 - TD. 122TAMP TAMPA MEMBER OF ARCADIA FM.

0 - 2 NO SAMPLES

2 - 5 SAND; LIGHT GRAY TO BROWNISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: ANGULAR TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: ORGANICS-10%, SILT-02%, CLAY-02%
HEAVY MINERALS-01%
FOSSILS: PLANT REMAINS
CONTAINS ROOT FRAGMENTS AT BASE. ORGANIC MATERIAL PRESENT.

5 - 7.2 SAND; WHITE TO DARK YELLOWISH ORANGE
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN- %, SILT-02%, ORGANICS-01%
HEAVILY IRONED STAINED. ROOT SCARS AT TOP ARE FILLED WITH
BROWN SAND.

7.2- 10 SAND; WHITE TO DARK YELLOWISH ORANGE
25% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: IRON STAIN- %, SILT-02%
MINOR AMOUNTS OF HEAVY MINERALS

10 - 11 SAND; WHITE TO LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ROUNDED TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED

ACCESSORY MINERALS: CLAY-01%, SILT-01%
COLOR GRADES FROM WHITE TO LIGHT GREY. GREEN CLAY FRAGMENTS APPEAR AT BASE OF SECTION. MINOR AMOUNTS OF HEAVY MINERALS.

11 - 14.1 SAND; VERY LIGHT GRAY TO LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: SILT-01%, PHOSPHATIC SAND-10%
PHOSPHATIC GRAVEL-03%
FIRST MAJOR APPEARANCE OF PHOSPHATE. WHITE, HIGHLY WEATHERED PHOSPHATE COARSE SAND & GRAVEL. TRACE AMOUNTS OF HEAVY MINERALS.

14.1- 17 SAND; VERY LIGHT GRAY TO GRAYISH GREEN
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-20%, IRON STAIN- %
PHOSPHATIC GRAVEL-03%, PHOSPHATIC SAND-07%
OTHER FEATURES: PLATY
IRON STAINING. SEDIMENT APPEARS TO HAVE BEEN REWORKED. BROWN TO BLACK UNWEATHERED, WHITE WEATHERED, PHOSPHATE. PHOSPHATE RANGES FROM COARSE SAND TO SMALL PEBBLES. GREEN CLAY APPEARS IN MATRIX AND AS CLAY SEAMS.

17 - 17.9 SAND; GREENISH GRAY TO LIGHT GRAY
30% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-30%, IRON STAIN- %
PHOSPHATIC GRAVEL-03%, PHOSPHATIC SAND-07%
OTHER FEATURES: PLATY
INCREASE IN GREEN CLAY CONTENT. IRON STAINING. REWORKED SEDIMENT-SEE NOTE ABOVE.

17.9- 18.3 SAND; LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; HIGH SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-02%, PHOSPHATIC GRAVEL-03%
PHOSPHATIC SAND-07%
THIN (5 INCHES) LAYER OF SAND WITH WEATHERED & UNWEATHERED PHOSPHATE RANGING IN SIZE FROM MEDIUM SAND TO MEDIUM PEBBLES. NOTICEABLE LACK OF GREEN CLAY. OVERALL CLAY CONTENT IS LOW.

18.3- 22 SAND; LIGHT GREENISH GRAY
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED

ACCESSORY MINERALS: CLAY-15%, IRON STAIN- %
PHOSPHATIC GRAVEL-07%, PHOSPHATIC SAND-30%
OTHER FEATURES: PLATY
IRON STAINING. REWORKED SEDIMENT-SEE NOTE ABOVE. LARGE AMOUNT OF SAND TO LARGE PEBBLE SIZED, WEATHERED & UNWEATHERED, PHOSPHATE. AT VERY BOTTOM, PRESENCE OF THIN LAYER OF PINK ANGULAR CLAY FRAGMENTS.

22 - 25 SAND; MODERATE YELLOWISH BROWN TO VERY LIGHT GRAY
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-30%, PHOSPHATIC GRAVEL-10%
PHOSPHATIC SAND-15%, IRON STAIN- %
CLAYEY SAND WITH THIN TO THICK SEAMS OF CLAY. IRON STAINING. REWORKED SEDIMENT-SEE NOTE ABOVE. PHOSPHATE CONTENT VARIES. CAN GO AS HIGH AS 30%. PHOSPHATE GRAIN SIZE MODE IS GRANULE, WITH A RANGE OF VERY COARSE SAND TO SMALL PEBBLES. BOTH WEATHERED AND UNWEATHERED PHOSPHATE PRESENT.

25 - 27.5 SAND; MODERATE YELLOWISH BROWN TO VERY LIGHT GRAY
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: CLAY-35%, PHOSPHATIC GRAVEL-05%
PHOSPHATIC SAND-15%, IRON STAIN-%
CLAYEY SAND, WITH CLAY CONTENT INCREASING WITH DEPTH. IRON STAINING. REWORKED SEDIMENT-SEE NOTE ABOVE. PHOSPHATE (WEATHERED & UNWEATHERED) LARGELY CONCENTRATED AT TOP OF INTERVAL. PHOSPHATE DECREASES WITH DEPTH.

27.5- 29.5 CLAY; DARK YELLOWISH ORANGE TO YELLOWISH GRAY
40% POROSITY: INTERGRANULAR; UNCONSOLIDATED
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-05%
IRON STAIN-%
SANDY CLAY, WITH A MEDIUM GRAIN MODE, WITH GRAIN SIZES RANGING BETWEEN MICROCRYSTALLINE TO COARSE. SAND IS LIGHT GREY APPEARING IN THIN, IRREGULAR LAMINATIONS. MINOR AMOUNT OF DOLOSILT PRESENT-QUANTITY DIFFICULT TO ESTIMATE. IRON STAINING PRESENT. REWORKED SEDIMENT PRESENT-SEE NOTE ABOVE. MINOR AMOUNT OF WEATHERED, FINE TO COARSE, PHOSPHATE SAND. GRADATIONAL CONTACT BETWEEN THE OVERLYING BONE VALLEY MEMBER OF THE PEACE RIVER FORMATION & THE UNDERLYING ARCADIA FORMATION OCCURS FROM APPROXIMATELY 29 TO 30 FEET.

29.5- 32.1 SAND; VERY LIGHT GRAY TO LIGHT YELLOWISH ORANGE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-02%
PHOSPHATIC SAND-08%, SILT-SIZE DOLOMITE-20%, IRON STAIN-%
PHOSPHATE SAND IS FINE TO VERY COARSE, WELL ROUNDED, BROWN

GRAY, AND BLACK. PHOSPHATE GRAVEL TENDS TO BE GRANULE
SIZED. CLAY CONTENT DIFFICULT TO ESTIMATE. CLAY APPEARS IN
MATRIX, & IN THIN SEAMS TO IRREGULAR CHUNKS. CLAY IS MIXED
IN WITH DOLOSILT. IRON STAINING PRESENT.

32.1- 32.6 SAND; VERY LIGHT GRAY TO WHITE
30% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-01%
PHOSPHATIC SAND-05%, SILT-SIZE DOLOMITE-10%, IRON STAIN-%
PHOSPHATE GRAVEL IS GRANULE TO MEDIUM PEBBLE SIZED, OFTEN
SUB-ROUNDED, BROWN TO BLACK IF UNWEATHERED, WHITE IF
WEATHERED. PHOSPHATE SAND RANGES FROM VERY FINE TO VERY
COARSE GRAINED, ROUNDED, WITH SAME COLORING AS GRAVEL.
WHITE CLAY AND DOLOSILT PRESENT IN MATRIX AND AS THIN
SEAMS. CLAY CONTENT DIFFICULT TO ESTIMATE. VERY SLIGHT IRON
STAINING.

32.6- 40 SILT-SIZE DOLOMITE; WHITE TO LIGHT YELLOWISH ORANGE
40% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC GRAVEL-05%
PHOSPHATIC SAND-03%, IRON STAIN- %
OTHER FEATURES: SUCROSIC
IRON STAINING PRESENT. PHOSPHATE SAND RANGED FROM FINE TO
VERY COARSE. PHOSPHATE GRAVEL RANGED FROM GRANULE TO MEDIUM
PEBBLE SIZE. WEATHERED AND UNWEATHERED PHOSPHATE PRESENT.
DOLOSILT IS SUCROSIC.

40 - 41.4 SAND; LIGHT YELLOWISH ORANGE TO WHITE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-03%
PHOSPHATIC SAND-07%, SILT-SIZE DOLOMITE-15%
IRON STAIN- %
OTHER FEATURES: SUCROSIC
IRON STAINING PRESENT. PHOSPHATE SAND RANGES FROM MEDIUM TO
VERY COARSE. PHOSPHATE GRAVEL RANGES FROM GRANULE TO MEDIUM
PEBBLE SIZE. WEATHERED AND UNWEATHERED PHOSPHATE PRESENT.
DOLOSILT IS SUCROSIC.

41.4- 42 SAND; WHITE TO LIGHT YELLOWISH ORANGE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-01%
PHOSPHATIC SAND-01%, SILT-SIZE DOLOMITE-10%
IRON STAIN- %
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOSILT PRESENT. THIN SEAMS OF CLAY WITH DOLOSILT
PRESENT. IRON STAINING PRESENT.

42 - 45 SAND; LIGHT YELLOWISH ORANGE TO WHITE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: SILT-SIZE DOLOMITE-35%
PHOSPHATIC GRAVEL-03%, PHOSPHATIC SAND-02%, IRON STAIN- %
OTHER FEATURES: SUCROSIC
FOSSILS: SHARKS TEETH
DOLOSILT CONTENT VARIES THROUGHOUT SECTION. CAN APPEAR IN THE MATRIX, AS THIN SEAMS, OR THICK CHUNKS. ABOVE DOLOSILT PERCENTAGE IS AN ESTIMATE. DOLOSILT IS SUCROSIC. PHOSPHATE GRAVEL RANGES FROM GRANULE TO LARGE PEBBLE SIZE. PHOSPHATE SAND RANGES FROM FINE TO VERY COARSE. 0-2MM SIZE SHELL MOLDS PRESENT. TRACE AMOUNTS OF CLAY ARE PRESENT. IRON STAINING PRESENT.

45 - 48.5 SAND; LIGHT YELLOWISH ORANGE TO WHITE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO FINE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: SILT-SIZE DOLOMITE-35%
PHOSPHATIC GRAVEL-03%, PHOSPHATIC SAND-03%, IRON STAIN- %
OTHER FEATURES: SUCROSIC
DOLOSILT CONTENT IS HIGHLY VARIABLE - APPEARS IN MATRIX AND AS THIN TO THICK SEAMS. DOLOSILT IS SUCROSIC. PHOSPHATE GRAVEL RANGES FROM GRANULE TO SMALL PEBBLE SIZE. PHOSPHATE SAND RANGES FROM VERY FINE TO VERY COARSE. IRON STAINING PRESENT.

48.5- 49.3 GRAVEL; LIGHT YELLOWISH ORANGE TO WHITE
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-40%
PHOSPHATIC SAND-05%, QUARTZ SAND-30%
SILT-SIZE DOLOMITE-25%
GRAVEL DOMINATED BY BROWN UNWEATHERED PHOSPHATE CLASTS THAT RANGE FROM GRANULE TO LARGE PEBBLE IN SIZE. MINOR AMOUNTS OF PHOSPHATE SAND. MEDIUM GRAINED QUARTZ SAND ALSO PRESENT WITH CLAY AND DOLOSILT IN THE MATRIX. SECTION COLOR BEGINS TO TRANSITION TO WHITE.

49.3- 50 DOLOSTONE; WHITE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC GRAVEL-05%
PHOSPHATIC SAND-03%
OTHER FEATURES: SUCROSIC, CALCAREOUS
FOSSILS: CORAL, FOSSIL MOLDS, FOSSIL FRAGMENTS
CALCAREOUS DOLOMITE WITH INTRACLASTS PRESENT. INTRACLASTS ARE ROUNDED, GRAYISH ORANGE TO VERY LIGHT GRAY, CONTAIN PHOSPHATIC SAND & GRAVEL, & QUARTZ SAND. DOLOMITE IS SUCROSIC. THIS SECTIONS MARKS THE FIRST MAJOR APPEARANCE OF

FOSSILS IN THIS CORE. PRESENCE OF INTRACLASTS AND POOR SORTING OF SECTION INDICATES THAT THIS SECTION MAY HAVE BEEN REWORKED BY SOME NATURAL PROCESS SUCH AS A STORM.

50 - 51.8 SAND; WHITE
35% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: SILT-SIZE DOLOMITE-39%
PHOSPHATIC GRAVEL-01%, PHOSPHATIC SAND-10%
OTHER FEATURES: SUCROSIC
THIN SECTION OF WELL INDURATED DOLOSTONE LOCATED AT THE TOP OF THE SECTION. FRESH FACE SHOWS FAINT LAMINATIONS AND CROSS BEDDING. NOTICEABLE LACK OF FOSSILS WHEN COMPARED TO PREVIOUS SECTION.

51.8- 55 SILT-SIZE DOLOMITE; WHITE TO LIGHT YELLOWISH ORANGE
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC GRAVEL-01%
PHOSPHATIC SAND-10%
OTHER FEATURES: SUCROSIC
LARGE ANGULAR PEBBLES OF MODERATELY INDURATED DOLOMITE PRESENT. TOP THREE QUARTERS OF SECTION IS LARGELY DOLOSILT. QUARTZ SAND INCREASES WITH DEPTH, LARGELY CONCENTRATING IN THE BOTTOM QUARTER OF THE SECTION. SEAMS & FRAGMENTS OF PURE DOLOSILT STILL APPEAR AT THE BASE. SECTION APPEARS TO BE REWORKED.

55 - 56 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-03%, PHOSPHATIC SAND-01%
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOMITE WITH A THIN SEAM OF QUARTZ & PHOSPHATE SAND AT THE TOP.

56 - 57.5 DOLOSTONE; LIGHT YELLOWISH ORANGE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-07%, PHOSPHATIC SAND-03%
OTHER FEATURES: SUCROSIC
SECTION COMPOSED OF SUCROSIC DOLOMITE.

57.5- 60 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, QUARTZ SAND-07%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL MOLDS, MOLLUSKS
INCREASE IN PHOSPHATIC SAND CONTENT. MODERATE AMOUNT OF FOSSIL MOLDS-PROBABLY MOLLUSKS.

60 - 61.7 SAND; LIGHT YELLOWISH ORANGE TO YELLOWISH GRAY
35% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%
SILT-SIZE DOLOMITE-35%
OTHER FEATURES: SUCROSIC
SECTION IS LARGELY SILICICLASTIC, WITH QUARTZ AND PHOSPHATE SAND AS THE FRAMEWORK. PHOSPHATE IS FINE TO MEDIUM GRAINED. MATRIX IS COMPOSED OF SUCROSIC DOLOSILT. 2 INCH LAYER OF WELL INDURATED DOLOSTONE APPEARS HALFWAY THROUGH SECTION. SECTION HAS MOTTLED TEXTURE, HOWEVER BIOTURBATION MAY NOT BE THE CAUSE.

61.7- 65 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-75%, QUARTZ SAND-75%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL MOLDS
DOLOMITIC INTRACLASTS PRESENT IN UPPER PORTION OF SECTION. PHOSPHATE CONTENT IS MAINLY SAND SIZED, HOWEVER SOME PHOSPHATE GRANULES ARE PRESENT. SILICICLASTIC CONTENT FLUCTUATES-CONTENT IS LOW AT THE TOP, INCREASES TOWARDS THE MIDDLE, THEN DECREASES AT THE BASE. DOLOMITE IS SUCROSIC.

65 - 70 DOLOSTONE; WHITE TO GRAYISH YELLOW
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: IRON STAIN- %, PHOSPHATIC SAND-07%
QUARTZ SAND-10%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL MOLDS
VERY MINOR IRON STAINING PRESENT. TOWARDS THE BOTTOM DOLOSTONE BECOMES POORLY INDURATED. SEAMS OF GRAYISH YELLOW PURE DOLOSTONE (NO SAND) ARE SCATTERED THROUGHOUT SECTION.

70 - 71 WACKESTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRANULE; RANGE: COARSE TO GRAVEL

POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-10%
OTHER FEATURES: SUCROSIC, DOLOMITIC, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, CORAL, BRYOZOA
LIMESTONE IS FOSSILIFEROUS, SANDY, & DOLOMITIC. DUE TO HIGH SILICICLASTIC CONTENT, THE LIMESTONE HAS A “DIRTY” TEXTURE. MATRIX IS COMPOSED OF A MIX OF QUARTZ AND PHOSPHATE SAND MICRITE, AND DOLOMITE. LIMESTONE IS MODERATELY ALTERED - 10 TO 50% HAS BEEN ALTERED TO DOLOMITE.

71 - 71.5 DOLOSTONE; WHITE
20% POROSITY: INTERGRANULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-07%
OTHER FEATURES: SUCROSIC
FOSSILS: NO FOSSILS
DOLOMITE IS SUCROSIC. SOME CALCITE PRESENT. NOTICEABLE LACK OF FOSSILS. THIN LAYER OF QUARTZ AND PHOSPHATE SAND WITH DOLOSILT MATRIX AT TOP OF SECTION.

71.5- 73.1 WACKESTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRANULE; RANGE: COARSE TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-20%
OTHER FEATURES: SUCROSIC, DOLOMITIC, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS, BRYOZOA
LIMESTONE IS FOSSILIFEROUS, SANDY, & DOLOMITIC. DUE TO HIGH SILICICLASTIC CONTENT, THE LIMESTONE HAS A “DIRTY” TEXTURE. MATRIX IS COMPOSED OF A MIX OF QUARTZ AND PHOSPHATE SAND MICRITE, AND DOLOMITE. LIMESTONE IS MODERATELY ALTERED - 10 TO 50% HAS BEEN ALTERED TO DOLOMITE.

73.1- 76 SANDSTONE; WHITE TO GRAYISH YELLOW
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: IRON STAIN- %, DOLOMITE-45%
OTHER FEATURES: SUCROSIC, DOLOMITIC
DOLOMITIC SANDSTONE. FRAMEWORK CONSISTS LARGELY OF QUARTZ & PHOSPHATE SAND. MATRIX IS COMPOSED OF SUCROSIC, SILT SIZED DOLOMITE. DOLOMITE ALSO APPEARS AS THIN IRREGULAR SEAMS. SOME MINOR IRON STAINING.

76 - 80 SANDSTONE; YELLOWISH GRAY TO VERY LIGHT GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY

POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-45%
OTHER FEATURES: SUCROSIC, DOLOMITIC
DOLOMITIC SANDSTONE. FRAMEWORK CONSISTS LARGELY OF QUARTZ & PHOSPHATE SAND. MATRIX IS COMPOSED OF SUCROSIC, SILT SIZED DOLOMITE. DOLOMITE ALSO APPEARS AS THIN IRREGULAR SEAMS. SECTION REPRESENTS TRANSITIONAL BOUNDARY. AT THE TOP, THE SECTION IS POORLY INDURATED WITH GRAYISH YELLOW DOLOMITE PRESENT IN THE MATRIX AND AS SEAMS. WITH DEPTH, THE SEAMS DISAPPEAR AND THE MATRIX BECOMES WHITE, THEN VERY LIGHT GRAY. WITH DEPTH, THE INDURATION OF THE SEGMENT INCREASES AND PHOSPHATE COLOR CHANGES FROM BROWN TO BLACK.

80 - 82.6 SILT-SIZE DOLOMITE; VERY LIGHT GRAY TO YELLOWISH GRAY
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-25%, QUARTZ SAND-25%
OTHER FEATURES: SUCROSIC
SANDY DOLOSILT WITH SUCROSIC DOLOMITE CRYSTALS & A HIGH QUARTZ AND PHOSPHATE SAND CONTENT. PHOSPHATE GRAINS ARE DOMINANTLY BLACK.

82.6- 84 SILT-SIZE DOLOMITE; VERY LIGHT GRAY TO LIGHT BLUISH GRAY
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-20%
CLAY-10%
OTHER FEATURES: SUCROSIC
SANDY DOLOSILT. SEE ABOVE NOTES. TRANSITION ZONE: SEAMS OF LIGHT BLUISH GRAY CLAY BEGIN TO APPEAR, AND INCREASE IN THICKNESS & FREQUENCY WITH DEPTH. BLACK PHOSPHATE SAND PRESENT.

84 - 86 CLAY; LIGHT BLUISH GRAY TO VERY LIGHT GRAY
45% POROSITY: INTERGRANULAR
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
MINOR DOLOMITE PRESENT IN CLAY. DOLOMITE IS SUCROSIC. QUARTZ & PHOSPHATE MIXED SPORADICALLY IN CLAY. TOWARDS THE BOTTOM OF THE SECTION VERY LIGHT GRAY, POORLY INDURATED SUCROSIC DOLOSTONE APPEARS.

86 - 87.6 SILT-SIZE DOLOMITE; WHITE
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-10%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: SUCROSIC
FOSSILS: SHARKS TEETH
SUCROSIC DOLOSILT WITH QUARTZ & BLACK PHOSPHATE SAND. SMALL AMOUNT OF GRANULE TO SMALL PEBBLE SIZED PHOSPHATE; OFTEN LEACHED OR WEATHERED.

87.6- 90 SAND; MODERATE LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
ROUNDNESS: SUB-ROUNDED TO ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED

ACCESSORY MINERALS: PHOSPHATIC SAND-30%
SILT-SIZE DOLOMITE-20%, PHOSPHATIC GRAVEL-01%
OTHER FEATURES: SUCROSIC
INCREASE IN BLACK PHOSPHATE SAND CONTENT. MATRIX IS SUCROSIC DOLOSILT. SMALL AMOUNT OF GRANULE TO SMALL PEBBLE SIZED PHOSPHATE; OFTEN LEACHED OR WEATHERED.

90 - 95 SILT-SIZE DOLOMITE; WHITE
35% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-10%
OTHER FEATURES: SUCROSIC
SOME CALCITE IS PRESENT. DOLOSILT IS SUCROSIC.

95 - 97 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-02%, QUARTZ SAND-02%
OTHER FEATURES: FOSSILIFEROUS, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS, BRYOZOA
FOSSILIFEROUS DOLOMITE WITH NUMEROUS SHELL FRAGMENTS & MOLDS. DOLOMITE CRYSTALS ARE SUCROSIC.

97 - 98.3 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-03%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC, CALCAREOUS

98.3- 100 SILT-SIZE DOLOMITE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
ACCESSORY MINERALS: PHOSPHATIC SAND- %, QUARTZ SAND- %
FOSSILS: FOSSIL FRAGMENTS
CALCAREOUS DOLOSILT WITH SUCROSIC CRYSTALS. QUARTZ SAND & PHOSPHATE SAND ARE PRESENT AND EXHIBIT REVERSE GRADING. FOSSILS BEGIN TO APPEAR AT BASE OF SECTION.

100 - 101.2 WACKESTONE; VERY LIGHT GRAY
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY COARSE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-03%
PHOSPHATIC GRAVEL-02%, QUARTZ SAND-01%
OTHER FEATURES: DOLOMITIC, FOSSILIFEROUS
FOSSILS: CORAL, MOLLUSKS
FOSSILIFEROUS LIMESTONE, MODERATELY ALTERED TO DOLOMITE (10 TO 50%). FOSSIL CONTENT IS LARGELY SHELL FRAGMENTS, WHICH DECREASES WITH DEPTH. COLOR CHANGES TO WHITE WITH DEPTH.

101.2- 102 DOLOSTONE; WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-02%, QUARTZ SAND-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
CALCAREOUS DOLOMITE WITH SUCROSIC DOLOMITE CRYSTALS.

102 - 110 DOLOSTONE; WHITE TO VERY LIGHT GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-02%, QUARTZ SAND-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
SAME AS ABOVE. CHERT NODULES PRESENT.

110 - 112.2 DOLOSTONE; WHITE
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: BRYOZOA, FOSSIL FRAGMENTS, FOSSIL MOLDS
CALCAREOUS DOLOMITE WITH SUCROSIC DOLOMITE CRYSTALS.
PHOSPHATE CONTENT CAN VARY BETWEEN 05% - 10%. PHOSPHATE
INCREASES TOWARD THE MIDDLE OF THE SECTION. SOME GRANULE
GRAINS ARE ALSO PRESENT. FOSSILS BEGIN TO APPEAR AT BOTTOM
OF SECTION.

112.2- 113 SILT-SIZE DOLOMITE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; UNCONSOLIDATED
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-10%
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOSILT INTERBEDDED WITH QUARTZ & PHOSPHATE SAND
(VERY FINE). SAND HAS DOLOSILT MATRIX.

113 - 117.6 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
SUCROSIC DOLOMITE. PHOSPHATE CONTENT INCREASES WITH DEPTH.
CHERT NODULES PRESENT. CHERT CONTAINS FOSSIL “GHOSTS” -
REMNANTS OF FOSSILS. CHERT ALSO CONTAINS PHOSPHATE GRAINS.
INDURATION VARIES BETWEEN MODERATE & POOR.

117.6- 120 DOLOSTONE; WHITE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, QUARTZ SAND-25%
OTHER FEATURES: SUCROSIC
FOSSILS: BRYOZOA, FOSSIL MOLDS, FOSSIL FRAGMENTS
CUTTINGS BAG OF MEDIUM GRAINED PHOSPHATE & QUARTZ SAND INCLUDED IN THIS SECTION. COULD REPRESENT A THIN LAYER OF UNCONSOLIDATED PHOSPHATE RICH SAND OR "CAVING/CAVE-IN" MATERIAL THAT SLOUGHED OFF THE BOREHOLE WALLS AT A SHALLOWER DEPTH. PHOSPHATE CONTENT IS APPROXIMATELY 30%.

120 - 121 DOLOSTONE; WHITE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, QUARTZ SAND-20%
OTHER FEATURES: SUCROSIC
FOSSILS: SHARKS TEETH, FOSSIL FRAGMENTS, FOSSIL MOLDS
SUCROSIC DOLOMITE WITH MOLDIC POROSITY.

121 - 122 SILT-SIZE DOLOMITE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-30%
DOLOSILT WITH HIGH QUARTZ & PHOSPHATE SAND CONTENT.

122 - 122.1 WACKESTONE; WHITE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-07%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
WACKESTONE WITH SAND. SAND IS PRIMARILY FINE TO MEDIUM GRAINED. LIMESTONE IS SLIGHTLY DOLOMITIC - ALTERATION OF 0-10%.

122.1- 123.1 CLAY; YELLOWISH GRAY
40% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-05%
CLAY WITH THIN ZONES OF SANDY CLAY. SAND IS MAINLY PHOSPHATIC & FINE TO MEDIUM GRAINED. NEARLY HORIZONTAL SLICKENSIDES ARE PRESENT. AT THE BASE, SECTION GRADES TO SUCROSIC DOLOSILT WITH VERY FINE PHOSPHATIC & QUARTZ SAND.

123.1- 125 SILT-SIZE DOLOMITE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC

FOSSILS: FOSSIL MOLDS
SUCROSIC DOLOSILT WITH SAND.

125 - 128 DOLOSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOMITE WITH SILT SIZED CRYSTALS. COLOR FALLS BETWEEN WHITE AND YELLOWISH GRAY.

128 - 130.5 SILT-SIZE DOLOMITE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-05%
DOLOSILT WITH PHOSPHATE & QUARTZ SAND. SAND CONTENT VARIES THROUGHOUT SECTION. SOME CLAY PRESENT IN MINOR QUANTITIES.

130.5- 134 DOLOSTONE; WHITE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, QUARTZ SAND-02%
SUCROSIC DOLOMITE WITH SILT SIZED CRYSTALS. PHOSPHATE SAND IS VERY FINE TO FINE GRAINED, AND VARIES BETWEEN 7-15%. PHOSPHATIC SAND DECREASES WITH DEPTH AND PHOSPHATIC GRAVEL BEGINS TO APPEAR. FOSSIL FRAGMENTS AND MOLDS BEGIN TO APPEAR AT BASE OF SECTION.

134 - 135 SILT-SIZE DOLOMITE; WHITE
20% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC
OVERALL, SUCROSIC DOLOSILT. HOWEVER AT TOP OF SECTION THERE IS POORLY INDURATED DOLOSTONE. POORLY INDURATED DOLOSTONE APPEARS TO HAVE SOFT SEDIMENT DEFORMATION FEATURES. WHITE DOLOMITE OVERLAYS YELLOWISH GRAY DOLOMITE. PORTIONS OF THE CONTACT BETWEEN THE TWO DOLOMITES ARE INFILLED WITH A THIN LAYER OF MEDIUM LIGHT GRAY CLAY. WHERE THE CLAY IS MISSING THE CONTACT IS IRREGULAR, SHOWING CONVOLUTIONS AND FAINT FLAME LIKE STRUCTURES, INDICATING POSSIBLE SOFT SEDIMENT DEFORMATION. SECTION COULD ALSO BE A RESULT OF CAVITY INFILL.

135 - 136.5 DOLOSTONE; WHITE
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-10%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

136.5- 137.7 SAND; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-10%
QUARTZ & PHOSPHATE SAND WITH DOLOSILT MATRIX. LENSES OF PURE DOLOSILT PRESENT.

137.7- 140 DOLOSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-10% SHELL-02%, PHOSPHATIC GRAVEL-02%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
SUCROSIC DOLOMITE WITH SILT SIZED CRYSTALS, PHOSPHATE & QUARTZ SAND, & GRANULE TO SMALL PEBBLE SIZE PHOSPHATE GRAVEL. NUMEROUS MOLDS AND HIGH MOLDIC POROSITY. ACTUAL SHELL CONTENT IS LOW.

140 - 144 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-10% PHOSPHATIC GRAVEL-02%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL FRAGMENTS
TRACE AMOUNT OF SHELLS. GRANULE TO SMALL PEBBLE SIZE PHOSPHATE GRAVEL.

144 - 145 SILT-SIZE DOLOMITE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-03%
DOLOSILT.

145 - 149 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-20%
OTHER FEATURES: SUCROSIC
SANDY SUCROSIC DOLOMITE.

149 - 151.6 DOLOSTONE; WHITE
20% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-25%, PHOSPHATIC SAND-10%
OTHER FEATURES: SUCROSIC, FOSSILIFEROUS
FOSSILS: CORAL, BRYOZOA, MOLLUSKS
SANDY, FOSSILIFEROUS DOLOMITE.

151.6- 153 DOLOSTONE; WHITE
15% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-05%
ORGANICS-03%
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOMITE WITH CALCAREOUS INTRACLASTS (MEDIUM TO LARGE PEBBLE SIZE) THAT APPEAR AT THE BASE OF THE SECTION. SMALL AMOUNT OF ORGANICS ALSO APPEAR AT THE BASE.

153 - 155 SILT; LIGHT GREENISH GRAY
40% POROSITY: INTERGRANULAR; UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-01%
OTHER FEATURES: DOLOMITIC
DOLOMITIC VERY FINE SILT. TRACE AMOUNTS OF CLAY PRESENT.

155 - 159 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC SAND-05%
PHOSPHATIC GRAVEL-03%
OTHER FEATURES: SUCROSIC
DOLOMITE IS SUCROSIC. TRACE AMOUNT OF CLAY RIP UP CLASTS. WEATHERED PHOSPHATE GRAVEL (GRANULE TO SMALL PEBBLE SIZE) IS ALSO PRESENT.

159 - 161 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-01%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: CALCAREOUS, SUCROSIC
CALCAREOUS DOLOMITE WITH SUCROSIC CRYSTALS. VERY SMALL AMOUNT OF PHOSPHATE GRAVEL (TRACE TO 1%). LACK OF RIP UP CLASTS.

161 - 162.7 DOLOSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%, QUARTZ SAND-01%
OTHER FEATURES: SUCROSIC
SUCROSIC DOLOMITE WITH VARIABLE SAND CONTENT. ABOVE SAND PERCENTAGE IS AN AVERAGE. VERY POORLY INDURATED.

162.7- 166.3 DOLOSTONE; YELLOWISH GRAY TO GREENISH GRAY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-03%
OTHER FEATURES: CALCAREOUS, SUCROSIC
CALCAREOUS DOLOMITE WITH SUCROSIC SILT SIZED CRYSTALS. GREENISH GRAY CLAY PRESENT THROUGHOUT SECTION. AT TOP OF SECTION, CLAY HAS HIGH CONTENT OF DOLOSILT. WITH DEPTH CLAY BECOMES MORE PURE. CLAY CONTENT VARIES THROUGHOUT THE SECTION. APPEARS AS SEAMS AND AS ANGULAR FRAGMENTS.

166.3- 171.2 MUDSTONE; WHITE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-03%, QUARTZ SAND-02%
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC MUDSTONE. DOLOMITE ALTERATION IS LOW (0-10%).

171.2- 175 MUDSTONE; WHITE TO LIGHT OLIVE GRAY
05% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, PHOSPHATIC SAND-15%
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC LIMESTONE (ALTERATION 0-10%). PRESENCE OF TWO 2 INCH THIN BEDS OF QUARTZ & PHOSPHATE SAND WITH DOLOSILT MATRIX. SAND BEDS OCCUR AT 171.5 FEET AND 173 FEET DEPTHS. SAND BEDS ARE LIGHT OLIVE GRAY IN COLOR.

175 - 175.5 MUDSTONE; WHITE
10% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-10%
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC LIMESTONE (ALTERATION 0-10%) WITH QUARTZ & PHOSPHATE SAND.

175.5- 178.7 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO VERY COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-23%, QUARTZ SAND-50%
DOLOMITE-25%, PHOSPHATIC GRAVEL-02%
OTHER FEATURES: DOLOMITIC
VERY POORLY INDURATED DOLOMITIC SANDSTONE. MATRIX IS DOLOMITIC. GRANULE TO SMALL PEBBLE SIZE PHOSPHATE GRAVEL PRESENT.

178.7- 181 DOLOSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-25%
PHOSPHATIC GRAVEL-05%
OTHER FEATURES: SUCROSIC
SANDY, MODERATELY TO POORLY INDURATED DOLOMITE. QUARTZ SAND VARIES BETWEEN 10% TO 40% - VALUE ABOVE IS AN AVERAGE. INCREASE IN PHOSPHATE GRAVEL CONTENT. GRAVEL SIZE RANGES BETWEEN GRANULE TO MEDIUM PEBBLE.

181 - 183.3 SAND; LIGHT OLIVE GRAY TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: ANGULAR TO SUB-ANGULAR; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%
SILT-SIZE DOLOMITE-15%
QUARTZ SAND WITH VARIABLE DOLOSILT MATRIX (VARIES BETWEEN 1%-20%).

183.3- 185 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-15%
PHOSPHATIC GRAVEL-15%
OTHER FEATURES: SUCROSIC, CALCAREOUS
CALCAREOUS DOLOMITE WITH WEATHERED PHOSPHATE GRAVEL (GRANULE TO MEDIUM PEBBLE SIZE) AND MICRITE CHUNKS.
185 - 186.5 DOLOSTONE; WHITE TO VERY LIGHT GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, QUARTZ SAND-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
CALCAREOUS DOLOMITE WITH FOSSILS. SORITES FORAMS ARE PRESENT. CONTACT BETWEEN THE OVERLYING ARCADIA FORMATION AND THE UNDERLYING TAMPA BAY MEMBER OF THE ARCADIA FORMATION IS AT 186.5 FEET.

186.5- 188.8 DOLOSTONE; WHITE TO VERY LIGHT GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
VERY WELL INDURATED PURE DOLOSTONE.

188.8- 192 DOLOSTONE; WHITE
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS DOLOMITE WITH HIGH CONTENT OF CHERT NODULES. CHERT NODULES ARE BLACK TO GRAY IN COLOR. 75% OF SECTION IS COMPRISED OF CHERT.

192 - 195 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, OOLITE, PELLET
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRANULE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: DOLOMITIC
DOLOMITIC LIMESTONE WITH APPROXIMATELY 45-50% DOLOMITE ALTERATION. MOST OF THE ORIGINAL MICRITE MATRIX HAS BEEN DOLOMITIZED. REMAINING CALCITE IS PRIMARILY IN THE FORM OF OOLITIC OR PELLITIC LIKE GRAINS THAT SEEM TO BE WEATHERED. INCLUDED BOTH GRAIN TYPES ABOVE DUE TO UNCERTAINTY AS TO WHICH GRAIN TYPE ACTUALLY IS PRESENT. SIZE MODE AND RANGE NOTATED ABOVE DESCRIBES THE OOLITIC/PELLITIC GRAINS. GRAINS AND MICRITE TEND TO BE WHITE, WHILE THE DOLOMITE TENDS TO BE YELLOWISH GRAY.

195 - 197 DOLOSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: MOLDIC, INTERCRYSTALLINE; 50-90% ALTERED

SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: CALCAREOUS
CALCAREOUS DOLOMITE. MINOR AMOUNTS (APPROXIMATELY 10-15%) OF OOLITIC/PELLITIC CALCITE GRAINS (MENTIONED IN PREVIOUS SECTION) PRESENT.

197 - 200 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
ALMOST PURE DOLOMITE.

TOTAL DEPTH

Appendix C2. Lithologic Log for Core Hole 2 at the ROMP 45.5 - Progress Energy Well Site in Polk County, Florida

LITHOLOGIC WELL LOG PRINTOUT
SOURCE - FGS

WELL NUMBER: W-18799
TOTAL DEPTH: 1780 FT.
149 SAMPLES FROM 172 TO 1780 FT.

COUNTY - POLK
LOCATION: T.31S R.24E S.11
LAT = 27D 47M 46S
LON = 81D 53M 14S

COMPLETION DATE: N/A
ELEVATION: 168 FT
OTHER TYPES OF LOGS AVAILABLE - NONE

OWNER/DRILLER:ROMP 45.5 CORE HOLE 2

WORKED BY:JOSUE GALLEGOS & MICHELLE LADLE DESCRIBED CORE. DESCRIPTION
COMPLETED APRIL 2010.
WELL STARTS IN ARCADIA FORMATION. ELEVATION LISTED
FOR TOP CONTACT OF NOCATEE MEMBER IS POSSIBLE HIGH TOP.
POSSIBLE LOW TOP FOR NOCATEE IS 247 FT. OCALA TOP
CONTACT IS ACTUALLY TRANSITIONAL, BETWEEN 400 TO 408 FT.
ELEVATION LISTED FOR OLDSMAR FORMATION IS POSSIBLE HIGH TOP.
POSSIBLE LOW TOP FOR OLDSMAR IS 1750.5 FT.
SEE ALSO W-18803,ROMP 45.5 CH1 AND W-18987,ROMP 45.5 CH3

172.0 - 295.0	122ARCA	ARCADIA FM.
188.3 - 219.0	122TAMP	TAMPA MEMBER OF ARCADIA FM.
219.0 - 295.0	122NOCA	NOCATEE MEMBER OF ARCADIA FM.
295.0 - 405.0	123SWNN	SUWANNEE LIMESTONE
405.0 - 605.0	124OCAL	OCALA GROUP
605.0 - 1658.5	124AVPK	AVON PARK FM.
1658.5 - 1780.0	124OLDM	OLDSMAR LIMESTONE

0 - 172.3 SILT; LIGHT OLIVE GRAY
40% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: CALCITE-%
SILTSTONE WITH CLAY MATRIX. THIN RIND OF CALCIFIED
SILTSTONE RINGS THE OUTER DIAMETER OF THE CORE. RIND REACTS
TO HCL. RIND IS VERY LIGHT GRAY. INNER CORE DOES NOT REACT
TO HCL BUT HAS A RAPID REACTION TO ALIZARIN RED, INDICATING
SOME MINOR CONTENT OF CALCITE. WHITE INTRACLASTS PRESENT AT
BASE OF SECTION.

172.3- 173.8 MUDSTONE; WHITE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: GRANULE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-20%, QUARTZ SAND-15%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
DOLOMITIC SANDY LIMESTONE. DOLOMITE ALTERATION IS LOW
(0-10%) TO MODERATE (10-40%), INCREASING WITH DEPTH.

173.8- 174.6 DOLOSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE

MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-15%, QUARTZ SAND-20%
OTHER FEATURES: CALCAREOUS
CALCAREOUS DOLOMITE. DOLOMITE ALTERATION CONTINUES TO INCREASE WITH DEPTH.

174.6- 175 SAND; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-30%
PHOSPHATIC GRAVEL-01%
PHOSPHATE SAND IS FINE GRAINED, BROWN TO BLACK. PHOSPHATE GRAVEL IS GRANULE TO SMALL PEBBLE SIZE, BROWN TO BLACK. MATRIX IS SLIGHTLY DOLOMITIC, WITH SOME CLAY & DOLOSILT.

175 - 176 MUDSTONE; WHITE
15% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-05%
PHOSPHATIC GRAVEL-01%
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC LIMESTONE. ALTERATION IS LOW (0-10%) QUARTZ & PHOSPHATE SANDS TEND TO BE VERY FINE TO FINE. PHOSPHATE GRAVEL IS GRANULE TO SMALL PEBBLE SIZE.

176 - 177 SAND; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-15%
SILT-SIZE DOLOMITE-30%, PHOSPHATIC GRAVEL-02%
OTHER FEATURES: DOLOMITIC
DOLOSILT IS PRESENT IN THE MATRIX. BROWN TO BLACK PHOSPHATE IS ALSO PRESENT. PHOSPHATE SAND IS VERY FINE TO FINE. PHOSPHATE GRAVEL IS GRANULE SIZE.

177 - 178.7 DOLOSTONE; LIGHT GRAY TO WHITE
10% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-30%, PHOSPHATIC SAND-05%
PHOSPHATIC GRAVEL-04%
OTHER FEATURES: SUCROSIC
SANDY DOLOMITE WITH VERY FINE GRAINED QUARTZ & PHOSPHATE SAND. PHOSPHATE GRAVEL IS GRANULE TO MEDIUM PEBBLE SIZE. PHOSPHATE GRAVEL SIZE IS DISTINGUISHING MARK OF SECTION. APPROXIMATELY 1% OF INTRACLASTS. THIN BED OF SANDY DOLOSILT AT TOP OF SECTION. THIS SECTION POSSIBLY CORRELATED WITH 178.7 - 185FT OF W-18803.

178.7- 180 DOLOSTONE; YELLOWISH GRAY
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC SAND-07%
PHOSPHATIC GRAVEL-07%
OTHER FEATURES: SUCROSIC
NOTICEABLE DECREASE IN SAND CONTENT AND CHANGE TO FINE & MEDIUM GRAINED QUARTZ & PHOSPHATE SAND, WHEN COMPARED TO PREVIOUS SECTION. SLIGHT INCREASE IN PHOSPHATE GRAVEL CONTENT. PHOSPHATE GRAVEL SIZE RANGES FROM GRANULE TO MEDIUM PEBBLE. FAINT, SMALLER THAN MILLIMETER SIZE, VEINS PRESENT. SECTION POSSIBLY CORRELATED WITH 178.7 - 185FT SECTION OF W-18803.

180 - 180.4 SAND; LIGHT OLIVE GRAY TO MODERATE LIGHT GRAY
25% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
UNCONSOLIDATED
ACCESSORY MINERALS: PHOSPHATIC SAND-20%
PHOSPHATIC GRAVEL-02%, SILT-SIZE DOLOMITE-10%
POSSIBLY CORRELATED WITH 181.0-183.3 FT SECTION OF W-18803.
THIN 3 INCH BED OF QUARTZ & PHOSPHATE SAND WITH CALCAREOUS WHITE INTRACLASTS.

180.4- 181.5 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-20%, PHOSPHATIC SAND-15%
PHOSPHATIC GRAVEL-10%
OTHER FEATURES: SUCROSIC
SANDY DOLOMITE. INCREASE IN PHOSPHATE SAND & GRAVEL CONTENT. POSSIBLY CORRELATED WITH 178.7 - 185 FT SECTION OF W-18803.

181.5- 184.1 DOLOSTONE; YELLOWISH GRAY
10% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC GRAVEL-20%
PHOSPHATIC SAND-07%, QUARTZ SAND-03%
LARGE INCREASE IN PHOSPHATE GRAVEL. WEATHERED & UNWEATHERED, GRANULE TO MEDIUM PEBBLE SIZE PHOSPHATE GRAVEL. SOME CALCAREOUS TO DOLOMITIC GRAVEL SIZED INTRACLASTS PRESENT. POSSIBLY CORRELATED WITH 178.7 TO 185 FT SECTION OF W-18803. DECREASE IN OVERALL SAND CONTENT COMPARED TO PREVIOUS SECTION.

184.1- 185 DOLOSTONE; WHITE
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-05%, PHOSPHATIC SAND-05%
PHOSPHATIC GRAVEL-00%
OTHER FEATURES: CALCAREOUS, SUCROSIC
CALCAREOUS DOLOMITE. ALTERATION IS BETWEEN 50 - 60%.
NOTICEABLE LACK OF PHOSPHATE GRAVEL. BORDERLINE DOLOMITIC
MUDSTONE (LIMESTONE).

185 - 186.8 WACKESTONE; VERY LIGHT GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-05%, QUARTZ SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, BRYOZOA, FOSSIL FRAGMENTS
FOSSIL MOLDS
DOLOMITIC LIMESTONE WITH ALTERATION OF 30 - 50%. SORITES
FORAMS PRESENT. POSSIBLY CORRELATED WITH 185 - 186.5 FT
INTERVAL OF W-18803.

186.8- 188.3 DOLOSTONE; YELLOWISH GRAY
15% POROSITY: INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-07%, QUARTZ SAND-05%
OTHER FEATURES: SUCROSIC
CALCAREOUS DOLOMITE WITH SUCROSIC CRYSTALS POSSIBLE
TRANSITION ZONE INTO TAMPA MBR. <----------------------
POSSIBLE TRANSITION ZONE INTO TAMPA MEMBER. CHECK WITH
CLINT

188.3- 190 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SILICIC CEMENT
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: PHOSPHATIC SAND-03%, QUARTZ SAND-02%
SLIGHTLY DOLOMITIC LIMESTONE WITH CHERT NODULES. INDURATION
IS POOR, THEN INCREASES TO GOOD INDURATION WITH DEPTH.
POROSITY DECREASES WITH DEPTH. SAND CONTENT DECREASES &
DISAPPEARS WITH DEPTH. CHERT COMPOSES ~45% OF SECTION -
POSSIBLY CORRELATED WITH 188.8 TO 192.0 FT SECTION OF

W-18803.

190 - 193 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, QUARTZ SAND-01%
LIMESTONE WITH LITTLE TO NO SAND CONTENT.

193 - 195 WACKESTONE; WHITE TO YELLOWISH GRAY
12% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: OOLITE, PELLET; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, QUARTZ SAND-01%
DOLOMITIC LIMESTONE WITH ~45 TO 50% ALTERATION. MUCH OF
ORIGINAL MICRITE MATRIX HAS BEEN DOLOMITIZED. REMAINING
CALCITE IS COMPOSED OF OOLITIC TO PELLITIC LIKE GRAINS
HOWEVER THERE IS MUCH UNCERTAINTY AS TO IF THE GRAINS
REALLY ARE OOLITES OR PELLETS. ANOTHER POSSIBILITY: GRAINS
COULD BE INTRACLASTS. GRAINS ARE ROUNDED TO ANGULAR.
SECTION POSSIBLY CORRELATED WITH 192-195 FT SECTION OF
W-18803.

195 - 198.3 DOLOSTONE; YELLOWISH GRAY
25% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, QUARTZ SAND-01%
OTHER FEATURES: CALCAREOUS, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
CALCAREOUS DOLOMITE WITH HIGH MOLDIC POROSITY. PRESENCE OF
WHITE OOLITIC/PELLITIC LIKE GRAINS MENTIONED IN ABOVE
SECTION.

198.3- 201 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
PURE DOLOMITE WITH HIGH MOLDIC POROSITY NOTE: 2 INCH THICK
SANDY DOLOMITE BED LOCATED AT ~ 199.1 FT DEPTH. DOLOMITIC
INTRACLASTS PRESENT. INTRACLASTS EXHIBIT GRADING
INCREASING IN SIZE FROM COARSE SAND TO LARGE PEBBLE GRAVEL.
POSSIBLY CORRELATED WITH 197.0 - 200.0 FT SECTION OF
W-18803.

201 - 202 DOLOSTONE; MODERATE YELLOWISH BROWN

20% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: CORAL, MOLLUSKS, FOSSIL FRAGMENTS, FOSSIL MOLDS
PRESENCE OF DOLOMITE INTRACLASTS AT TOP OF SECTION - GRAVEL SIZE (GRANULE TO LARGE PEBBLE). LARGE SECTION OF DOLOMITIZED CORAL. MOLDIC POROSITY IS HIGHEST SOURCE OF POROSITY. MOTTLING PRESENT IN CERTAIN PORTIONS OF SEGMENT. PHOSPHATE & QUARTZ SAND CONTENT IS LESS THAN 1%.

202 - 205 DOLOSTONE; MODERATE YELLOWISH BROWN
20% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
SAME AS ABOVE. NOTICEABLE LACK OF INTRACLASTS.

205 - 210.4 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, CORAL

210.4- ;

- ??? MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS:
TRACE AMOUNT OF QUARTZ AND PHOSPHATE SAND. ROCK TURNS YELLOWISH GRAY WHEN WET.

??? - 215 CLAY; LIGHT GREENISH GRAY
45% POROSITY: INTERGRANULAR; UNCONSOLIDATED
OTHER FEATURES: CALCAREOUS
GREEN, CALCAREOUS CLAY, WITH WHITE POCKETS/CHUNKS OF MUDSTONE GRADE LIMESTONE. NO PHOSPHATE OR QUARTZ PRESENT.

215 - 218.6 CLAY; LIGHT GREENISH GRAY

45% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-01%
OTHER FEATURES: CALCAREOUS
CLAY CONTENT DECREASES WITH DEPTH, PERCENTAGE OF WHITE LIMESTONE CHUNKS INCREASES WITH DEPTH. SOME DOLOMITIC INTRACLASTS PRESENT.

218.6- 220 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-30%
SANDY MUDSTONE WITH QUARTZ SAND. BED OF RECRYSTALLIZED CALCITE AT TOP OF SECTION.

220 - 226.6 SANDSTONE; YELLOWISH GRAY TO LIGHT GREENISH GRAY
15% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-50%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
QUARTZ SANDSTONE CEMENTED BY CALCITE WITH GREEN CLAY IN MATRIX. SAND IS QUARTZ, VERY FINE. MINOR FOSSIL FRAGMENTS. CLASTS OF RECRYSTALLIZED CALCITE CRYSTALS PRESENT.

226.6- 230 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, CALCITE- %
OTHER FEATURES: CALCAREOUS
FOSSILS: BENTHIC FORAMINIFERA
HIGHLY VARIABLE SECTION, WITH POOR CORE SAMPLES. THIS MADE DESCRIPTION & ESTIMATION OF PERCENTAGES VERY DIFFICULT. BELOW IS BEST GUESS: QUARTZ SANDSTONE CEMENTED WITH CALCITE. CALCITE CONTENT VARIES BETWEEN 15 - 40% (VERY ROUGH ESTIMATE). INTERMITTENT POCKETS AND SEGMENTS OF RE-CRYSTALLIZED CALCITE PRESENT. MILIOLIDS FOUND IN CERTAIN SEGMENTS OF SECTION. BED OF UNCONSOLIDATED, MEDIUM GRAINED QUARTZ SAND FOUND AT BASE OF SECTION. SAND HAS MEDIUM TO COARSE GRAINED LIMESTONE LITHOCLASTS (~40% OF SAND BED). VERY FINE PHOSPHATE SAND PRESENT (~2%). DRILLERS BAGGED THIS BED OF QUARTZ SAND - THEREFORE UNABLE TO ESTIMATE LENGTH OF SAND BED. POROSITY OF SAND BED IS ~25%.

230 - 235 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
15% POROSITY: INTERGRANULAR; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, CALCITE- %
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
HIGHLY VARIABLE SECTION, WITH POOR CORE SAMPLES. THIS MADE DESCRIPTION & ESTIMATION OF PERCENTAGES VERY DIFFICULT. BELOW IS BEST GUESS: QUARTZ SANDSTONE THAT HAS BEEN CEMENTED WITH CALCITE. FOSSIL FRAGMENTS FOUND SCATTERED

THROUGHOUT SECTION. CALCITE CONTENT VARIES 15 - 40% (VERY ROUGH ESTIMATE). SEGMENTS OF RECRYSTALLIZED CALCITE PRESENT. BED OF UNCONSOLIDATED QUARTZ SAND (MEDIUM GRAINED) FOUND AT BASE OF SECTION. MEDIUM GRAINED LIMESTONE LITHOCLASTS PRESENT IN THE SAND(~30%). VERY FINE PHOSPHATE SAND PRESENT (~2%) AS WELL. POROSITY OF SAND BED IS 25%.

235 - 240 NO SAMPLES

240 - 242.4 SANDSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: INTERGRANULAR; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-01%, CALCITE- %
OTHER FEATURES: CALCAREOUS
HIGHLY VARIABLE SECTION, WITH POOR CORE SAMPLES. THIS MADE DESCRIPTION & ESTIMATION OF PERCENTAGES VERY DIFFICULT. BELOW IS BEST GUESS: QUARTZ SANDSTONE CEMENTED WITH CALCITE. NO FOSSILS. CALCITE CONTENT VARIES BETWEEN 15 - 40%. SEGMENTS OF RECRYSTALLIZED CALCITE PRESENT. NO SAND BED AT BASE.

242.4- 245 DOLOSTONE; GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, VUGULAR, PIN POINT VUGS
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-02%
PALE YELLOWISH BROWN DOLOMITE WITH MINOR QUARTZ CONTENT. SOME VUGS PRESENT.

245 - 246.1 DOLOSTONE; GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-01%, PHOSPHATIC SAND-02%
BOTTOM OF SECTION BEGINS TO GRADE INTO BROWN COLORED

246.1- SAND; NO COLOR GIVEN TO NO COLOR GIVEN
TO% POROSITY: NOT OBSERVED, ,

- 247 SILT-SIZE DOLOMITE; GRAYISH BROWN
40% POROSITY: INTERGRANULAR; POOR INDURATION
ACCESSORY MINERALS: QUARTZ SAND-02%
DOLOSILT THAT HAS BEEN POORLY INDURATED DUE TO COMPACTION. THIN GRAY VERTICAL VEINS OF CLAY APPEAR AT BOTTOM OF SECTION, AS WELL AS GRAY COLORED ANGULAR TO SUBANGULAR SHAPED SPOTS OF

247 - DOLOSTONE; NO COLOR GIVEN TO NO COLOR GIVEN
IL% POROSITY: ,

- 248.6 CLAY; GREENISH GRAY
30% POROSITY: INTERGRANULAR; MODERATE INDURATION

CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-01%
FOSSILS: , ,
TRACE AMOUNTS OF PHOSPHATE OR PHOSPHATE LIKE GRAINS. GRAINS ARE SO FINE THAT IF IS DIFFICULT TO TEST/ DETERMINE EXACT PHOSPHATE CONTENT. POROSITY IS DECREASED DUE TO COMPACTION/INDURATION.

248.6- 250 CLAY; YELLOWISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: QUARTZ SAND-40%, PHOSPHATIC SAND-01%
OTHER FEATURES: DOLOMITIC
SANDY CLAYSTONE WITH VERY FINE PHOSPHATE & QUARTZ SAND. DUE TO POOR INDURATION, POROSITY IS SLIGHTLY HIGHER, RELATIVE TO PREVIOUS SECTION.

250 - 251.6 CLAY; YELLOWISH GRAY TO GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
CLAYSTONE WITH TRACE AMOUNTS OF QUARTZ, POSSIBLY SOME PHOSPHATE AND MICA AS WELL IN TRACE AMOUNTS. CLAYSTONE GRADES FROM YELLOWISH GRAY TO GREENISH GRAY. INDURATION DECREASES WITH DEPTH.

251.6- 252.6 SILT; LIGHT GREENISH GRAY
30% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CLAY MATRIX
OTHER FEATURES: DOLOMITIC
DOLOMITIC SILTSTONE WITH MODERATE CLAY CONTENT. EXACT PERCENTAGE IS DIFFICULT TO DETERMINE DUE TO SIZE OF SILT & CLAY. CEMENT IS ASSUMED TO BE MIX OF CLAY & DOLOMITE. TRACE AMOUNTS OF QUARTZ AND MICA. NO VISIBLE PHOSPHATE. SILT SIZED, UNIDENTIFIABLE BLACK GRAINS ARE PRESENT BUT ARE NOT PHOSPHATE. MEDIUM LIGHT GREY VEINS OF CLAY & SILT PRESENT.

252.6- 255 CLAY; LIGHT GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
CLAYSTONE WITH SOME GRAY CLAY & SILT VEINING PRESENT AT TOP OF SECTION. ~7% OF SAMPLE IS SILT SIZED BLACK GRAINS - UNABLE TO DETERMINE COMPOSITION. TRACE AMOUNTS OF VERY FINE TO SILT SIZED MICA GRAINS. LAYERS OF CLAYEY SILT AT VERY BASE OF SECTION. CLAYSTONE IS SLIGHTLY DOLOMITIC. CEMENT IS PROBABLY CLAY & DOLOMITE.

255 - 260 CLAY; LIGHT GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
CLAYSTONE WITH SOME GRAY CLAY & SILT VEINING. ~7 TO 10% OF SILT SIZED BLACK GRAINS - UNABLE TO IDENTIFY. TRACE AMOUNTS OF SILT SIZED MICA LIKE GRAINS.

260 - 261.7 CLAY; LIGHT OLIVE
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
CLAYSTONE WITH WHITE CLAY CLASTS. SOME OF THESE CLASTS APPEAR TO BE SHAPED LIKE FOSSILS.

261.7- 264.1 CLAY; LIGHT OLIVE
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
CLAYSTONE WITH DARK GRAY TO BLACK VEINS. VEINS COMPOSED OF CLAY.

264.1- 265 CLAY; LIGHT OLIVE
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
CLAYSTONE.

265 - 267 CLAY; GREENISH GRAY TO DARK GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC CLAYSTONE. CLAYSTONE DARKENS IN COLOR WITH DEPTH.

267 - 269 CLAY; DARK GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
SLIGHTLY DOLOMITIC CLAYSTONE.

269 - 270 CLAY; DARK GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
SPARRY CALCITE CEMENT
OTHER FEATURES: DOLOMITIC, CALCAREOUS
DOLOMITIC TO CALCAREOUS CLAYSTONE.

270 - 271.5 CLAY; GREENISH GRAY TO DARK GREENISH GRAY
35% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
SPARRY CALCITE CEMENT
OTHER FEATURES: DOLOMITIC, CALCAREOUS
DOLOMITIC TO CALCAREOUS CLAYSTONE. AT BASE OF SECTION, ROCK BECOMES SANDY CLAY & UNCONSOLIDATED.

271.5- 272 SANDSTONE; VERY LIGHT GRAY TO LIGHT GREENISH GRAY
15% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-10%
OTHER FEATURES: DOLOMITIC
FINE GRAINED, SLIGHTLY DOLOMITIC SANDSTONE. CEMENT IS PROBABLY DOLOMITIC, BUT ALSO ANOTHER CEMENT IS POSSIBLY PRESENT - PERHAPS QUARTZ CEMENT. FINE PHOSPHATE SAND IS

PRESENT.

272 - 275 SAND; LIGHT OLIVE TO GREENISH GRAY
26% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-03%
QUARTZ SAND WITH VARIABLE CLAY CONTENT IN MATRIX. SECTION VARIES BETWEEN A SILTY & CLAYEY SAND, TO A SAND WITH MINOR CLAY AND SILT CONTENT. VERY POORLY INDURATED.

275 - 277.4 SAND; GREENISH GRAY
26% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS: ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX
ACCESSORY MINERALS: PHOSPHATIC SAND-03%
QUARTZ SAND WITH VARIABLE CLAY CONTENT IN MATRIX. SECTION VARIES BETWEEN A SILTY & CLAYEY SAND, TO A SAND WITH MINOR CLAY AND SILT CONTENT. VERY POORLY INDURATED. VERY SLIGHTLY DOLOMITIC.

277.4- 278.5 SAND; GREENISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-04%
OTHER FEATURES: DOLOMITIC, SUCROSIC
CLAY CONTENT DECREASES WITH DEPTH. INDURATION INCREASES WITH DEPTH. THROUGHOUT SECTION, SUCROSIC DOLOSILT IS PRESENT IN VARIABLE AMOUNTS. AT BASE OF SECTION, ENTIRE MATRIX IS COMPRISED OF SILT SIZED SUCROSIC DOLOMITE CRYSTALS.

278.5- 278.9 SAND; GREENISH GRAY TO DARK GREENISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-03%
OTHER FEATURES: DOLOMITIC, SUCROSIC
ZONE OF TRANSITION. CLAY CONTENT INCREASES WITH DEPTH APPEARING AS CLAY FRAGMENTS & SEAMS. CLAY IS DARK GREENISH GRAY.

278.9- 280.8 CLAY; DARK GREENISH GRAY
40% POROSITY: INTERGRANULAR; UNCONSOLIDATED
OTHER FEATURES: DOLOMITIC, SUCROSIC
FOSSILS: FOSSIL MOLDS
CLAY WITH VARIABLE AMOUNTS OF QUARTZ SAND AND DOLOSILT.

MINOR AMOUNT OF SMALL FOSSIL MOLDS, USUALLY FILLED WITH
WHITE SAND. TRACE PHOSPHATE CONTENT.

280.8- 282.6 SAND; GREENISH GRAY TO LIGHT OLIVE
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
QUARTZ SAND WITH VARIABLE CLAY CONTENT IN MATRIX. SUCROSIC
DOLOSILT PRESENT IN MATRIX. REAPPEARANCE OF PHOSPHATE SAND.

282.6- 285 SAND; LIGHT OLIVE
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO SUB-ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): CLAY MATRIX, DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
FOSSILS: FOSSIL MOLDS
QUARTZ SAND WITH VARIABLE AMOUNTS OF CLAY IN MATRIX.
SUCROSIC DOLOSILT PRESENT IN MATRIX.

285 - 287.5 SAND; LIGHT OLIVE
20% POROSITY: INTERGRANULAR
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
ROUNDNESS: SUB-ANGULAR TO ROUNDED; MEDIUM SPHERICITY
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: PHOSPHATIC SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
QUARTZ SAND WITH SUCROSIC DOLOSILT IN MATRIX. MINOR CLAY
CONTENT PRESENT - CONTENT VARIES. IN MANY PLACES CLAY IS
NOT PRESENT.

287.5- 290 SANDSTONE; LIGHT OLIVE
14% POROSITY: INTERGRANULAR, FRACTURE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-50%
SILT-SIZE DOLOMITE-45%, PHOSPHATIC SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
QUARTZ SANDSTONE WITH NO CLAY, HIGH CONTENT OF SUCROSIC
DOLOSILT IN MATRIX. QUARTZ AND DOLOSILT HAVE BEEN CEMENTED
TOGETHER. INDURATION INCREASES WITH DEPTH. QUARTZ SAND IS
FINE, WITH GRAIN SIZE RANGE OF VERY FINE TO MEDIUM. SOME
SMALL FRACTURES AND A SLICKENSIDE APPEAR IN A SMALL
FRACTURE ZONE, ROUGHLY LOCATED AT THE CENTER OF THE SECTION
(~ AT A 288.75 FT DEPTH BLS.).

290 - 295 SANDSTONE; LIGHT OLIVE
14% POROSITY: INTERGRANULAR; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-50%

SILT-SIZE DOLOMITE-45%, PHOSPHATIC SAND-05%
OTHER FEATURES: DOLOMITIC, SUCROSIC
QUARTZ SANDSTONE WITH NO CLAY, HIGH CONTENT OF SUCROSIC DOLOSILT IN MATRIX. QUARTZ AND DOLOSILT HAVE BEEN CEMENTED TOGETHER. INDURATION INCREASES WITH DEPTH. QUARTZ SAND IS FINE, WITH GRAIN SIZE RANGE OF VERY FINE TO MEDIUM. ONLY 4” OF CORE WAS RECOVERED.

295 - 300 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL CAST, SKELETAL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
WACKESTONE INDURATION DECREASES WITH DEPTH. TRACE AMOUNT OF QUARTZ IS PRESENT. SORITES FORAMS PRESENT. TRACE AMOUNTS OF BLACK PHOSPHATE PRESENT.

300 - 303.6 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%, HEAVY MINERALS-01%
PHOSPHATIC SAND- %
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA
TRACE TO 0% PHOSPHATE CONTENT. HEAVY MINERALS COULD BE PHOSPHATE, BUT DUE TO VERY FINE GRAIN SIZE, IT IS DIFFICULT TO DETERMINE. ARCHAIAS ANGULATUS FORAMS PRESENT.

303.6- 307.6 WACKESTONE; WHITE TO DARK GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-07%, HEAVY MINERALS-01%
PHOSPHATIC SAND- %
FOSSILS: MOLLUSKS, FOSSIL MOLDS, FOSSIL FRAGMENTS
BENTHIC FORAMINIFERA
SORITES FORAMS PRESENT. TRACE TO 1% VERY FINE PHOSPHATE SAND CONTENT PRESENT. QUARTZ SAND IS VERY FINE.

307.6- 309.6 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY COARSE TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%, HEAVY MINERALS-01%
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS

TRACE PHOSPHATE SAND CONTENT. PHOSPHATE IS VERY FINE GRAINED.

309.6- 310.8 WACKESTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%, HEAVY MINERALS-01%
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS
BENTHIC FORAMINIFERA
WACKESTONE GRADES TO MUDSTONE AT VERY BASE OF SECTION. MINOR AMOUNTS OF SPARRY CALCITE IN MOLDIC POROSITY. MILIOLID FORAMS PRESENT AS WELL AS SORITES FORAMS. TRACE AMOUNTS OF BIOTITE MICA.

310.8- 315 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRANULE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, HEAVY MINERALS-01%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
SANDY MUDSTONE GRADE LIMESTONE, WITH FOSSIL CONTENT AT TOP & BOTTOM OF SECTION; LACK OF FOSSILS IN CENTER PORTION OF SECTION.

315 - 320 WACKESTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL CAST, SKELETAL
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-15%, HEAVY MINERALS-01%
SPAR-20%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS, BRYOZOA
ALGAE
SANDY, FOSSILIFEROUS WACKESTONE WITH SPARRY CALCITE GRAINS AND TRACE MILIOLID FORAM CONTENT.

320 - 325.8 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-05%, HEAVY MINERALS-01%
SPAR-25%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

QUARTZ SAND CONTENT AND FOSSIL CONTENT DECREASE. GRAINS OF
SPARRY CALCITE PRESENT.

325.8- 330 PACKSTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS
FOSSIL FRAGMENTS, MOLLUSKS, BRYOZOA
PACKSTONE WITH LITTLE TO NO SAND. MILIOLIDS & SORITES
FORAMS PRESENT. SPARRY CALCITE PRESENT BUT NOT AS GRAINS
(AS SEEN PREVIOUSLY).

330 - 331 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-03%, SPAR-10%
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA, BRYOZOA
MUDSTONE WITH SORITES FORAMS. PRESENCE OF SPARRY CALCITE
LARGELY IN FORM OF INDIVIDUAL GRAINS, THOUGH SOME
REPLACEMENT OF FOSSIL GRAINS IS SEEN.

331 - 335 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-25%, QUARTZ SAND-10%
HEAVY MINERALS-01%
ALMOST PURE MUDSTONE GRADE LIMESTONE WITH VARIABLE AMOUNT
OF INDIVIDUAL SPARRY CALCITE GRAINS AND MINOR QUARTZ SAND
CONTENT. MAXIMUM SPARRY CALCITE OBSERVED IS 25%.

335 - 337.3 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-25%, QUARTZ SAND-10%
HEAVY MINERALS-01%
ALMOST PURE MUDSTONE GRADE LIMESTONE WITH VARIABLE AMOUNT
OF INDIVIDUAL SPARRY CALCITE GRAINS AND MINOR QUARTZ SAND
CONTENT. MAXIMUM SPARRY CALCITE OBSERVED IS 25%.

337.3- 338.6 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
25% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-01%
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL MOLDS, FOSSIL FRAGMENTS
WACKESTONE WITH VARIABLE FOSSIL CONTENT. PERCENTAGE ABOVE REFLECTS MAX FOSSIL CONTENT. SORITES AND MILIOLID FORAMS PRESENT. SPARRY CALCITE PRESENT IN VARIABLE QUANTITIES.

338.6- 340.7 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-10%
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL MOLDS, FOSSIL FRAGMENTS
WACKESTONE WITH HIGH FOSSIL CONTENT AT TOP OF SECTION. FOSSIL CONTENT DECREASES WITH DEPTH. PERCENTAGE ABOVE REFLECTS MAX FOSSIL CONTENT. NUMEROUS SORITES & MILIOLIDS FORAMS PRESENT. SPARRY CALCITE PRESENT. QUARTZ CONTENT INCREASES WITH DEPTH.

340.7- 343 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-25%, QUARTZ SAND-20%
FOSSILS: BENTHIC FORAMINIFERA
SANDY MUDSTONE GRADE LIMESTONE WITH SPARRY CALCITE ‘GRAINS’ PRESENT (UP TO 25%). FORAMS PRESENT - MILIOLIDS & SORITES.

343 - 345 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-02%, QUARTZ SAND-15%
FOSSILS: BENTHIC FORAMINIFERA
SANDY MUDSTONE WITH VARIABLE AMOUNT OF SPARRY CALCITE ‘GRAINS’. AT BASE OF SECTION IS A THIN WACKESTONE LAYER WITH MILIOLIDS AND SORITES FORAMS.

345 - 349.6 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

ACCESSORY MINERALS: HEAVY MINERALS-05%, QUARTZ SAND-15%
SANDY MUDSTONE WITH VARIABLE AMOUNT OF SPARRY CALCITE
'GRAINS'. HEAVY MINERAL CONTENT INCREASES.

349.6- 353 PACKSTONE; WHITE TO YELLOWISH GRAY
GRAIN TYPE: SKELETAL, SKELETAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-05%, QUARTZ SAND-02%
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS
FOSSIL MOLDS
MILIOLID DOMINATED PACKSTONE. MINOR SORITES CONTENT.

353 - 356 PACKSTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST, INTRACLASTS
90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, BRYOZOA
FOSSIL FRAGMENTS, FOSSIL MOLDS
FOSSILIFEROUS PACKSTONE. MILIOLIDS AND SORITES FORAMS
PRESENT. HIGH CONTENT OF ROUND LITHOCLASTS (PROBABLY
INTRACLASTS). ALSO, A HIGH NUMBER OF IRREGULAR SHAPED
ECHINOID FRAGMENTS.

356 - 360 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: QUARTZ SAND-00%, SPAR-05%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS
FOSSIL MOLDS
FOSSILIFEROUS PACKSTONE WITH MILIOLIDS. SPARRY CALCITE
PRESENT, MAKES UP 5% OF SECTION. LARGE NUMBER OF MEDIUM
GRAINED LITHOCLASTS (PROBABLY INTRACLASTS).

360 - 362.4 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, SKELETAL, SKELETAL CAST
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-01%
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS
FOSSIL MOLDS

PACKSTONE - MIX OF FOSSILS, INTRACLASTS & MILIOLIDS. MORE MICRITE MUD PRESENT WHEN COMPARED TO PREVIOUS SECTION (~30% MICRITE MUD).

362.4- 365 WACKESTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: INTRACLASTS, SKELETAL
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO COARSE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: QUARTZ SAND-01%
FOSSILS: FOSSIL FRAGMENTS
WACKESTONE WITH MINOR AMOUNT OF MEDIUM GRAINED INTRACLASTS AND FOSSILS. WACKESTONE IS BORDERLINE MUDSTONE.

365 - 366.4 PACKSTONE; WHITE
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
WACKESTONE AT TOP OF SECTION, THEN GRADES INTO PACKSTONE WITH DEPTH. FOSSIL CONTENT & SIZE INCREASES WITH DEPTH - GOES FROM COARSE TO GRAVEL SIZE. MILIOLIDS PRESENT. INDURATION POOR AT TOP AND INCREASES TO MODERATE WITH DEPTH.

366.4- 369 PACKSTONE; WHITE
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: VERY FINE TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-15%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
SPICULES
HIGH AMOUNT OF GASTROPODS & OTHER MOLLUSK SHELLS. A HIGH NUMBER OF GASTROPOD MOLDS ARE ALSO OBSERVED. MICRITE MUD IS VERY WELL CEMENTED. FOSSILS ARE LARGER IN THIS SECTION COMPARED TO PREVIOUS SECTION. HOWEVER THERE ARE NUMEROUS VERY FINE GRAINED SIZE FOSSILS IN THE MATRIX. FOUND PRESERVED MOLD OF SPONGE & SPONGE SPICULES. ACCORDING TO DR. PARKER OF THE FLORIDA STATE UNIVERSITY GEOLOGY DEPARTMENT THE SPONGE IS LIKELY A TYPE OF PSAMMOBIOTIC SPONGE.

369 - 371.3 PACKSTONE; WHITE TO YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL CAST, SKELETAL
75% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: COARSE; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: SPAR-05%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: CORAL, BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL MOLDS
INTRACLASTS PRESENT (1% OF SAMPLE). SOME PELLETS (OR AGGREGATE GRAINS) PRESENT IN MINOR QUANTITY. MILIOLIDS PRESENT. NUMEROUS GRAVEL SIZED MOLDS AND CASTS.

371.3- 375 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL MOLDS, FOSSIL FRAGMENTS
PACKSTONE - OVERALL SIZE OF GRAINS DECREASES. ALMOST NO GRAVEL SIZE GRAINS OR MOLDS/CASTS. MILIOLID PRESENT AS WELL AS SOME CORALLINE ALGAE. LARGE DECREASE IN MOLDIC POROSITY WHEN COMPARED TO PREVIOUS SECTION.

375 - 377.2 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE-01%
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BRYOZOA, BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL MOLDS, FOSSIL FRAGMENTS
HIGH CONTENT OF BRYOZOAN MOLDS AND MILIOLID FORAMS. PACKSTONE WITH VARIABLE FOSSIL CONTENT. RANGES FROM 50 TO 80% FOSSIL CONTENT. CRYSTALLIZED DOLOMITE AT VERY TOP OF SECTION. INCREASE IN FOSSIL CONTENT & MOLDIC POROSITY. FOSSIL CONTENT IS LARGER THAN BEFORE. PREDOMINANTLY VERY COARSE IN SIZE. INCREASE IN GRAVEL SIZE GRAINS WHEN COMPARED TO ABOVE SECTION.

377.2- 377.9 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: NO FOSSILS
MUDSTONE WITH NOTICEABLE COMPLETE LACK OF FOSSILS. TWO ROUGHLY HORIZONTAL LAMINATION SIZE LAYERS OF BLACK ORGANIC MATERIAL PRESENT.

377.9- 380 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC

GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL MOLDS
FOSSIL FRAGMENTS
MILIOLIDS PRESENT. NUMEROUS MEDIUM LIGHT GRAY LITHOCLASTS OR FOSSIL FRAGMENTS ARE PRESENT(~20%). LITHOCLASTS/FOSSIL FRAGMENTS ARE VERY FINE IN SIZE. FOSSIL CONTENT INCREASES SLIGHTLY WITH DEPTH. AT BASE OF SECTION, ROCK IS A BORDERLINE WACKESTONE.

380 - 390 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 09% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA
PREDOMINANTLY A MUDSTONE WITH THIN (~1 TO 2 INCH) BEDS OF WACKESTONE TO LOW ORDER PACKSTONE SCATTERED RANDOMLY THROUGHOUT THE SECTION. THIN WACKESTONE/PACKSTONE BEDS COMPRISE ~15% OF SECTION. MILIOLIDS PRESENT IN ENTIRE SECTION. MOLDIC POROSITY IS LOW (~2 TO 5%).

390 - 392.3 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA
MILIOLIDS PRESENT.

392.3- 395 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

395 - 398 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SLIGHT INCREASE OF FOSSIL CONTENT AT BASE OF SECTION TO 5%.

398 - 400 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: COARSE TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

OTHER FEATURES: GRANULAR
SECTION COMPOSED OF SILT TO VERY FINE SIZE CLASTS/GRAINS OF CALCITE. THE ORIGIN OF THESE GRAINS (MENTIONED BEFORE IN MY DESCRIPTION NOTES) IS DIFFICULT TO DETERMINE. ACCORDING TO DR. PARKER OF THE FSU DEPT. OF GEOLOGY THERE ARE THREE POSSIBILITIES: 1.) THE GRAINS ARE BIOCLASTIC - DERIVED FROM SHELL FRAGMENTS AND OTHER LIME MATERIAL, THE CALCITE HAS BEEN PUMMELED INTO THEIR PRESENT FORM I.E. GRAINS; IN ESSENCE VERY SMALL INTRACLASTS. 2.) THE GRAINS ARE MICROSPAR - AUTHIGENIC PRECIPITATED CALCITE, AKIN TO WHAT WE CALL DOLOSILT. THE TERM MICROSPAR IS BORROWED FROM FOLK. 3.) DETRITAL PRECIPITATES - THE CALCITE PRECIPITATED, THEN WAS DEPOSITED ELSEWHERE, WEATHERING THE CRYSTALS INTO THE GRAINS WE SEE IN THE CORE. GIVEN THE UNKNOWN ORIGIN AND PROPER CLASSIFICATION FOR SUCH GRAINS I WILL TREAT SUCH GRAINS AS NON-ALLOCHEMS OR LIME “MUD”. THEREFORE IF A ROCK HAS ONLY THESE CALCITE GRAINS, & NO OTHER ALLOCHEMS, THE LIMESTONE WILL TEXTURALLY BE DEFINED AS A MUDSTONE. IF A ROCK HAS >10% ALLOCHEM CONTENT, YET ALSO HAS THESE CALCITE GRAINS, THE LIMESTONE WILL TEXTURALLY BE DEFINED AS A WACKESTONE. THE PRESENCE OF THESE CALCITE GRAINS WILL BE NOTATED IN THE DESCRIPTION AS A “GRANULAR” TEXTURE. BASED ON THIS CONVENTION, THIS SECTION IS CLASSIFIED AS A GRANULAR, MUDSTONE TEXTURE LIMESTONE.

400 - 402.2 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
MUDSTONE WITH GRANULAR CALCITE CRYSTALS/GRAINS. MILIOLIDS ARE THE DOMINANT ALLOCHEM.

402.2- 405 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: VERY FINE TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: PYRITE-02%
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
MILIOLIDS PRESENT IN MINOR QUANTITIES. FOSSIL CONTENT INCREASES UP TO 05% AT BASE OF SECTION. PRESENCE OF THIN LAYER OF HIGHLY WEATHERED, DUSKY YELLOWISH BROWN TO LIGHT BROWN (RUST COLOR) PYRITE.

405 - 408 MUDSTONE; YELLOWISH GRAY TO WHITE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: FINE TO GRAVEL; POOR INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
ALLOCHEMS PREDOMINANTLY COMPOSED OF LEPIDOCYCLINA SP. FORAMS. TEND TO BE 0.25 INCH TO 1 INCH IN SIZE (GRAVEL SIZE). MINOR CONTENT OF MILIOLIDS. LEPIDOCYCLINA SP. LOOK VERY MUCH LIKE L. OCALANA, INDEX FOSSILS FOR THE OCALA LIMESTONE FORMATION. HOWEVER, CORE MATRIX DOES NOT APPEAR TO BE OCALA (FOSSIL CONTENT IS TOO LOW).

408 - 410 MUDSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ALMOST 100% PURE MICRITE MUDSTONE. VERY LOW FOSSIL CONTENT.

410 - 415 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
MICRITE MUDSTONE.

415 - 415.9 MUDSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
COLOR IS DARKER COMPARED TO SECTIONS ABOVE IT & BELOW IT. FOR THIS REASON ONLY DO I MAKE A SECTION BREAK HERE. COLOR CHANGE IS ABRUPT.

415.9- 418 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS
COLOR ABRUPTLY CHANGES AT TOP OF SECTION. FOSSIL CONTENT GRADUALLY INCREASES WITH DEPTH TO A MAXIMUM OF 05%.

418 - SAND; ORANGISH RED TO NO COLOR GIVEN
ON% POROSITY, ,
GRAIN SIZE: COARSE; RANGE: MICROCRYSTALLINE TO MEDIUM
ROUNDNESS:SUB-ANGULAR; UNCONSOLIDATED
CEMENT TYPE(S): , ANHYDRITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: , INTERBEDDED, BIOTURBATED,
ACCESSORY MINERALS: PYRITE-TH%, -%

FOSSIL CONTENT PRIMARILY LEPIDOCYCLINA SP. - UNABLE TO
DETERMINE SPECIES. EXCELLENT CROSS-SECTION VIEWS OF
LEPIDOCYCLINA SP. GASTROPOD & MOLLUSKS MOLDS & CASTS APPEAR
MID SECTION. GASTROPOD CONTENT INCREASES WITH DEPTH.
OVERALL, POROSITY IS 15%. MOLDIC POROSITY HOWEVER INCREASES
WITH DEPTH.

- 420 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL MOLDS
FOSSIL FRAGMENTS
LOW ORDER WACKESTONE. LEPIDOCYCLINA SP. PRESENT. FOSSIL
CONTENT INCREASES VERY SLIGHTLY WITH DEPTH.

420 - 421.8 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL MOLDS
FOSSIL FRAGMENTS
MINOR MILIOLIDS PRESENT. LEPIDOCYCLINA SP. ALSO PRESENT.
POOR TO MODERATE INDURATION.

421.8- 425 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA
MILIOLIDS PRESENT. MICRITE RICH MUDSTONE. POOR TO MODERATE
INDURATION.

425 - 428 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
DECREASE IN POROSITY & FOSSIL/ALLOCHEM CONTENT. POOR TO
MODERATE INDURATION.

428 - 430 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST

03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA
GASTROPODS, MILIOLIDS (MEDIUM GRAIN SIZE) & LEPIDOCYCLINA SP. (GRAVEL SIZE) PRESENT. LEPIDOCYCLINA SP. LOOKS LIKE OCALANA.

430 - 434.4 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
FOSSIL MOLDS
ALLOCHEMS DOMINANTLY LEPIDOCYCLINA SP. MINOR GASTROPOD AND OTHER MOLLUSK CONTENT PRESENT. GASTROPODS TEND TO BE IN THE FORM OF CASTS.

434.4- 435 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSIL CONTENT DECREASES TO 01%. DECREASE IN MOLDIC POROSITY.

435 - 437.5 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, FOSSIL FRAGMENTS
FOSSIL MOLDS
GASTROPOD CASTS AND MOLDS, BIVALVE FRAGMENTS, & LEPIDOCYCLINA SP. FORAMS PRESENT. SLIGHT INCREASE IN MOLDIC POROSITY.

437.5- 440 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
DOMINATED BY LEPIDOCYCLINA SP. FORAMS. OTHER FOSSIL

FRAGMENTS AND MOLDS PRESENT.

440 - 445 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA, MOLLUSKS
OVERALL A MUDSTONE WITH ALLOCHEMS CONTENT RANGING BETWEEN
01 TO 05%. VARIABLE MUD CONTENT. THIN (1 INCH) ZONES OF
WACKESTONE SCATTERED THROUGH SECTION. WACKESTONE ZONES
COMPRISED OF GRAVEL SIZED LEPIDOCYCLINA SP. & BIVALVE
FRAGMENTS.

445 - SILT; NO COLOR GIVEN TO NO COLOR GIVEN
D % POROSITY: , , ; GOOD INDURATION
CEMENT TYPE(S): CHALCEDONY CEMENT,
SEDIMENTARY STRUCTURES: INTERBEDDED, NODULAR, BRECCIATED,
,
ACCESSORY MINERALS: ANHYDRITE-SE%, QUARTZ SAND-TR%
OTHER FEATURES: CRYSTALLINE, PARTINGS, CRYSTALLINE
DOLOMITIC

- MOLDS & CASTS.

- 449.5 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
ALLOCHEMS PRIMARILY GASTROPOD CASTS & BROKEN BIVALVE
FRAGMENTS (COARSE IN SIZE). LESS THAN 1% MILIOLIDS (MEDIUM
GRAINED). VERY POOR INDURATION AS DEPTH INCREASES.

449.5- 450.6 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS
ALMOST PURE MUDSTONE. VERY POORLY INDURATED.

450.6- 452 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO GRAVEL

MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA, MOLLUSKS
GRADUAL INCREASE IN ALLOCHEM CONTENT WITH DEPTH, FROM 1% TO 7% AT BASE. VERY FINE SIZED ROTALID LIKE FORAMS. MINOR MILIOLIDS.

452 - 453.7 WACKESTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA, MOLLUSKS
FOSSIL CONTENT PREDOMINANTLY LEPIDOCYCLINA SP. FORAMS & BIVALVES (GRAVEL IN SIZE). MINOR MILIOLID CONTENT (1%). MUD CONTENT VARIES BETWEEN 10% TO 15%.

453.7- 459 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
MUDSTONE WITH VARIABLE FOSSIL CONTENT. ON AVERAGE 5% FOSSIL CONTENT, BUT WITH A MAXIMUM OF 10%. FOSSILS PRIMARILY GRAVEL SIZE BIVALVE FRAGMENTS. MINOR LEPIDOCYCLINA SP. CONTENT.

459 - 461.1 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
MUDSTONE WITH VARIABLE FOSSIL CONTENT. AVERAGE OF 3% FOSSIL CONTENT WITH MAXIMUM OF 7%. FOSSILS PRIMARILY GRAVEL SIZE BIVALVE FRAGMENTS. MINOR LEPIDOCYCLINA SP. CONTENT.

461.1- 461.9 WACKESTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
SECTION OF WACKESTONE COMPRISED MAINLY OF BIVALVE FRAGMENTS. MINOR LEPIDOCYCLINA SP. FORAM CONTENT.

461.9- 465 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
MUDSTONE WITH VARIABLE MICRITE CONTENT. AVERAGE FOSSIL CONTENT OF 3%, WITH MAXIMUM OF 5%. TOWARD BASE, THERE IS A 2 INCH SEGMENT OF 20% FOSSIL CONTENT WACKESTONE. SECTION TRANSITIONS BACK TO MUDSTONE AT BASE. FOSSILS PRIMARILY LEPIDOCYCLINA SP. & BIVALVES, TYPICALLY GRAVEL IN SIZE. POOR TO MODERATE INDURATION.

465 - 467.5 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
ALLOCHEMS PREDOMINANTLY BIVALVES AND LEPIDOCYCLINA SP. LESS THAN 1% MILIOLID CONTENT. FOSSIL CONTENT VARIES. AVERAGE FOSSIL CONTENT IS 5%, MINIMUM IS 3%, MAXIMUM IS 5%.

467.5- 470 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
FOSSIL CONTENT HIGHLY VARIABLE. RANGE OF 3% TO 9%. AVERAGE IS 5%. ALLOCHEMS MAINLY LEPIDOCYCLINA SP. & BIVALVES. APPEARANCE OF DISTINCT FORAM: NUMMULITES OCALANUS. MILIOLIDS (MEDIUM TO COARSE IN SIZE) & SMALL ROTALIDS (FINE IN SIZE) ARE ALSO PRESENT. PRESENCE OF BOTH
<------------------BEGINNING OF OCALA??? ASK CLINT
NUMMULITES AND LEPIDOCYCLINA SUGGESTS THAT THIS SECTION IS PART OF THE OCALA FORMATION. HOWEVER, THE OCALA TENDS TO BE MORE FOSSILIFEROUS, TENDING TOWARD PACKSTONE TEXTURES. THIS SECTION AND THOSE DESCRIBED ABOVE HAVE BEEN PRIMARILY MUDSTONES TO WACKESTONES.

470 - 472.9 MUDSTONE; WHITE TO YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
MILIOLIDS (~1%) & LEPIDOCYCLINA SP. PRESENT. NO NUMMULITES.

472.9- 475 WACKESTONE; WHITE TO YELLOWISH GRAY

15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
INCREASE IN MOLDIC POROSITY. MOLDIC POROSITY IS VERY FINE TO FINE IN SIZE. HIGH CONTENT OF LEPIDOCYCLINA SP. FRAGMENTS. MINOR CONTENT OF MILIOLIDS AND BIVALVE FRAGMENTS.

475 - 477 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
INCREASE IN MILIOLID CONTENT. LEPIDOCYCLINA STILL PRIMARY ALLOCHEM TYPE. DARK GRAY TO BLUE GRAY MANGANESE OXIDE FRAGMENTS (~20 TO 25%).

477 - 480 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, BRYOZOA, FOSSIL FRAGMENTS FOSSIL MOLDS, MOLLUSKS
LEPIDOCYCLINA SP. PRIMARY TYPE OF ALLOCHEM. BIVALVE FRAGMENTS. MINOR CONTENT OF GASTROPOD MOLDS (<1%). ~20% OF SECTION COMPOSED OF DARK GRAY/BLUE GRAY MANGANESE OXIDE FRAGMENTS (MEDIUM GRAIN SIZE).

480 - 483.1 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS FOSSIL MOLDS
MINOR MILIOLID CONTENT (~2%). LEPIDOCYCLINA SP. PRESENT.

483.1- 483.9 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
ALLOCHEMS DOMINATED BY COARSE SIZED SHELL FRAGMENTS OF

LEPIDOCYCLINA OCALANA & BIVALVES. ABRUPT CHANGE IN FOSSIL
CONTENT AT BASE OF SECTION.

483.9- 484.8 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
ABRUPT DECREASE OF ALLOCHEM CONTENT WHEN COMPARED TO ABOVE
SECTION. DOMINANT ALLOCHEMS ARE NOW ONLY LEPIDOCYCLINA
OCALANA (LARGE REDUCTION IN BIVALVE CONTENT) . 1% MILIOLID
CONTENT.

484.8- 486.2 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DOMINANT ALLOCHEM ARE LEPIDOCYCLINA OCALANA.

486.2- 487.2 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
ALLOCHEM CONTENT INCREASES WITH DEPTH FROM ~15% AT TOP OF
SECTION TO >50% AT BASE OF SECTION. AT BASE, SECTION GRADES
INTO PACKSTONE. DOMINANT ALLOCHEMS IN SECTION ARE
LEPIDOCYCLINA OCALANA & BIVALVES. BOTH ARE USUALLY SEEN AS
LARGE GRAVEL SIZE FRAGMENTS.

487.2- 490 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA PRIMARY ALLOCHEM. AT TOP OF SECTION
ALLOCHEM CONTENT IS 40% BUT QUICKLY GRADES TO 15%

490 - 495 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS

PRIMARY ALLOCHEM IS LEPIDOCYCLINA OCALANA. VERY LITTLE TO NO CONTENT OF OTHER FOSSIL TYPES. SECTION COULD BE DESCRIBED AS A FOSSILIFEROUS LEPIDOCYCLINA OCALANA WACKESTONE.

<------------DEFINITELY IN OCALA NOW

495 - 500 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
PRIMARY ALLOCHEM IS LEPIDOCYCLINA OCALANA. AT VERY BASE SECTION BECOMES A PACKSTONE. SOME NUMMULITES PRESENT.

500 - 504.3 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DOMINANT ALLOCHEM IS LEPIDOCYCLINA OCALANA. SECONDARY ALLOCHEM (~5%) IS NUMMULITES SP. MILIOLIDS PRESENT IN MINOR QUANTITY (~1%).

504.3- 504.9 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DOMINANT ALLOCHEM IS LEPIDOCYCLINA OCALANA. SECONDARY ALLOCHEM (~5%) IS NUMMULITES SP. MILIOLIDS PRESENT IN MINOR QUANTITY (~1%).

504.9- 509.6 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR, FOSSILIFEROUS
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ALLOCHEM CONTENT VARIES BETWEEN 30 TO 45%, BUT AVERAGE IS 40%.ALLOCHEMS ARE LEPIDOCYCLINA OCALANA & NUMMULITES VANDERSTOKI.

509.6- 514.2 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR

GRAIN TYPE: SKELETAL; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ALLOCHEMS PRIMARILY ARE LEPIDOCYCLINA OCALANA & NUMMULITES VANDERSTOKI.

514.2- 515.4 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ALLOCHEMS PRIMARILY ARE LEPIDOCYCLINA OCALANA & NUMMULITES VANDERSTOKI. SECTION DARKER IN COLOR WHEN COMPARED TO SECTIONS ABOVE AND BELOW. MANGANESE OXIDE STAINING (~1%).

515.4- 518.1 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
SECTION LIGHTENS IN COLOR SLIGHTLY. MINOR MANGANESE OXIDE STAINING. ALLOCHEMS PRIMARILY ARE LEPIDOCYCLINA OCALANA NUMMULITES VANDERSTOKI.

518.1- 520 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
MINOR MANGANESE OXIDE STAINING. DOMINANT ALLOCHEM IS LEPIDOCYCLINA OCALANA. THICK BROWN LAMINATIONS WITH ABUNDANT COARSE TO MEDIUM FOSSILS & INTRACLASTS.

520 - 521.9 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
PRIMARY ALLOCHEM IS LEPIDOCYCLINA OCALANA. MINOR NUMMULITES CONTENT.

521.9- 525 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
PRIMARY ALLOCHEMS ARE LEPIDOCYCLINA OCALANA. MINOR NUMMULITES CONTENT. ALLOCHEM CONTENT INCREASES WITH DEPTH TO 30%.

525 - 529.5 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
PRIMARY ALLOCHEMS ARE LEPIDOCYCLINA OCALANA. MINOR NUMMULITES CONTENT. VARIABLE FOSSIL CONTENT BETWEEN 20 30%.

529.5- 533.9 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DOMINANT ALLOCHEMS ARE LEPIDOCYCLINA OCALANA. MINOR NUMMULITES CONTENT.

533.9- 535 PACKSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, CRYSTALS
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA DOMINANT FOSSIL. NUMMULITES AND SOME MILIOLIDS PRESENT. AT THE TOP OF THE SECTION THERE WAS SPARRY CALCITE RECRYSTALLIZATION IN THE FORM OF ROUND, FINE SIZE CRYSTAL GROWTHS.

535 - 539.6 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA DOMINANT FOSSIL. ALLOCHEM CONTENT VARIES. MAXIMUM IS 70%. ALLOCHEM CONTENT RANGES BETWEEN 50 TO 70%.

539.6- 540.9 PACKSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
LEPIDOCYCLINA OCALANA DOMINANT FOSSIL. MINOR NUMMULITES
CONTENT. MINOR ECHINOID FRAGMENTS.

540.9- 545 PACKSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
OVERALL SECTION IS A PACKSTONE, HOWEVER IN MANY SEGMENTS
CORE IS BORDERLINE WACKESTONE. LEPIDOCYCLINA OCALANA IS
DOMINANT FOSSIL.

545 - 547 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA PRESENT.

547 - 549 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA PRESENT.

549 - 550 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, MOLLUSKS
FOSSIL CONTENT RANGES FROM 20% TO A MAXIMUM OF 50%. FOSSIL
CONTENT INCREASES WITH DEPTH. MAXIMUM FOSSIL CONTENT OCCURS
AT VERY BASE OF SECTION. LEPIDOCYCLINA OCALANA DOMINANT
FOSSIL. MINOR MOLLUSK FRAGMENTS PRESENT.

550 - 552.4 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA PRESENT AS DOMINANT ALLOCHEM. AT TOP

OF SECTION IS A 2 INCH THICK LEPIDOCYCLINA OCALANA PACKSTONE
BED.

552.4- 555 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA DOMINANT ALLOCHEM.

555 - 557.5 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
LEPIDOCYCLINA OCALANA DOMINANT ALLOCHEM. RECRYSTALLIZATION
APPEARS IN FORM OF SMALL (MEDIUM GRAIN SIZE) CIRCULAR
SHAPED SPARRY CALCITE GROWTHS.

557.5- 560 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
HIGH CONTENT OF LEPIDOCYCLINA OCALANA AND NUMMULITES
VANDERSTOKI.

560 - 561.8 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
HIGH CONTENT OF LEPIDOCYCLINA OCALANA AND NUMMULITES
VANDERSTOKI. TRACE MILIOLIDS.

561.8- 563.8 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
NUMMULITES VANDERSTOKI IS THE DOMINANT FOSSIL TYPE. MINOR
LEPIDOCYCLINA OCALANA CONTENT.

563.8- 565.5 WACKESTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR

GRAIN TYPE: SKELETAL; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
NUMMULITES VANDERSTOKI IS THE DOMINANT FOSSIL TYPE. MINOR LEPIDOCYCLINA OCALANA CONTENT.

565.5- 567.5 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 09% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
NUMMULITES VANDERSTOKI AND LEPIDOCYCLINA OCALANA BOTH PRESENT.

567.5- 570 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
NUMMULITES VANDERSTOKI AND LEPIDOCYCLINA OCALANA BOTH PRESENT. FOSSIL CONTENT DECREASES WITH DEPTH TO 1%.

570 - 570.7 MUDSTONE; WHITE TO YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS

570.7- 575 MUDSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
APPEARANCE OF MOLDIC POROSITY. MOLDS TEND TO BE OF GASTROPODS AND OTHER MOLLUSCS. APPEARANCE OF LARGE GRAVEL SIZED SHELLS. DISAPPEARANCE OF FORAMS.

575 - 577 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
REAPPEARANCE OF NUMMULITES VANDERSTOKI. DISAPPEARANCE OF

MOLDS. MATRIX COMPOSED OF “CALCITE GRAINS”.

577 - 580 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
ECHINOID FOSSILS PRIMARY ALLOCHEM. GRAVEL SIZE SHELL FRAGMENTS. UNABLE TO IDENTIFY ECHINOID TYPE. MINOR CONTENT OF NUMMULITES SP.

580 - 582.2 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
ECHINOID FOSSILS PRIMARY ALLOCHEM. GRAVEL SIZE SHELL FRAGMENTS. UNABLE TO IDENTIFY ECHINOID TYPE. MINOR CONTENT OF NUMMULITES SP.

582.2- 585 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID
ECHINOID FOSSILS PRIMARY ALLOCHEM. GRAVEL SIZE SHELL FRAGMENTS. UNABLE TO IDENTIFY ECHINOID TYPE. MINOR CONTENT OF NUMMULITES SP. ALMOST PURE MUDSTONE.

585 - 586.5 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: BENTHIC FORAMINIFERA
NUMMULITES SP. PRESENT. POSSIBLE ECHINOIDS. UNABLE TO ID. ALMOST PURE MUDSTONE, WITH MATRIX OF “CALCITE GRAINS

586.5- 590 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
ECHINOID FRAGMENTS. MATRIX COMPOSED OF CALCITE GRAINS. ALMOST PURE MUDSTONE.

590 - 593 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
ECHINOID FRAGMENTS. MATRIX COMPOSED OF CALCITE GRAINS.
ALMOST PURE MUDSTONE.

593 - 595 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
ECHINOID FRAGMENTS. MATRIX COMPOSED OF CALCITE GRAINS.
ALMOST PURE MUDSTONE.

595 - 596.5 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
MATRIX COMPOSED OF CALCITE GRAINS. ONLY 27% RECOVERY. 73%
OF CORE IS MISSING.

596.5- 600 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
MATRIX COMPOSED OF “CALCITE GRAINS”.

600 - 602.7 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR
FOSSILS: FOSSIL FRAGMENTS
MATRIX COMPOSED OF “CALCITE GRAINS”. TRACE AMOUNTS OF
ORGANIC FRAGMENTS BEGIN TO APPEAR.

602.7- 605 MUDSTONE; YELLOWISH GRAY TO GRAYISH BROWN

20% POROSITY: INTERGRANULAR
GRAIN TYPE: ; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: ORGANICS-02%
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
YELLOWISH GRAY MUDSTONE WITH SEGMENTS OF PALE YELLOWISH BROWN MUDSTONE. PALE YELLOWISH BROWN MUDSTONE HAS MOTTLING
<-------------------------BEGIN AVON PARK FM!!!!!! AND
SOME BURROWS WITH YELLOWISH GRAY LIMESTONE INFILL. 30% OF SECTION IS MOTTLED. BLACK ORGANIC FRAGMENTS PRESENT IN MATRIX.

605 - 606.5 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-03%
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
DISAPPEARANCE OF MOTTLING. MINOR AMOUNT OF DISTINCT BURROWS. SLIGHT INCREASE IN ORGANIC FRAGMENTS (VERY FINE IN SIZE).

606.5- 610 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-03%
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
VERY FINE SIZE ORGANIC FLECKS.

610 - 611.7 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-03%
FOSSILS: FOSSIL FRAGMENTS, ORGANICS
VERY FINE SIZE ORGANIC FLECKS. MOLDIC POROSITY COMPRISES ABOUT 5% OF ENTIRE SECTION. MOLDIC POROSITY TYPICALLY FINE GRAIN IN SIZE.

611.7- 615 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-01%

OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, ORGANICS
BENTHIC FORAMINIFERA
SKELETAL GRAINS ARE PRIMARILY FORAMS. APPEARANCE OF NEOLAGANUM DALLI ECHINOIDS. MANY OF THE ECHINOIDS ARE RECRYSTALLIZED. ECHINOID CONTENT INCREASE WITH DEPTH (MAX 5%). AT TOP OF SECTION IS A SEGMENT OF LIME MUD BOUNDED BY A PERIMETER OF BLUE-GRAY OXIDE STAIN. POSSIBLY REPRESENTS A VOID THAT WAS INFILLED BY THE LIME MUD. CALCITE IS MODERATELY RECRYSTALLIZED.

615 - 617.2 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, BENTHIC FORAMINIFERA
DISAPPEARANCE OF ORGANICS. MODERATELY RECRYSTALLIZED CALCITE. MAJORITY OF SKELETAL GRAINS ARE FORAMS. RECRYSTALLIZED NEOLAGANUM DALLI ECHINOIDS PRESENT.

617.2- 620 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, BENTHIC FORAMINIFERA
SKELETAL GRAINS ARE PRIMARILY FORAMS, USUALLY MILIOLIDS. RECRYSTALLIZED ECHINOIDS PRESENT. COMPOSE 5% OF SKELETAL GRAINS.

620 - 625 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, BENTHIC FORAMINIFERA
PRIMARY SKELETAL GRAINS ARE FORAMS. MILIOLIDS PRESENT. RECRYSTALLIZED ECHINOIDS MAKE UP 5% OF GRAINS. TRACE AMOUNTS OF TINY (VERY FINE) BLACK CRYSTALS. POSSIBLY PRECIPITATED IRON SULFIDE.

625 - 630 33 40IY MMCARL U
S25E70H01 X NUMMULITES VANDERSTOKI PRESENT.
SECTION IS A CALCITE LITHOCLAST SAND (70%) WITH 25% CLEAR QUARTZ SAND, 1% HEAVY MINERAL SAND, AND 4% “OTHER” UNIDENTIFIABLE LITHOCLASTIC SAND. CALCITE LITHOCLASTS TEND TO BE ANGULAR TO SUBANGULAR, THOUGH SOME SUBROUNDED GRAINS WERE OBSERVED. QUARTZ AND HEAVY MINERAL GRAINS TEND TO BE SUBROUNDED TO ROUNDED. SIZE MODE IS MEDIUM GRAIN, WITH A RANGE OF MEDIUM TO COARSE. SECTION IS UNCONSOLIDATED.

630 - 633.6 WACKESTONE; YELLOWISH GRAY TO WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
AT VERY TOP OF SECTION IS A THIN (~1 TO 2 INCH) LAYER OF HIGHLY RECRYSTALLIZED, WELL INDURATED, DOLOMITE. IMMEDIATELY BELOW DOLOMITE IS A THIN LAYER (2 TO 3 INCHES) OF WACKESTONE WITH 40% ALLOCHEM CONTENT. ALLOCHEM CONTENT SUBSEQUENTLY DECREASES TO 10% WITH DEPTH. ECHINOID FRAGMENTS PRESENT.

633.6- 634.7 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
POSSIBLE FORAMS PRESENT. UNABLE TO BE CERTAIN DUE TO POOR PRESERVATION.

634.7- 637.1 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
POSSIBLE FORAMS PRESENT. UNABLE TO BE CERTAIN DUE TO POOR PRESERVATION. MINOR (1%) ECHINOID FRAGMENT CONTENT.

637.1- 638.7 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: VERY COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
MOLLUSKS, ALGAE
MILIOLIDS, GASTROPOD CASTS, AND CORALLINE ALGAE. LARGE AMOUNT OF FOSSIL FRAGMENTS. AT BASE OF SECTION IS A THIN (1 INCH) BED OF PACKSTONE. PACKSTONE COMPOSED OF FOSSIL FRAGMENTS. FRAGMENTS ARE ALL GRAVEL IN SIZE.

638.7- 640 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
POSSIBLE FORAMS PRESENT. UNABLE TO BE CERTAIN DUE TO POOR PRESERVATION.

640 - 640.8 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST, INTRACLASTS
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ALGAE
MOLLUSKS
CORALLINE ALGAE, GASTROPOD SHELLS & CLASTS, & MILIOLID
FORAMS PRESENT. DOMINANT GRAIN TYPE ARE UNIDENTIFIABLE
FOSSIL FRAGMENTS.

640.8- 644.9 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, INTRACLASTS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
ABUNDANT MILIOLID & ROTALID FORAMS. FORAMS ARE OFTEN
RECRYSTALLIZED. MATRIX HAS ALSO BEEN RECRYSTALLIZED IN
CERTAIN AREAS.

644.9- 645.3 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
MILIOLID AND ROTALID FORAMS PRESENT BUT LESS THAN SEEN IN
SECTION ABOVE. FORAMS HAVE BEEN RECRYSTALLIZED. ECHINOIDS
AND ECHINOID FRAGMENTS PRESENT.

645.3- 646.7 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
ALLOCHEMS ARE MEDIUM GRAIN SIZE, PRIMARILY MILIOLID &
ROTALID FORAMS. LESS THAN 1% ARE GRAVEL SIZE ECHINOID
FRAGMENTS.

646.7- 647.9 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: ECHINOID, MOLLUSKS, FOSSIL FRAGMENTS, ALGAE
PACKSTONE WITH VERY COARSE SIZE FOSSIL FRAGMENTS. OFTEN

RECRYSTALLIZED. GASTROPOD, ECHINOID, AND CORALLINE ALGAE PRESENT.

647.9- 650 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA
ALLOCHEM CONTENT VARIES. ALLOCHEM CONTENT INCREASE FROM 15% AT TOP TO 50% AT BOTTOM. ALLOCHEMS ARE PRIMARILY FORAMS. SOME RECRYSTALLIZED ECHINOIDS ALSO PRESENT. MATRIX BECOMES RECRYSTALLIZED WITH DEPTH.

650 - 655 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, MOLLUSKS, ALGAE, ECHINOID FOSSIL FRAGMENTS
FORAM GRAINSTONE. ALLOCHEMS ARE MEDIUM TO COARSE SIZE MILIOLID & ROTALID FORAMS. MINOR AMOUNTS OF GASTROPODS CORALLINE ALGAE, AND ECHINOIDS.

655 - 660 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
FORAM & FOSSIL FRAGMENT GRAINSTONE. ALLOCHEMS ARE MEDIUM TO COARSE SIZE MILIOLID & ROTALID FORAMS. MINOR AMOUNT OF RECRYSTALLIZED ECHINOIDS.

660 - 665 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
FORAM & FOSSIL FRAGMENT GRAINSTONE. ALLOCHEMS ARE MEDIUM TO COARSE SIZE MILIOLID & ROTALID FORAMS. MINOR AMOUNT OF RECRYSTALLIZED ECHINOIDS. ECHINOIDS POSSIBLY NEOLAGANUM DALLI. TRACE AMOUNTS (<1%) OF DICTYOCONUS AMERICANUS FOUND AT APPROXIMATELY 662 FEET. ONLY 2 FEET OF RECOVERED CORE.

665 - 666.7 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
FORAM AND FOSSIL FRAGMENT GRAINSTONE. ALLOCHEMS ARE MILIOLID AND ROTALID FORAMS. MINOR AMOUNTS OF ECHINOIDS & GASTROPODS. MICRITE CONTENT INCREASES WITH DEPTH. AT BASE OF SECTION, CORE IS A BORDERLINE PACKSTONE.

666.7- 669.4 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
FORAM & FOSSIL FRAGMENT PACKSTONE (MEDIUM GRAIN SIZE) WITH 2% CONTENT OF GRAVEL SIZE ECHINOID FRAGMENTS. INDURATION INCREASES WITH DEPTH. MOLDIC POROSITY ONLY ACCOUNTS FOR 1% OF POROSITY.

669.4- 671.1 GRAINSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
FORAM AND FOSSIL FRAGMENT GRAINSTONE (COARSE GRAIN SIZE). 1% OF CORE IS COMPRISED OF RECRYSTALLIZED ECHINOID FRAGMENTS. TOP OF SECTION HAS LARGE BURROW INFILLED WITH MEDIUM GRAIN SIZE MATERIAL FROM OVERLYING SECTION.

671.1- 672.4 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
FORAM & FOSSIL FRAGMENT PACKSTONE (MEDIUM GRAIN SIZE) WITH 2% CONTENT OF GRAVEL SIZE ECHINOID FRAGMENTS. INDURATION AND RECRYSTALLIZATION INCREASE WITH DEPTH.

672.4- 673.4 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 09% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS

673.4- 675 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL

GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
PACKSTONE WITH REVERSE GRADING WITH RESPECT TO ALLOCHEM CONTENT. ALLOCHEM CONTENT AT TOP OF SECTION IS 80%, BUT THEN GRADES DOWN TO 50% AT BASE OF SECTION. ALLOCHEMS ARE FORAMS AND FOSSIL FRAGMENTS.

675 - 676.6 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
WACKESTONE WITH VARIABLE ALLOCHEM CONTENT (VARIES BETWEEN 20 TO 40 %) WITH 30% AVERAGE. ALLOCHEMS PRIMARILY MILIOLID AND ROTALID FORAMS. 3% OF CORE IS COMPOSED OF GRAVEL SIZE ECHINOID FRAGMENTS. SOME ECHINOID FRAGMENTS PRESENT.

676.6- 678.7 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
FORAM AND FOSSIL FRAGMENT PACKSTONE. 2% ECHINOID CONTENT.

678.7- 679.8 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
ROTALID & MILIOLID FORAM GRAINSTONE. 2% OF CORE COMPOSED OF ECHINOIDS.

679.8- 682.3 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
HIGH RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
NOTE: WHILE I CALL THIS SECTION A WACKESTONE, IN TRUTH IT IS A COMPLEX SECTION OF INTERBEDDED MUDSTONE, WACKESTONE, & PACKSTONE BEDS, WITH MEDIUM TO HIGH RECRYSTALLIZATION.

682.3- 683.8 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
MILIOLID & ROTALID FORAM PACKSTONE. SHARP LOWER CONTACT AT BASE OF SECTION. CONTACT IS THIN (<1MM) AND COMPOSED OF EITHER DARK ORGANIC MATTER, OR IRON OXIDE. BELOW CONTACT IS MUDSTONE (DESCRIBED IN ENTRY BELOW).

683.8- 684.5 MUDSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
MUDSTONE WITH MINOR INTERBEDDING OF WACKESTONE.

684.5- 685.8 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, ECHINOID, FOSSIL FRAGMENTS
ALLOCHEM CONTENT VARIABLE. SOME SEGMENTS IN SECTION COULD BE CONSIDERED BORDERLINE WACKESTONE.

685.8- 687.8 GRAINSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
FORAM GRAINSTONE. PRIMARILY ROTALIDS & MILIOLIDS.

687.8- 687.9 MUDSTONE; YELLOWISH GRAY
10% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SHARP TOP AND BOTTOM CONTACTS.

687.9- 689.3 GRAINSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID

FORAM AND FOSSIL FRAGMENT GRAINSTONE. TRACE FRAGMENTS OF
GRAVEL SIZE ECHINOIDS.

689.3- 691.5 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
ALLOCHEM CONTENT VARIES BETWEEN 20-40% WITH AVERAGE OF 30%.
ALLOCHEMS ARE FORAMS AND FOSSIL FRAGMENTS.

691.5- 692.4 WACKESTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL, SKELETAL CAST
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: MOLLUSKS, BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
FOSSIL MOLDS
SUDDEN APPEARANCE OF MOLDS & CASTS OF MOLLUSKS.

692.4- 694.1 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
DIFFICULT TO DETERMINE EXACT % OF ALLOCHEMS DUE TO
RECRYSTALLIZATION. MY ESTIMATE IS 50% ALLOCHEM CONTENT.
THIS SECTION IS INTERBEDDED WITH GRAINSTONE BEDS. GRAIN
SIZE IN GRAINSTONE BEDS ARE MEDIUM. FORAMS ARE STILL
PRIMARY ALLOCHEM TYPE. WHITE ROUNDED INTRACLASTS PRESENT.

694.1- 694.6 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
MEDIUM GRAIN PACKSTONE WITH A SHARP LOWER CONTACT. BELOW
CONTACT IS A COARSE GRAINSTONE. SEE NEXT DESCRIPTION BELOW.

694.6- 696 GRAINSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION

FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS, ECHINOID
SHARP UPPER CONTACT WITH OVERLYING PACKSTONE (SEE PREVIOUS DESCRIPTION). SOME ECHINOID FRAGMENTS AS WELL AS INTRACLASTS (GRAVEL SIZE). PRIMARY ALLOCHEMS ARE MEDIUM SIZE FORAMS. SHARP LOWER CONTACT WITH MUDSTONE/WACKESTONE. SEE DESCRIPTION BELOW.

696 - 696.4 LIMESTONE; WHITE
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
GRADED SECTION. SHARP TOP CONTACT WITH OVERLYING GRAINSTONE (SEE PREVIOUS DESCRIPTION). TOP OF SECTION IS A MOLDIC MUDSTONE WITH 5% ALLOCHEMS. SECTION THEN TRANSITIONS INTO A BED OF WACKESTONE, THEN PACKSTONE. PACKSTONE BED HAS SHARP LOWER CONTACT WITH A WHITE MUDSTONE. SEE DESCRIPTION BELOW.

696.4- 697.3 MUDSTONE; WHITE
12% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ALMOST PURE MICRITIC MUDSTONE. PORTIONS OF SECTION HAVE BEEN MODERATELY RECRYSTALLIZED, CAUSING HIGHER INDURATION. BASE OF SECTION IS A WACKESTONE BED.

697.3- 698.7 WACKESTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: SKELETAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
ALLOCHEM CONTENT IS VARIABLE. VARIES BETWEEN 10 TO 50%. IT IS OFTEN DIFFICULT TO DETERMINE ALLOCHEM CONTENT AND % BECAUSE OF MEDIUM TO HIGH RECRYSTALLIZATION OF THE CORE.

698.7- 701 MUDSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: BENTHIC FORAMINIFERA, FOSSIL FRAGMENTS
SECTION DOMINATED BY THIN BROWN LAMINATIONS.

701 - 701.8 LIMESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

OTHER FEATURES: GRANULAR, MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
LIMESTONE WITH BRANCHLIKE FOSSIL FRAGMENTS AND GRANULAR CALCITE CRYSTALS (“CALCITE GRAINS”). FOSSIL FRAGMENTS AND CALCITE GRAINS ARE DOMINANT. SECTION IS INTERBEDDED WITH THIN LAYERS OF LIMESTONE (MUDSTONE TEXTURE).

701.8- 702.9 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR, MEDIUM RECRYSTALLIZATION
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
MUDSTONE INTERBEDDED WITH LAYERS COMPOSED OF FOSSIL FRAGMENTS AND CALCITE GRAINS. ALSO INTERBEDDED WITH WACKESTONE. VERY FINE SIZE, POST DEPOSITIONAL, DOLOMITE CRYSTALS PRESENT - PROBABLY A PRODUCT OF RECRYSTALLIZATION

702.9- 705 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
VERY FINE SIZE RECRYSTALLIZED DOLOMITE CRYSTALS STILL PRESENT. CRYSTALS TEND TO BE CLEAR TO LIGHT BROWN IN COLOR. RECRYSTALLIZED CALCITE INCREASES WITH DEPTH. AT BASE OF SECTION, DOLOMITE CRYSTALS MAKE UP 40% OF THE SAMPLE. TRACE RUST STAINING. 1% OF ORGANICS PRESENT.

705 - 706.4 LIMESTONE; WHITE TO YELLOWISH GRAY
POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL
GRAIN SIZE: COARSE; RANGE: MEDIUM TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: GRANULAR, HIGH RECRYSTALLIZATION
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
MUDSTONE INTERBEDDED WITH WACKESTONE AND THIN GRAINSTONE BEDS. MUDSTONE BEDS TYPICALLY HAVE ONLY 3% ALLOCHEM CONTENT (COARSE GRAIN IN SIZE). WACKESTONE ALLOCHEM CONTENT VARIES BETWEEN 15 TO 30% (COARSE GRAIN SIZE). WACKESTONE BEDS ALSO HAVE HIGH CONTENT OF “CALCITE GRAINS”. GRAINSTONE BEDS ARE COMPOSED OF HIGHLY RECRYSTALLIZED ALLOCHEM FRAGMENTS. ALL 3 BED TYPES HAVE VERY FINE SIZE DOLOMITE CRYSTAL GROWTHS (TYPICALLY CLEAR TO LIGHT BROWN) WITH GOOD RHOMBOHEDRAL CLEAVAGE. DOLOMITE CRYSTALS MAKE UP 30% OF THE SECTION.

706.4- 708.4 MUDSTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR

GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: ECHINOID, FOSSIL FRAGMENTS
CONTINUED PRESENCE OF DOLOMITE CRYSTALS. CRYSTALS ACCOUNT FOR 20 TO 30% OF SECTION. 1% ECHINOID FRAGMENTS.

708.4- 710.6 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
WACKESTONE WITH VARIABLE ALLOCHEM CONTENT. ALLOCHEM CONTENT VARIES BETWEEN 15 TO 45%. ALLOCHEMS ARE FOSSIL FRAGMENTS. “CALCITE GRAINS” ARE ALSO PRESENT. CONTINUED PRESENCE OF LIGHT BROWN, VERY FINE, DOLOMITE CRYSTAL GROWTHS. AT BOTTOM OF SECTION (LAST 2 INCHES) 70% OF SAMPLE IS COMPOSED OF SPARRY CALCITE.

710.6- 711.6 DOLOSTONE; GRAYISH ORANGE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS, SUCROSIC, CRYSTALLINE
VERY FINE DOLOMITE CRYSTAL FRAMEWORK WITH WHITE MICRITIC MATRIX. DOLOMITE CRYSTALS COMPOSE 70% OF SAMPLE, WITH 30% WHITE MATRIX. THIN (0.5 TO 2 INCHES) BEDS OF FINE GRAIN CRYSTALLINE DOLOMITE PRESENT - THESE THIN BEDS ARE 100% DOLOMITE, WITHOUT ANY MICRITE MATRIX; POROSITY TENDS TO BE 25% IN THESE THIN BEDS.

711.6- 712.9 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
HIGHLY ALTERED, VERY CRYSTALLINE DOLOMITE, WITH SOME RECRYSTALLIZED FOSSILS PRESENT. DOLOMITE CRYSTALS ARE NORMALLY GRADED, WITH SMALL CRYSTALS AT THE TOP, AND CRYSTAL SIZE INCREASING WITH DEPTH. MAX CRYSTAL SIZE IS MEDIUM GRAIN SIZE. THE LAST INCH OF THE SECTION, WHITE MICRITIC MATRIX APPEARS.

712.9- 714.6 LIMESTONE; WHITE
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, SKELETAL
50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO GRAVEL

POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
BORDERLINE DOLOMITE. SECTION IS FISSILE AND POORLY INDURATED. 1% OF SAMPLE IS COMPOSED OF THIN LAMINATIONS OF ORGANICS.

714.6- 718.1 WACKESTONE; WHITE TO YELLOWISH GRAY
15% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL, CRYSTALS
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
HIGHLY RECRYSTALLIZED. RECRYSTALLIZATION MAKES ESTIMATION OF ALLOCHEM CONTENT DIFFICULT. SECTION CHARACTERIZED BY BROWN, IRREGULAR LAMINATIONS. SOME VERTICAL FRACTURES ARE PRESENT. SOME THIN LAYERS OF GRAINSTONE ARE ALSO PRESENT. THESE GRAINSTONE LAYERS ARE HIGHLY POROUS (20-25%).

718.1- 718.5 PACKSTONE; YELLOWISH GRAY
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
PACKSTONE WITH MINOR ORGANIC LAMINATIONS.

718.5- 719.1 GRAINSTONE; YELLOWISH GRAY
17% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
OBLIQUE FRACTURE PRESENT.

719.1- 720 PACKSTONE; YELLOWISH GRAY
17% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
PACKSTONE WITH NUMEROUS BROWN LAMINATIONS. SECTION IS VERY CHAOTIC, WITH RANDOMLY SPACED MICRITE MUD LAYERS. AT TOP OF SECTION IS A SEDIMENT COLLAPSE FEATURE.

720 - 720.5 GRAINSTONE; WHITE TO YELLOWISH GRAY

20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
GRAINSTONE SEEMS TO BE COMPOSED OF FORAMS OR PELLETS.
DIFFICULT TO DETERMINE FOR CERTAIN.

720.5- 722.7 GRAINSTONE; YELLOWISH GRAY TO WHITE
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
HIGHLY POROUS GRAINSTONE THAT IS POSSIBLY PERMEABLE. VERY
LITTLE AMOUNT OF MATRIX IS PRESENT.

722.7- 724.1 GRAINSTONE; YELLOWISH GRAY
25% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 90% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, BRYOZOA
HIGHLY POROUS GRAINSTONE WITH FOSSIL FRAGMENTS AS THE
DOMINANT ALLOCHEM. HIGH CONTENT OF HOLLOW TUBE-LIKE
FOSSILS; POSSIBLY CALCAREOUS ALGAE. HIGH RECRYSTALLIZATION
OF MANY ALLOCHEMS. GRAINSTONE IS POSSIBLY PERMEABLE.
GRAINSTONE IS INTERBEDDED WITH THIN (0.25-0.125 INCH)
LAYERS OF MICRITE.

724.1- 725.7 PACKSTONE; YELLOWISH GRAY TO WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ECHINOID

725.7- 728 PACKSTONE; YELLOWISH GRAY
20% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, ECHINOID
SECTION CHARACTERIZED BY BROWN, WAVY LAMINATIONS.

728 - 730 GRAINSTONE; YELLOWISH GRAY
30% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
POSSIBLY PERMEABLE GRAINSTONE. ALLOCHEMS ARE HIGHLY RECRYSTALLIZED ROUNDED FORAMS AND FOSSIL FRAGMENTS. DICTYOCONUS AMERICANUS PRESENT.

730 - 735 NO SAMPLES

735 - 740 NO SAMPLES

740 - 742 NO SAMPLES

742 - 743.1 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED EUHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
EXTREMELY IMPERMEABLE. 1% OF POROSITY IS RECRYSTALLIZED MOLDS. TOP 1 INCH OF BED IS WHITE LIMESTONE.

743.1- 745 DOLOSTONE; MODERATE YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
APPROXIMATELY 2 FEET OF CORE IS MISSING. POSSIBLE VOID SPACE?

745 - 750 MUDSTONE; WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL, SKELETAL CAST
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE; UNCONSOLIDATED
FRIABLE. UNCONSOLIDATED TO VERY POORLY CONSOLIDATED. 3 FEET OF CORE IS MISSING. POSSIBLE VOID SPACE?

750 - 755 DOLOSTONE; MODERATE YELLOWISH BROWN
05% POROSITY: INTERCRYSTALLINE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
3 FEET OF CORE IS MISSING. POSSIBLE VOID SPACE? AT BASE OF DOLOMITE IS A LAYER OF POORLY CONSOLIDATED, WHITE WACKESTONE.

755 - 760 33 30IY FVMSUL U
ADG X POSSIBLY PERMEABLE
UNCONSOLIDATED CARBONATE SAND. 50% OF SECTION IS COMPOSED OF LIMESTONE FRAGMENTS. LIMESTONE FRAGMENTS INCLUDE FORAMS FORAM FRAGMENTS, OTHER FOSSIL FRAGMENTS, AND LIMESTONE LITHIC FRAGMENTS. THE OTHER 50% OF THE SECTION IS COMPOSED OF BROWN, RHOMBIC DOLOMITE CRYSTALS (EUHEDRAL TO SUBHEDRAL) .UNABLE TO DETERMINE IF THE DOLOMITE CRYSTALS

ARE AUTHIGENIC OR ALLOGENIC. 4 FEET OF CORE IS MISSING. GRAIN SIZE MODE IS FINE, WITH A SIZE RANGE OF VERY FINE TO MEDIUM. GRAINS ARE SUBANGULAR TO SUBROUNDED. POROSITY IS 30%.

760 - 765 33 30IY FVMSUL U
ADG X ONLY 8 INCHES OF CORE RECOVERED.
SECTION IS THE SAME AS PREVIOUS SECTION (SEE ABOVE) EXCEPT LIMESTONE FRAGMENTS COMPOSE 70% OF SECTION, WHILE DOLOMITE CRYSTALS COMPOSE ONLY 30% OF THE SECTION. SOME GRAVEL SIZE LITHICS PRESENT. GRAIN SIZE MODE IS FINE, WITH A SIZE RANGE OF VERY FINE TO MEDIUM. GRAINS ARE SUBANGULAR TO SUBROUNDED. POROSITY IS 30%.

765 - 768.5 33 30IY MFRSUL U
ADG XE POSSIBLY PERMEABLE
UNCONSOLIDATED CARBONATE SAND. 15% OF SECTION IS COMPOSED OF WHOLE OR FRAGMENTS OF ECHINOID. 70% OF SECTION IS COMPOSED OF LIMESTONE FRAGMENTS. 30% IS COMPOSED OF DOLOMITE CRYSTALS. ONLY 8 INCHES OF CORE WAS RECOVERED. GRAIN SIZE MODE IS MEDIUM, WITH A SIZE RANGE OF FINE TO VERY COARSE. GRAINS ARE SUBANGULAR TO SUBROUNDED. POROSITY IS 30%.

768.5- 770 PACKSTONE; WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
ONLY 3 INCHES OF CORE RECOVERED. SECTION IS VERY FRAGMENTED. ALSO RECOVERED WERE SOME FRAGMENTS OF PURE CRYSTALLINE DOLOMITE.

770 - 775 29 30IY FVMSUM U FINE SAND
COMPOSED OF CALCITE GRAINS. GRAINS ARE EITHER FORAM FRAGMENTS OR INTRACLASTS. DIFFICULT TO TELL BECAUSE OF HIGH RECRYSTALLIZATION. MODE GRAIN SIZE IS FINE, WITH A RANGE OF VERY FINE TO MEDIUM. GRAINS ARE SUBANGULAR TO SUBROUNDED. POROSITY IS 30%. POSSIBLY PERMEABLE.

775 - 780 MUDSTONE; WHITE
15% POROSITY: INTERGRANULAR
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; POOR INDURATION
OTHER FEATURES: HIGH RECRYSTALLIZATION
VERY POORLY CONSOLIDATED TO UNCONSOLIDATED. APPROXIMATELY ONE FOOT OF CORE IS MISSING.

780 - 785 33 30IY U SECTION IS A
MIXTURE OF SAND AND GRAVEL. ONLY 15 INCHES OF CORE WAS RECOVERED. AT THE TOP OF THE SECTION, THE SECTION IS A MEDIUM GRAIN SAND, 80% OF WHICH IS CALCITE GRAINS AND 20% OF WHICH ARE BROWN, RHOMBIC, DOLOMITE CRYSTALS. CALCITE

GRAINS ARE HIGHLY RECRYSTALLIZED. WITH DEPTH, THE SAND BECOMES A GRAVEL. THE GRAVEL IS COMPOSED OF LIMESTONE LITHOCLASTS, CRYSTALLINE DOLOMITE LITHOCLASTS, ECHINOID FOSSILS, AND ECHINOID FRAGMENTS. POROSITY IS 30%. POSSIBLY PERMEABLE.

785 - 790 DOLOSTONE; GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
POROSITY PRIMARILY MOLDIC.

790 - 795 DOLOSTONE; DARK YELLOWISH BROWN
15% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
POROSITY PRIMARILY MOLDIC. MANY LAMINATIONS. SOME VUGS. VUGS WERE FRAGMENTED BY DRILLING.

795 - 800 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
APPROXIMATELY ONE FOOT OF CORE RECOVERED. WAVY LAMINATIONS PRESENT.

800 - 805 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ONLY 11 INCHES OF CORE RECOVERED.

805 - 810 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
POROSITY PRIMARILY MOLDIC. TOWARDS THE BASE OF THE SECTION THERE ARE 2 INCH LONG INTRACLASTS. THEY APPEAR TO BE RIP UP CLASTS.

810 - 815 DOLOSTONE; MODERATE YELLOWISH BROWN
15% POROSITY: FRACTURE, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM

GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
POROSITY IS PRIMARILY MADE UP OF FRACTURES. SOME MINOR VUGS. SECTION IS FRACTURED. FRACTURES TEND TO BE FILLED WITH MEDIUM TO COARSE GRAIN DOLOMITE CRYSTALS. AT THE BASE OF THE SECTION THERE IS SOME DIPPING LAMINAE (DIP IS APPROXIMATELY 45 DEGREES).

815 - 817.1 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION

817.1- 820 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
25% POROSITY: FRACTURE, INTERCRYSTALLINE, VUGULAR
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
FOUR TYPES OF POROSITY PRESENT: FRACTURE, INTERCRYSTALLINE , VUG, AND A FORM OF SECONDARY POROSITY. FRACTURE POROSITY: COMPOSES 2% OF TOTAL SECTION POROSITY, FRACTURES HAVE A DIP OF 75 DEGREES, AND FLUID FLOW IS INFERRED ALONG FRACTURES BECAUSE OF COARSER CRYSTALS THAT APPEAR WITHIN FRACTURES. INTERCRYSTALLINE POROSITY: 3% OF TOTAL POROSITY. VUG POROSITY: 5% OF TOTAL POROSITY, BOTH LARGE AND PINPOINT VUGS ARE PRESENT, HOWEVER VUGS ARE NOT INTERCONNECTED. FORM OF SECONDARY POROSITY: COMPOSES 15% OF TOTAL POROSITY APPEARS IN DISTINCT LAYERS, HOWEVER SOME LAYERS (OR BANDS) OF POROSITY APPEAR DRAPED OR MOUNDED.

820 - 821.5 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH ORANGE
15% POROSITY: MOLDIC, FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
DOLOMITIZED INTRACLASTS IN A SMALL FRACTURE ZONE AT THE TOP OF THE SECTION. FRACTURING DECREASES WITH DEPTH. POROSITY IS PRIMARILY MOLDIC (10%) WITH 5% OF POROSITY BEING FRACTURES. AT THE BASE OF THE SECTION ARE WHAT APPEAR TO BE 45 DEGREE DIPPING LAYERS OF WITH VARIABLE CRYSTAL SIZES. APPEAR TO BE RELIC BEDS, POSSIBLY CROSS BEDS.

821.5- 825 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
17% POROSITY, 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
SECTION CHARACTERIZED BY APPROXIMATELY 45 DEGREE DIPPING, 5 TO 10 MM THIN, BEDS. POROSITY TENDS TO OCCUR AS THIN SINGLE LINES OF CONNECTED PORES THAT PARALLEL THE BEDS.

POSSIBLE BEDDING PLANE PARTINGS/DISSOLUTION?

825 - 828.5 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: MOLDIC, PIN POINT VUGS; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
PRIMARY POROSITY IS MOLDIC. THE MOLDS ARE SMALL, USUALLY 1-2MM IN DIAMETER. AT THE TOP OF THE SECTION IS A LAYER OF HIGHLY POROUS (25% INTERGRANULAR TO MOLDIC POROSITY) COARSE GRAIN CRYSTALLINE DOLOMITE. THE DOLOMITE LAYER IS 2 INCHES THICK AND IS DIPPING APPROXIMATELY 45 DEGREES. THE DOLOMITE LAYER OVERLAYS THIN LAMINATIONS (ALSO DIPPING AT 45 DEGREES) WITH ECHINOID FRAGMENTS. SOME OF THE PORES IN THE DOLOMITE LAYER ARE COATED IN BLACK ORGANICS.

828.5- 830 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
20% POROSITY: MOLDIC, VUGULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
SECTION CHARACTERIZED BY LARGE MOLDIC POROSITY (4-20MM IN DIAMETER). MANY MOLDS ARE DISTINCTLY ECHINOID MOLDS. MINOR CONTENT OF ECHINOID FRAGMENTS. MINOR VUGS. SOME OF PORE SPACE COATED WITH BLACK ORGANICS.

830 - 835 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
10% POROSITY: MOLDIC, VUGULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
CORE WAS VERY FRAGMENTED AND CHEWED UP BY DRILL BIT. APPROXIMATELY 2 FEET OF CORE RECOVERED.

835 - 838 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: FINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ONLY 16 INCHES OF CORE RECOVERED. MOLDIC POROSITY INCREASES WITH DEPTH. MOLDS TYPICALLY 5-10 MM.

838 - 840 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH BROWN
15% POROSITY: MOLDIC, VUGULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ONLY 16 INCHES OF CORE RECOVERED. RECOVERED ROCK VERY FRAGMENTED DUE TO DRILLING.

840 - 845 DOLOSTONE; DARK YELLOWISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL

GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL FRAGMENTS, ECHINOID
ONLY 14 INCHES OF CORE RECOVERED. MINOR AMOUNT OF ECHINOID FRAGMENTS PRESENT.

845 - 847 DOLOSTONE; DARK YELLOWISH BROWN
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
CRYSTAL SIZE INCREASES WITH DEPTH. MOLDIC POROSITY IS LARGE (4-8MM) AND INCREASES WITH DEPTH. SOME MOLDS FORM TRENDS OR LAYERS THAT APPEAR TO HAVE A DEPTH OF 45 DEGREES; ARE POSSIBLY REMNANTS OF FOSSILS THAT WERE ALIGNED WITH BEDS.

847 - 850 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
15% POROSITY: VUGULAR, FRACTURE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
VUGS AND FRACTURES EXHIBIT LARGER DOLOMITE CRYSTAL SIZE (COMPARED TO THE MATRIX) INDICATING PROBABLE FLUID FLOW. ZONE OF GRAVEL IS SEEN IN THIS SECTION. POSSIBLY DUE TO DRILLING, HOWEVER I AM NOT CERTAIN.

850 - 852 DOLOSTONE; DARK YELLOWISH BROWN
07% POROSITY: FRACTURE, MOLDIC, VUGULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
LAMINATED AND BEDDED DOLOMITE WITH VUGS AND FRACTURES. ONE WELL PRESERVED FRACTURE SHOWS NORMAL FAULTING OF DOLOMITE BEDS. AT THE BASE OF THE SECTION IS A ZONE OF FRACTURE BRECCIA AND ASSOCIATED INFILL FROM OVERLYING SEDIMENT.

852 - 855 DOLOSTONE; GRAYISH BROWN
10% POROSITY: FRACTURE, VUGULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SECTION IS CHARACTERIZED BY THIN FRACTURES AND VUGS THAT THAT ARE FORMED FROM ENLARGED FRACTURES.

855 - 856.2 DOLOSTONE; DARK YELLOWISH BROWN TO GRAYISH BROWN
05% POROSITY: FRACTURE, PIN POINT VUGS; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FRACTURES ARE VERY THIN AND DISCONTINUOUS. SECTION IS

LAMINATED AND MOTTLED.

856.2- 858.1 DOLOSTONE; GRAYISH BROWN TO BLACK
05% POROSITY: FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SECTION CHARACTERIZED BY LARGE GRAVEL (15-60MM LONG)
LITHOCLASTS. LITHOCLASTS HAVE BEEN DOLOMITIZED. POSSIBLY
INTRACLASTS DUE TO SOME CLASTS EXHIBITING DUCTILE/PLASTIC
DEFORMATION. LITHOCLASTS TEND TO BE SUBANGULAR TO
SUBROUNDED.

858.1- 860 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
15% POROSITY: MOLDIC, FRACTURE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
SLIGHTLY CALCAREOUS DOLOMITE, WITH FRACTURES. MOLDIC
POROSITY TENDS TO BE COARSE TO GRANULE IN SIZE. MANY MOLDS
HAVE BEEN FILLED BY RECRYSTALLIZED SPARRY CALCITE. SOME
CASTS PRESENT.

860 - 862 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN
10% POROSITY: FRACTURE, MOLDIC; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SLIGHTLY CALCAREOUS DOLOMITE WITH FRACTURES. MOLDS ARE
COARSE GRAIN IN SIZE. SOME MOLDS ARE FILLED WITH SPARRY
CALCITE. AT THE BASE OF THE SECTION IS FAULT OR COLLAPSE
BRECCIA SURROUNDED BY A DARK BROWN AND BLACK MATRIX.

862 - 864.2 DOLOSTONE; DARK YELLOWISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY, 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
CHARACTERIZED BY ANGULAR TO SUBANGULAR BRECCIA. SOME
BRECCIA HAVE MINOR FRACTURES BUT OVERALL THE SECTION IS NOT
OVERTLY FRACTURED. SOME CLASTS ARE LAMINATED. POROSITY IS
DIFFICULT TO DEFINE. SOME IS VAGUELY MOLDIC. MOST OF
POROSITY TENDS TO FORM AT PERIMETER/CONTACT BETWEEN BRECCIA
CLASTS AND SURROUNDING MATRIX.

864.2- 865 DOLOSTONE; GRAYISH ORANGE
02% POROSITY: MOLDIC, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
MATRIX IS CALCAREOUS AND SOME MOLDS ARE FILLED WITH SPARRY
CALCITE.

865 - 870 DOLOSTONE; DARK YELLOWISH BROWN TO DARK YELLOWISH BROWN

10% POROSITY: FRACTURE, MOLDIC; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
BEAUTIFUL SECTION COMPOSED OF PEBBLE TO COBBLE SIZE (10 TO >100 MM) BRECCIA. BRECCIA CLASTS ARE PRIMARILY ANGULAR TO SUBANGULAR, BUT SOME CLASTS ARE SUBROUNDED TO ROUNDED. CLASTS ARE TAN TO LIGHT BROWN WHILE THE MATRIX IS VERY DARK BROWN. SOME POST DEPOSITIONAL FRACTURING PRESENT, INFILLED WITH DARK BROWN SANDY CLAY. POROSITY IS COMPOSED OF POST DEPOSITIONAL FRACTURING, MINOR MOLDIC POROSITY, AND POROSITY DESCRIBED ABOVE WHERE POROSITY OCCURS ALONG BOUNDARIES OF CLASTS. ACCORDING TO DR. PARKER OF THE FSU GEOLOGICAL SCIENCES DEPT. THIS SECTION IS A CAVE DEPOSIT.

870 - 872 DOLOSTONE; DARK YELLOWISH BROWN
07% POROSITY: VUGULAR, INTERCRYSTALLINE; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
VUG, INTERCRYSTALLINE, AND OTHER SECONDARY POROSITY PRESENT. SECTION IS CHARACTERIZED BY THIN INCIPIENT DARK BROWN TO BLACK STYOLITES WITH THIN TAN LAYERS OF FLOWSTONE. NOTE: FLOWSTONE IS A TYPE OF CAVE DEPOSIT, DEPOSITED IN CAVES BY RUNNING WATER, GIVING DEPOSITS IRREGULAR SHAPES. CAVE DEPOSIT OF FLOWSTONE AND STYOLITES SITS ON IRREGULAR CONTACT OF FINE TO MEDIUM GRAIN DOLOMITE.

872 - 875 DOLOSTONE; DARK YELLOWISH BROWN
10% POROSITY: INTRAGRANULAR, VUGULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: FINE; RANGE: FINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
LAMINATIONS FORM MOUNDS THAT RESEMBLE A CROSS-SECTION OF A SPELEOTHEM. PROBABLE CAVE DEPOSIT. POROSITY INCREASES AT BASE. VUGS FOUND AT BASE OF SECTION ARE OFTEN SLIGHTLY INFILLED WITH DARK ORGANIC CLAYS.

875 - 878.1 DOLOSTONE; DARK YELLOWISH BROWN
15% POROSITY: VUGULAR, FRACTURE
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
SECTION COMPOSED OF BRECCIA, PROBABLY DUE TO COLLAPSE. VUGS, FRACTURE, AND BEDDING PLANE POROSITY PRESENT. BEDDING PLANE POROSITY OCCURS WHERE THIN LAMINATIONS OF BLACK ORGANIC CLAY HAVE BEEN ERODED OUT BY FLUIDS. FRACTURES AND VUGS ARE OFTEN COATED WITH DARK BLACK CLAY. MANY OF THE FRACTURES AND BEDDING PLANES ARE INTERCONNECTED, AND ARE PERMEABLE TO POSSIBLY PERMEABLE.

878.1- 879.3 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
03% POROSITY: FRACTURE, VUGULAR, PIN POINT VUGS
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CALCAREOUS
HIGHLY FRACTURED CALCAREOUS DOLOMITE. FRACTURES ARE MM TO SUB-MM IN WIDTH. ALMOST ALL FRACTURES HAVE BEEN "HEALED" OR FILLED WITH DOLOMITIC CALCITE. FRACTURES THAT WEREN'T HEALED DEVELOPED INTO POROSITY.

879.3- 881.5 DOLOSTONE; GRAYISH ORANGE
05% POROSITY: FRACTURE, PIN POINT VUGS; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS

881.5- 885 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
15% POROSITY: FRACTURE, VUGULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
OTHER FEATURES: CALCAREOUS
SECTION CHARACTERIZED AS A BRECCIA DEPOSIT WHICH EXHIBITS NORMAL GRADING. BRECCIA AT THE BASE OF THE SECTION ARE COBBLE IN SIZE. POROSITY COMPOSED OF FRACTURES, VUGS, AND DISSOLVED PERIMETERS OF BRECCIA CLASTS.

885 - 886.9 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: FRACTURE, VUGULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
OTHER FEATURES: CALCAREOUS
CHARACTERIZED BY VERY LARGE (> 100 MM) SIZE COBBLES. COBBLES ARE SURROUNDED BY VERY POORLY SORTED MATRIX OF GRAVEL TO SAND SIZE GRAINS.

886.9- 890 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
05% POROSITY: VUGULAR, PIN POINT VUGS; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
VERY TOP OF SECTION HAS LARGE COBBLES. SECTION THEN BECOMES DOMINATED BY VERY COARSE TO PEBBLE SIZE CALCAREOUS DOLOMITE CLASTS AND DOLOMITE MATRIX. SECTION IS POORLY SORTED. CLASTS ARE ANGULAR TO SUBANGULAR.

890 - 890.7 DOLOSTONE; GRAYISH BROWN
01% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
SECTION COMPOSED OF SAND TO GRANULE SIZE CALCAREOUS DOLOMITE CLASTS THAT EXHIBIT NORMAL GRADING. AT THE BASE OF THE SECTION, VERY LARGE COBBLES APPEAR.

890.7- 894.4 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
05% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
SECTION DOMINANTLY COMPOSED OF POORLY SORTED SAND SIZE DOLOMITE CLASTS IN DOLOMITE MATRIX. A FEW LARGE COBBLES AND SOME PEBBLES PRESENT.

894.4- 896.6 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
SECTION DOMINANTLY COMPOSED OF POORLY SORTED SAND SIZE DOLOMITE CLASTS IN DOLOMITE MATRIX. NO COBBLES PRESENT. SOME MILIOLID FORAMS PRESERVED.

896.6- 898.1 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
07% POROSITY: FRACTURE, VUGULAR; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
COBBLE SIZE BRECCIA CLASTS (SUBANGULAR TO SUBROUNDED) COMPOSE THIS SECTION. BRECCIA IS SURROUNDED BY VERY POORLY SORTED MATRIX OF SAND SIZE TO SMALL PEBBLE SIZE CLASTS THAT HAVE BEEN DOLOMITIZED.

898.1- 900 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS, FRACTURE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
ANGULAR TO SUBANGULAR SAND SIZE DOLOMITE CLASTS. POORLY SORTED. SOME LARGE TO SMALL PEBBLES PRESENT.

900 - 901.7 DOLOSTONE; MODERATE YELLOWISH BROWN TO GRAYISH ORANGE
01% POROSITY: FRACTURE, PIN POINT VUGS; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT
SECTION COMPOSED OF A MIXTURE OF DOLOMITIZED FOSSIL
FRAGMENTS AND LITHOCLASTS.

901.7- 905 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH ORANGE
03% POROSITY: FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: COQUINA, GREASY, LOW RECRYSTALLIZATION
CAVE DEPOSIT CHARACTERIZED BY FLOW STONE, SOLUTION COLLAPSE
BRECCIA, AND INCIPIENT STYOLITES.

905 - 907 DOLOSTONE; DARK YELLOWISH ORANGE
01% POROSITY: FRACTURE; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FRACTURED TO FAULTED DOLOMITE WITH BLACK ORGANIC FRAGMENTS.

907 - 909 DOLOSTONE; GRAYISH BROWN TO VERY LIGHT ORANGE
03% POROSITY, 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: STYLOLITIC, LAMINATED
CHARACTERIZED BY SUBROUNDED DOLOMITE CLASTS, DARK
LAMINATIONS, AND INCIPIENT STYOLITES.

909 - 910 DOLOSTONE; YELLOWISH GRAY TO LIGHT OLIVE GRAY
10% POROSITY: VUGULAR, FRACTURE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
FRACTURES HEALED WITH CALCITE. SECTION DOMINATED BY COARSE
TO VERY COARSE SAND SIZE CLASTS.

910 - 912.2 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
10% POROSITY, 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
OTHER FEATURES: CALCAREOUS
CORE IS CALCAREOUS DOLOMITE, CHARACTERIZED BY SAND TO
GRAVEL SIZE LITHOCLASTS OF CALCAREOUS DOLOMITE. MOST OF THE
CLASTS ARE ANGULAR TO SUBANGULAR. HOWEVER, SOME OF THE
CLASTS ARE SUBROUNDED. LITHOCLASTS ARE VERY POORLY SORTED
AND INCREASE IN QUANTITY WITH DEPTH. MINOR FRACTURING WITH
DARK CLAY PRESENT AS THIN COATING ON FRACTURES. POROSITY
TYPE IS SECONDARY POROSITY. PRESENT AS PORE SPACE THAT

FORMS AROUND PERIMETERS OF LITHOCLASTS. ALSO SOME SAND SIZE
MOLDIC POROSITY PRESENT.

912.2- 913.3 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
10% POROSITY: MOLDIC; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: STYLOLITIC, LAMINATED
OTHER FEATURES: CALCAREOUS
SECTION IS A TRANSITIONAL ZONE. AT THE TOP IS CALCAREOUS
DOLOMITE (SUCROSIC). TOWARDS THE MIDDLE OF THE SECTION ARE
INCIPIENT STYOLITES. AT THE BASE, THE SECTION IS A
DOLOMITIC LIMESTONE WITH HIGH CONTENT OF RECRYSTALLIZED
FORAMS AND DARK BROWN LAMINATIONS. MINOR FRACTURES (<1%).

913.3- 913.6 LIMESTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC
GOOD INDURATION
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
SECTION CHARACTERIZED BY HIGH MOLDIC POROSITY. HIGH
RECRYSTALLIZATION.

913.6- 915.5 WACKESTONE; VERY LIGHT ORANGE
10% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MEDIUM TO GRAVEL
GOOD INDURATION
OTHER FEATURES: DOLOMITIC

915.5- 916.8 PACKSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL; 50% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: FINE TO GRAVEL; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
HIGHLY POROUS AND POSSIBLY PERMEABLE. HIGHLY
RECRYSTALLIZED.

916.8- 918.2 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC, FRACTURE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
HIGHLY RECRYSTALLIZED. THIN LAMINATIONS OF LIGHT TO DARK
BROWN. FRACTURES MAKE UP 1% OF CORE.

918.2- 919.3 LIMESTONE; VERY LIGHT ORANGE
10% POROSITY: MOLDIC
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION

919.3- 920.5 LIMESTONE; VERY LIGHT ORANGE

20% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
FRIABLE IS SOME PARTS OF THE CORE.

920.5- 923.5 LIMESTONE; VERY LIGHT ORANGE
MODERATE INDURATION
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
CORE BROKEN INTO CHUNKS FROM DRILLING. POROSITY HIGHLY VARIABLE (10 TO 20%) AND PRIMARILY MOLDIC. INDURATION VARIES BETWEEN MODERATE TO GOOD.

923.5- 926.4 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
VERY POORLY INDURATED, FRIABLE, HIGHLY RECRYSTALLIZED LIMESTONE. BASE OF SECTION HAS BROWN LAMINATIONS AND INCIPIENT STYOLITES.

926.4- 929.8 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
RECRYSTALLIZED MUDSTONE. SECTION IS HIGHLY BURROWED. BURROWS TEND TO BE VERTICAL AND INFILLED WITH RECRYSTALLIZED, HIGHLY POROUS (20-25%) LIMESTONE. IRON STAINING PRESENT.

929.8- 932.5 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC, INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
MOLDIC POROSITY INCREASES WITH DEPTH.

932.5- 933.3 LIMESTONE; VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
GRANULAR
LIMESTONE RECRYSTALLIZED INTO GRANULAR LIKE CRYSTALS. DARK BROWN LAMINATIONS PRESENT.

933.3- 934.6 LIMESTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
GRANULAR

934.6- 935.8 LIMESTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
HIGHLY POROUS DOLOMITIC LIMESTONE WITH ABUNDANT MOLLUSCS
BIVALVES, AND GASTROPOD MOLDS.

935.8- 936.9 MUDSTONE; VERY LIGHT ORANGE
05% POROSITY: INTERGRANULAR, MOLDIC
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
LIGHT BROWN LAMINATIONS PRESENT.

936.9- 937.7 MUDSTONE; VERY LIGHT ORANGE
20% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL CAST; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: GRAVEL; RANGE: COARSE TO GRAVEL
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
HIGHLY POROUS DOLOMITIC LIMESTONE WITH ABUNDANT MOLLUSCS
BIVALVES, AND GASTROPOD MOLDS.

937.7- 939 MUDSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION

939 - 940.6 WACKESTONE; VERY LIGHT ORANGE
17% POROSITY: MOLDIC
GRAIN TYPE: SKELETAL; 15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: COARSE; RANGE: MEDIUM TO VERY COARSE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
SOME MOLDS OF FABULARIA VAUGHANI.

940.6- 940.8 MUDSTONE; VERY LIGHT ORANGE
10% POROSITY: INTERGRANULAR
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: DOLOMITIC
SECTION HAS THIN LAMINATIONS OF DARK BROWN LIMESTONE. ALSO
PRESENT ARE DARK BROWN LAYERS OF CALCAREOUS CLAY.

940.8- 942.2 LIMESTONE; VERY LIGHT ORANGE

30% POROSITY: MOLDIC
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
POROSITY IS LOW AT THE TOP OF THE SECTION (10-15%).
POROSITY RAPIDLY INCREASES TO 30% WITH DEPTH.

942.2- 943.5 WACKESTONE; VERY LIGHT ORANGE
GRAIN TYPE: SKELETAL; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
VARIABLE MOLDIC POROSITY, RANGING BETWEEN 10-20%.

943.5- 945 LIMESTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
DOMINANT PORE SIZE IS MEDIUM TO COARSE GRAIN SIZE.

945 - 949 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
HIGHLY RECRYSTALLIZED. DOMINANT PORE SIZE IS VERY COARSE TO SMALL PEBBLE IN SIZE.

949 - 953 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
POROSITY VARIES BETWEEN 15-30%. AVERAGE POROSITY IS 25%.

953 - 955 DOLOSTONE; VERY LIGHT ORANGE
05% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

955 - 960 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ONLY 26 INCHES RECOVERED. ORGANICS PRESENT IN MOLDS.

960 - 963 DOLOSTONE; VERY LIGHT ORANGE
20% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ORGANICS PRESENT IN MOLDS.

963 - 964 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ORGANICS PRESENT IN MOLDS.

964 - 964.8 SILT-SIZE DOLOMITE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR; POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
VERY POORLY INDURATED. POROSITY ABOVE IS JUST AN AVERAGE
MINIMUM VALUE BASED ON LITERATURE.

964.8- 965 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

965 - 970 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
ONLY 3 FEET RECOVERED.

970 - 971.3 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

971.3- 972.3 LIMESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
POOR INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
VARIABLE MOLDIC AND INTERGRANULAR POROSITY. LIMESTONE IS
COMPOSED NONMOLDIC FINE GRAIN LAYERS INTERBEDDED WITH
HIGHLY MOLDIC LAYERS. NONMOLDIC LAYERS HAVE 15-20%
POROSITY, WHILE MOLDIC LAYERS HAVE 30% POROSITY.

972.3- 974 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERGRANULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS, GRANULAR

974 - 975 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

975 - 976.7 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

976.7- 977.8 DOLOSTONE; VERY LIGHT ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
LOW MOLDIC POROSITY. INTERGRANULAR POROSITY IS DOMINANT.
POOR TO MODERATE INDURATION.

977.8- 980 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: VERY FINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
25% INTERGRANULAR POROSITY, 5% MOLDIC POROSITY.

980 - 982.4 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

982.4- 985 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
ORGANICS IN MOLDS.

985 - 990 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

OTHER FEATURES: CALCAREOUS, GRANULAR
SLIGHTLY CALCAREOUS, VERY GRANULAR. MOLDS HAVE BLACK ORGANICS IN THEM. INDURATION INCREASES TO MODERATE AT THE BASE OF THE SECTION.

990 - 993.2 DOLOSTONE; VERY LIGHT ORANGE
20% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

993.2- 994.1 DOLOSTONE; VERY LIGHT ORANGE
10% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: CALCAREOUS

994.1- 996.5 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

996.5- 999 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

999 - 1000 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
25% POROSITY: INTERGRANULAR; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR, CALCAREOUS

1000 - 1001.3 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
25% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
BASE OF SECTION MARKED BY VERY CALCAREOUS, MICROCRYSTALLINE DOLOMITE, WITH A BLACK SEAM OF CLAY.

1001.3- 1004.2 DOLOSTONE; GRAYISH BROWN TO GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED

SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR, CALCAREOUS
DOLOMITE INDURATION DECREASES TO POOR, WITH DEPTH. DOLOMITE ALSO BECOMES GRANULAR WITH DEPTH, AND CALCAREOUS.

1004.2- 1007 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: INTERGRANULAR, MOLDIC, FRACTURE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
FRACTURES ACCOUNT FOR 2% OF TOTAL POROSITY. SECTION HAS VERTICAL FRACTURES THAT HAVE BEEN HEALED BY QUARTZ. IN SOME AREAS ADJACENT TO FRACTURES, DOLOMITE CRYSTALS ARE CEMENTED BY SILICA.

1007 - 1010 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: INTERGRANULAR, MOLDIC; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
VARIABLE POROSITY (15-25%). AVERAGE POROSITY IS 20%.

1010 - 1012 DOLOSTONE; GRAYISH ORANGE
20% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

1012 - 1015 DOLOSTONE; GRAYISH ORANGE
25% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS

1015 - 1018.3 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
MOLDIC POROSITY OCCURS IN BANDS. TOP OF SECTION IS COMPOSED OF DOLOMITIC LIMESTONE THAT HAS 20% POROSITY AND LAMINATIONS OF DARK ORGANICS.

1018.3- 1020 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
MOLDIC AND INTERGRANULAR POROSITY RANGES BETWEEN 20-30%.
MOLDS OFTEN FILLED WITH BLACK ORGANICS.

1020 - 1022.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
20% POROSITY: MOLDIC, INTERGRANULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
DOLOMITE TO CALCAREOUS DOLOMITE INTERBEDDED WITH A FEW THIN
BEDS OF DOLOMITIC LIMESTONE.

1022.8- 1025 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
MOLDS ARE TYPICALLY MEDIUM TO COARSE SAND SIZE, BUT CAN GET
AS LARGE AS SMALL PEBBLES.

1025 - 1026 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC, POSSIBLY HIGH PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

1026 - 1028.8 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
LAST 9 INCHES OF CORE, POROSITY DECREASES TO 15-20%. BROWN
LAMINATIONS APPEAR AT THE BASE OF THE CORE

1028.8- 1030 DOLOSTONE; VERY LIGHT ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
TOP HALF OF SECTION HAS VERY COARSE SAND TO GRANULE SIZE
MOLDIC POROSITY. POROSITY IS 30% HERE. PORE SIZE DECREASES
WITH DEPTH TO COARSE SAND SIZE, AND POROSITY DECREASES TO
25%.

1030 - 1035 DOLOSTONE; GRAYISH ORANGE
30% POROSITY: MOLDIC; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; MODERATE INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT
RANGE OF POROSITY IS 10-30%. AVERAGE POROSITY IS 30%. 4 INCHES ABOVE BASE OF SECTION IS A SHARP CONTACT BETWEEN OVERLYING DOLOMITE AND UNDERLYING DOLOMITIC LIMESTONE. LIMESTONE IS MICROCRYSTALLINE THEN GRADES TO GRANULAR LIMESTONE.

1035 - 1035.6 DOLOSTONE; VERY LIGHT ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR

1035.6- 1040 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
25% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
DOLOMITE INTERBEDDED WITH A FEW THIN LIMESTONE BEDS. ORGANIC FRAGMENTS PRESENT.

1040 - 1041.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GRANULAR
POROSITY IS MOLDIC. POROSITY IS 30% AT TOP OF SECTION AND REDUCES WITH DEPTH TO 20%.

1041.5- 1042.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
MOLDIC POROSITY VARIES BETWEEN 15-20%.

1042.5- 1044.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: LAMINATED
OTHER FEATURES: GRANULAR
POROSITY VARIES BETWEEN 15-30% CORE IS LAMINATED. MOLDIC POROSITY OCCURS IN HORIZONTAL BANDS AND ALONG LAMINATIONS.

1044.5- 1045.4 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: MOLDIC, INTERGRANULAR; 90-100% ALTERED SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT

SHARP CONTACT WITH OVERLYING SECTION. END JOSUE GALLEGOS
DESCRIPTION BEGIN MICHELLE LADLE DESCRIPTION

1045.4- 1046.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1046.5- 1047.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1047.5- 1047.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1047.8- 1048 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS

1048 - 1049.4 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
08% POROSITY: MOLDIC, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Interbedded with organic layers at end of interval

1049.4- 1051.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1051.8- 1052 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Organic layers at 1052.0; Interbedded with recrystallized
limestone and dolostone

1052 - 1053 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Cross-bedded fracture; Variable dolomitized recrystallized
limestone throughout; Difficult to determine amount of
dolomitization

1053 - 1053.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1053.5- 1056.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1056.5- 1058.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Increased recrystallization with depth

1058.7- 1056.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Good permeability

1056.2- 1060 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Interval broken up/rubble (~18” of recovery)

1060 - 1070 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
Interval broken up/rubble (~14” of recovery); Moderate
permeability

1070 - 1070.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: CALCILUTITE-35%
OTHER FEATURES: DOLOMITIC
Brecciated mudstone in very fine dolomitic crystalline
calcite matrix.

1070.5- 1072.5 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
Good permeability; Only 39" of recovery for 1070.5-1075.0'

1072.5- 1073.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1073.2- 1074.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1074.8- 1077.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Slightly dolomitic recrystallized micrite; Increase in
recrystallization and porosity with depth

1077.2- 1078.5 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE

LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-<1%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Interbedded with calcareous dolostone (see below)

1078.5- 1080 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Increase in crystal size and porosity of 1079.5

1080 - 1081.3 MUDSTONE; VERY LIGHT ORANGE
03% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1081.3- 1083.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1083.2- 1085.3 MUDSTONE; VERY LIGHT ORANGE
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1085.3- 1086.5 WACKESTONE; VERY LIGHT ORANGE
03% POROSITY: MOLDIC, INTERGRANULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS

15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: BEDDED
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC

1086.5- 1088.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Only 44” of recovery for 1085.0-1090.0’; Increased
recrystallization with depth

1088.5- 1090.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
OTHER FEATURES: CALCAREOUS
Mottled with dolomitic recrystallized mudstone
1089.4-1090.0: Interbedded with organic clay and more
porous limestone

1090.8- 1093.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Organic layer at 1092.9’

1093.5- 1096.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

Dense dolomitic recrystallized mudstone

1096.8- 1097.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Interbedded with organic clay layers at end of interval

1097.4- 1098.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1098.5- 1101.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Recrystallized wackestone with sand size calcite crystals
Moderate permeability

1101.2- 1101.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Areas of low recrystallization interbedded with higher
recrystallization

1101.8- 1102.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in dolomitization with depth

1102.4- 1104.4 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, VUGULAR
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Decrease in porosity at 1102.7; Thin organic layers at
1103.8 and 1104.4’

1104.4- 1105 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Decrease in grain/crystal size with depth to mudstone with
few lager calcite crystals

1105 - 1105.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-02%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Flecks of organics and clays; Organic layer at 1105.7

1105.8- 1108.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%

OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1108.7- 1109.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: MOLDIC, INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Moderate permeability; Interbedded with organics; Less
permeability in some areas; Fewer molds/vugs at 1109.5’

1109.8- 1110.2 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, INTRACLASTS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS

1110.2- 1111.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1111.8- 1113.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1113.1- 1114.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1114.2- 1115 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in recrystallization with depth

1115 - 1115.8 MUDSTONE; VERY LIGHT ORANGE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Organic layer at 1115.8'

1115.8- 1117.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1117.2- 1118 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
04% POROSITY: MOLDIC, INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

1118 - 1118.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: VUGULAR, INTERCRYSTALLINE, INTERGRANULAR

GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1118.5- 1120.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-03%

1120.3- 1122.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, IRON CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Finer grains with depth to mudstone

1122.4- 1123.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, MOLDIC, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-03%
OTHER FEATURES: LOW RECRYSTALLIZATION
Interbedded with organic layers

1123.5- 1124.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1124.3- 1126.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN

03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Mollusk casts, molds of mollusks, Dictyconus sp.; Sand-
size calcite crystals grown inside larger vugs/molds; At
1125.3: fossils replaced by pyrite

1126.5- 1129.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
More compact matrix with nodules of porous vuggy limestone
Large molds resemble corals

1129.1- 1130.2 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Top of interval: more calcareous; decrease with depth
(increase in dolomitization)

1130.2- 1131 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1131 - 1131.5 MUDSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, IRON CEMENT
ORGANIC MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION

1131.5- 1132 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1132 - 1134.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: CALCITE-03%
OTHER FEATURES: CALCAREOUS
Sand-size calcite crystals

1134.5- 1135 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION

1135 - 1136.2 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Good permeability

1136.2- 1137.8 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERGRANULAR, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
FOSSILS: FOSSIL MOLDS
Top 6” of interval and bottom 4” are silicified; Cone molds

1137.8- 1138.4 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN

10% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Large molds/vugs (~1/2” diam); Good permeability in some places; Increase in calcite with depth

1138.4- 1139.8 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SILICIC CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Larger vugs lined with quartz crystals; Interbedded with silicified dolostone and quartz

1139.8- 1141.6 DOLOSTONE; GRAYISH BROWN TO MODERATE GRAY
05% POROSITY: VUGULAR, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT, DOLOMITE CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: QUARTZ-40%
Silicified with sand-size euhedral quartz crystals throughout

1141.6- 1142 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Recrystallized micrite, sand-size crystals, and organics

1142 - 1144.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: CALCAREOUS

FOSSILS: FOSSIL MOLDS
Very slow reaction to Aliz. Red: turns dark purple

1144.5- 1145.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-03%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1145.3- 1147.8 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1147.8- 1148.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
20% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Good permeability; Marker at 1148.7 not right (should be
1148.3)

1148.4- 1149.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
Interbedded (~50 degree angle) with organic layers

1149.3- 1149.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%, ORGANICS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Increase in dolomitization with depth

1149.8- 1150.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: CALCAREOUS

1150.1- 1156.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in dolomitization at 1155-1155.2’

1156.5- 1156.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CLAY MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION

1156.8- 1157.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1157.7- 1158.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
20% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR

GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Good permeability

1158.5- 1159.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1159.4- 1162 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Good permeability; Mottled with less porous
cryptocrystalline limestone

1162 - 1163.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
OTHER FEATURES: CALCAREOUS
Slightly silicified

1163.1- 1163.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC

1163.8- 1165 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Good permeability

1165 - 1165.8 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1165.8- 1168 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
08% POROSITY: VUGULAR, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1168 - 1168.3 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS; 25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1168.3- 1170.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

1170.1- 1170.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1170.6- 1171.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
FOSSILS: FOSSIL MOLDS

1171.6- 1172.3 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1172.3- 1173 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
FOSSILS: FOSSIL MOLDS

1173 - 1173.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Increased recrystallization with depth

1173.8- 1176.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, VUGULAR, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE

GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-35%, ORGANICS-03%
HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Mottled/Interbedded with recrystallized wackestone and
organics; Variable porosity

1176.1- 1177.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1177.5- 1178.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

1178.5- 1179.3 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: QUARTZ-10%
OTHER FEATURES: CALCAREOUS
Silicified dolostone with immature quartz crystals in vugs

1179.3- 1180.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

1180.5- 1181.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Good permeability; Increase in recrystallization and
dolomitization with depth

1181.2- 1183.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

1183.5- 1186.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
A few larger (very course sand size) calcite crystals; Some
areas more of a wackestone

1186.8- 1187.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

1187.6- 1190.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: DOLOMITE-30%, HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1190.7- 1192 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMESTONE-20%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1192 - 1193.5 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX
IRON CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Only 41” of recovery from 1190-1195’; Depths estimated

1193.5- 1195 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Good permeability; Increase in grain size and porosity

1195 - 1196.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
High permeability

1196.8- 1199.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1199.7- 1200 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
15% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMONITE-03%
Increase in Large Calcite Crystals with Depth to Packstone

1200 - 1200.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
ACCESSORY MINERALS: QUARTZ-05%
Silicified Dolostone with Quartz Crystals

1200.3- 1201 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, SKELETAL CAST
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Molds and Casts of Mollusks and Echinoids

1201 - 1202.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Decrease in Dolomite with Depth

1202.1- 1203 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: HEAVY MINERALS-02%, LIMONITE-05%

1203 - 1203.5 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-03%, LIMONITE-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Mottled with dolomite and micrite

1203.5- 1203.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1203.8- 1206.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Lens-Shaped Molds

1206.7- 1207.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
20% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS
Increase in Porosity with Depth; High Permeability

1207.5- 1208.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

03% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Thin Iron-Rich Layer Around 1207.5’

1208.8- 1209.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1209.7- 1210 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1210 - 1210.4 DOLOSTONE; YELLOWISH GRAY TO GRAYISH ORANGE
02% POROSITY: MOLDIC, INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Partially Silicified with Quartz crystals lining vugs/molds

1210.4- 1212 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Mottled with organics and dolostone

1212 - 1212.2 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
Silicified

1212.2- 1213.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Decrease in dolomite and increase in grain size with depth

1213.5- 1213.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
04% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: HEAVY MINERALS-01%, LIMONITE-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Organic Layers

1213.8- 1217.5 WACKESTONE; VERY LIGHT ORANGE TO YELLOWISH GRAY
10% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: ECHINOID
Increase in Induration and Recrystallization with Depth
Interbedded with denser recrystallized mudstone

1217.5- 1218.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
More Compact with Depth

1218.2- 1218.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
Increase in recrystallization with depth; Large crystals at 1219.0’

1218.8- 1219.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Interbedded with recrystallized mudstone

1219.5- 1220 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE
ACCESSORY MINERALS: HEAVY MINERALS-03%
Interbedded with clay layers (with fewer crystals of heavy minerals) at 1219.7’; Increase in recrystallization.

1220 - 1221 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
OTHER FEATURES: CALCAREOUS

1221 - 1222 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
80% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Increase in recrystallization with depth

1222 - 1222.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1222.2- 1223.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
Finer and increase in recrystallization with depth

1223.8- 1225.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1225.5- 1226 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%

1226 - 1230 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, SILICIC CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-01%

FOSSILS: FOSSIL MOLDS
Silicified; Increase in Silica with Depth; Mottled at top
with dolomitic mudstone

1230 - 1230.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
04% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1230.7- 1232.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ORGANIC MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Increase in micrite at 1232.5'; Lighter in color

1232.5- 1235 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1235 - 1236.4 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Increase in recrystallization

1236.4- 1236.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT

OTHER FEATURES: CALCAREOUS

1236.8- 1237.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC

1237.4- 1238.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Increase in recrystallization and size of crystals Clay
layers at 1238.3’

1238.3- 1239.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Increased crystal density with depth; Layer of clay and
large crystals and 1239.6’; Interbedded with recrystallized
mudstone

1239.6- 1240.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-03%
Increase in recrystallization with depth

1240.5- 1243.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
MODERATE INDURATION

CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1243.4- 1243.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
Dolomitic Clay Layer at 1243.5’

1243.5- 1244 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION

1244 - 1245 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1245 - 1245.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION

1245.9- 1246.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Increased recrystallization and decreased porosity with depth

1246.8- 1247 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Very Fine Calcarenite/Micrite Interbedded with Thin Layers of Organics

1247 - 1247.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
30% POROSITY: VUGULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1247.9- 1249 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
05% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-02%
Increase in large crystals and micrite with depth; Good Permeability (lighter color at 1248.5)

1249 - 1251.2 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
03% POROSITY: PIN POINT VUGS, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
Increase in recrystallization with depth; Increased micrite with depth

1251.2- 1252.8 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS

05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1252.8- 1254.3 WACKESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1254.3- 1254.9 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
01% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
Good Permeability

1254.9- 1256.8 WACKESTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
Interbedded thin organic clay layers; Increase in
recrystallization with depth

1256.8- 1257.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
25% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1257.6- 1258 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, IRON CEMENT
ORGANIC MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION

1258 - 1260.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, IRON CEMENT
ORGANIC MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%

1260.3- 1260.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
07% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Only ~23" recovery between 1260.3-1263.0'

1260.7- 1261.1 LIMESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SILICIC CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Silicious and Dolomitic; Presence of Iron

1261.1- 1261.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: CALCAREOUS
Slightly Silicified

1261.3- 1262.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
10% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Increase in micrite with depth; thin organic layers
interbedded at 1261.2'

1262.2- 1263 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS
Moderate permeability; Organic Clay Layer at 1262.4'

1263 - 1264.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Decreased porosity with depth; Remnants of echinoid spines

1264.5- 1265 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERCRYSTALLINE; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
Good permeability; decrease in dolomite with depth

1265 - 1265.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
SPARRY CALCITE CEMENT
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS

1265.2- 1265.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: DOLOMITIC

1265.5- 1266.9 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-02%, HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1266.9- 1268.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: VUGULAR, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Crystal size increases with depth; presence of sand- sized
Calcite crystals

1268.7- 1270 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Increase in micrite and decrease in porosity with depth

1270 - 1271.1 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

1271.1- 1271.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Increase in molds/vugs with depth

1271.8- 1273.6 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION

1273.6- 1274.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Fine (quartz) crystals lining vugs and molds

1274.6- 1278.4 MUDSTONE; VERY LIGHT ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SILICIC CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Increase in recrystallization and decrease in porosity with depth; Interbedded with wackestone (top 6”); Interbedded with heavies and organics as well as calcite crystals (bottom 6”)

1278.4- 1278.5 CHERT; OLIVE GRAY TO DARK YELLOWISH BROWN
Two layers with 1/4” of limestone between

1278.5- 1280 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
Increase in recrystallization with depth; Interbedded with vuggy recrystallized wackestone and organics

1280 - 1281.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE

GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Increase in recrystallization with depth

1281.1- 1281.4 MUDSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCITE-25%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Denser crystalline limestone with larger calcite filled
vugs/molds

1281.4- 1282.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Interbedded with organics Calcite (sand size) filled vugs
and fractures

1282.7- 1284.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: CALCAREOUS
Silicified Calcareous Dolostone

1284.8- 1287 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, IRON CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: ORGANICS-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Less Silica with depth

1287 - 1287.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1287.7- 1289.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Variable permeability due to variable recrystallization
Interbedded with finer (less porous) carbonate material

1289.1- 1289.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1289.7- 1290.3 MUDSTONE; YELLOWISH GRAY TO VERY LIGHT ORANGE
<1% POROSITY: VUGULAR, FRACTURE, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
Compacted micrite with pockets of calcarenite mixed with
micrite

1290.3- 1291.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION
Organic/Clay layer at 1291.5’

1291.5- 1292.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1292.2- 1292.4 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Very fine crystalline LS

1292.4- 1292.5 CHERT; MODERATE BLUISH GRAY TO MODERATE DARK GRAY

1292.5- 1292.6 MUDSTONE; VERY LIGHT ORANGE TO TRANSPARENT
XP% POROSITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Increase in larger crystals and porosity with depth
(increase in vugs)

1292.6- 1293 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
Organic clay layer at 1293.0’

1293 - 1294.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-02%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Visible grain boundaries

1294.3- 1295 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Recrystallized wackestone

1295 - 1295.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

1295.7- 1296.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ORGANIC MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE
ACCESSORY MINERALS: LIMONITE-03%, HEAVY MINERALS-02%
OTHER FEATURES: LOW RECRYSTALLIZATION
Interbedded with organic clays

1296.2- 1297.9 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION

1297.9- 1299 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ORGANIC MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: LIMONITE-01%, HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Mottled with organics and dolomite

1299 - 1299 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION

1299 - 1300 DOLOSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
03% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Mollusk molds and vugs infilled with gypsum; Interbedded
with Organic/iron-rich clay layers at 1299.6’

1300 - 1301 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-<1%
IRON STAIN-O2%
OTHER FEATURES: CALCAREOUS
Gypsum filled vugs

1301 - 1302.3 LIMESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Very fine crystalline LS matrix with gypsum nodule as well
as infilled fractures and vugs

1302.3- 1304.5 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE

GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Large (1-3”) gypsum nodules at 1303.3’ - 1304.0’

1304.5- 1305.4 MUDSTONE; VERY LIGHT ORANGE TO MODERATE GRAY
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-02%
LIMONITE-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Some molds infilled with gypsum; small area of
silicification at 1305.5’

1305.4- 1305.6 MUDSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
01% POROSITY: PIN POINT VUGS, FRACTURE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-01%
GYPSUM-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
Flecks of gypsum; Fe and Mg present; lighter in color with
depth; Gypsum filled fractures (both parallel and
perpendicular to the bedding plain)

1305.6- 1306.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%, GYPSUM-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum filled fracture (perpendicular to bedding plain)
Increase in recrystallization and dolomitization with depth

1306.2- 1308 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-01%, GYPSUM-<1%
OTHER FEATURES: CALCAREOUS
FOSSILS: PLANT REMAINS, FOSSIL MOLDS
Some vugs and molds filled with gypsum; increase in vugs
and molds with depth to 5%; low permeability

1308 - 1309.6 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
25% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: ORGANICS-01%, GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: PLANT REMAINS, FOSSIL MOLDS
Similar to above; increase in molds (mollusks) and vugs
Remains to have low permeability; Gypsum filled vugs/molds
Decrease in dolomitization at end

1309.6- 1309.7 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: CLAY-10%, ORGANICS-03%

1309.7- 1311.7 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
10% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Similar to 1308.0-1309.6; Increase in gypsum with depth
infilling vugs (~30%)

1311.7- 1312.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-02%
Pinpoint vugs filled with gypsum

1312.5- 1313.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Decrease in dolomite with depth

1313.6- 1316.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Lighter in color with depth; zone of gypsum infilled vugs
and molds at 1314.0’; Variable recrystallization; Well
cemented/compacted; Difficult to make out “grain size” in
places; Gypsum/anhydrite filled fractures (1316.2-1316.4’)

1316.4- 1316.5 ANHYDRITE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
Mix of anhydrite and gypsum (1.5” thick)

1316.5- 1318.4 MUDSTONE; VERY LIGHT ORANGE
POROSITY: NOT OBSERVED, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE, INTERBEDDED
ACCESSORY MINERALS: ORGANICS-<1%, HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Finer crystals with depth; Interbedded with Anhydrite/
Gypsum between 1317.0-1317.2’; Nodules of gypsum and
infilled fractures from 1317.9’ to 1318.3’; Marker at
1317.4 possibly incorrect: Recovery from 1315.0 - 1317.4 =
2.0’; Recovery from 1317.4 - 1320.0 = 3.1’

1318.4- 1318.7 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR, FRACTURE, VUGULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-01%, GYPSUM-01%
HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC

1318.7- 1319.7 MUDSTONE; VERY LIGHT ORANGE TO LIGHT YELLOWISH ORANGE
01% POROSITY: INTERGRANULAR, FRACTURE, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: ORGANICS-<1%, HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Increase in recrystallization with depth.

1319.7- 1320.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-03%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in vugs and molds from above; vugs/molds infilled with gypsum (~50%); Layer of gypsum/anhydrite (~1/2" thick) at 1320.3' Aliz. Red stain pinkish-purple: ferroan calcite present

1320.3- 1321 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, IRON CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMONITE-02%, GYPSUM-01%
HEAVY MINERALS-<1%, ORGANICS-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Aliz. Red rapidly changes purple: ferroan calcite present
Interbedded with iron-rich clays; Decrease in grain size with depth; Dolostone with vugs and molds infilled with gypsum/anhydrite at 1320.7 and increasing with depth; Some molds have donut-shaped cross-sections.

1321 - 1322 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-15%, LIMESTONE-02%

HEAVY MINERALS-01%, ORGANICS-<1%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Vugs and molds infilled with gypsum (~60%); Conglomerate of
shell fragments in dolomitic matrix with vugs and molds
infilled with gypsum (1321.8-1322.0’); Slow reaction to
Aliz. Red

1322 - 1322.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE

GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Layer of organic clay at 1322.5’; Large fractures infilled
with gypsum/anhydrite

1322.5- 1325 ANHYDRITE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
ACCESSORY MINERALS: LIMESTONE-03%
Lighter in color with depth

1325 - 1327.2 ANHYDRITE; WHITE TO GRAYISH BROWN
ACCESSORY MINERALS: LIMESTONE-05%

1327.2- 1329.5 ANHYDRITE; GRAYISH ORANGE TO MODERATE GRAY

1329.5- 1336.5 ANHYDRITE; VERY LIGHT GRAY TO DARK YELLOWISH BROWN
“Marbled” with two-toned minerals from 1329.5-1335.0’
Lighter mineral slightly harder; darker mineral infilling
dissolved spaces/fractures of lighter mineral. At 1335.7:
Nodules of very fine grained powdery white non-carbonate
mineral (possibly a Na evaporite)

1336.5- 1339.6 ANHYDRITE; MODERATE YELLOWISH BROWN TO MODERATE LIGHT GRAY
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-10%
Interbedded with Limestone layer every 6-8” (Pale Orange)
At 1339.2: Nodule of powdery white mineral (same as at
1335.7); 1340’ marker in wrong place (at 1339.6’)

1339.6- 1340.7 ANHYDRITE; GRAYISH ORANGE TO GRAYISH BROWN
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE
ACCESSORY MINERALS: LIMESTONE-40%
Interbedded with intraclastic wackestone

1340.7- 1342.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MEDIUM
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-05%, LIMONITE-03%
HEAVY MINERALS-01%, ORGANICS-02%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
Vugs infilled with gypsum/anhydrite; Interbedded/Mottled
with Dolomite, Organics, and Limonite Aliz. Red: reddish
purple; ferroan calcite present.

1342.2- 1344.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-15%, HEAVY MINERALS-01%
ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Carbonate precip. present; Gypsum infilling vugs/molds

1344.2- 1345 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-01%
ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Increase in carbonate precip. with depth

1345 - 1346 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-08%, HEAVY MINERALS-01%
ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Vugs and large fractures infilled; carb. precip.

1346 - 1350 ANHYDRITE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-10%

Interbedded with wackestone; Increase in Limestone in bottom
2” of interval

1350 - 1352.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
Gypsum nodules

1352.2- 1354 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
01% POROSITY: PIN POINT VUGS, INTERGRANULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Larger nodules of gypsum

1354 - 1355 WACKESTONE; VERY LIGHT ORANGE TO LIGHT GRAY
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
Dissolved grain boundaries

1355 - 1355.8 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%

1355.8- 1356 ANHYDRITE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: LIMESTONE-10%

1356 - 1358.5 WACKESTONE; VERY LIGHT ORANGE TO LIGHT GRAY
10% POROSITY: PIN POINT VUGS, VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE

25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-08%
Gypsum filled vugs; Dissolved grain boundaries

1358.5- 1361.5 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
10% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-25%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Varying amounts of recrystallization; Gypsum nodules and
filled vugs

1361.5- 1363 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%

1363 - 1365.2 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum nodules (largest ~2” diam) and filled vugs/molds
Zone of vuggy recrystallized LS from 1363.7 to 1364.7

1365.2- 1366.3 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
10% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; recrystallized vuggy LS

1366.3- 1366.7 ANHYDRITE; WHITE TO MODERATE LIGHT GRAY

1366.7- 1367 MUDSTONE; WHITE TO VERY LIGHT ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs and molds

1367 - 1372.4 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum nodules, filled vugs/molds; Variable
recrystallization and gypsum; variable permeability

1372.4- 1373.9 ANHYDRITE; WHITE TO GRAYISH BROWN
GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: LIMESTONE-05%
Lower 6”: Gypsum, fissile, softer, and lighter in color

1373.9- 1375.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION

1375.4- 1375.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERGRANULAR, MOLDIC
GRAIN TYPE: CRYSTALS; 02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%, ORGANICS-02%
HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

Increase in recrystallization with depth; Moderate reaction
to HCl and Aliz. Red. Gypsum filled vugs/molds; Clay layer
at top of interval

1375.7- 1377.3 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
15% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Moderate to slow reaction to HCl and Aliz. Red.; Gypsum
filled vugs and molds; Molds: Fabiana, Gunteria
Dictyoconus, Mollusks, etc.

1377.3- 1379.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%, ORGANICS-02%
HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum nodules (largest at 1376.4: 2.5” diam), filled
vugs/molds; Increased vugs and low recrystallization at
1376.7-1377.4; Clay layer at top of interval and at 1377.4
(above large gypsum nodules)

1379.7- 1381.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Recrystallization varies with max at 1380.1; Moderate
reaction to HCl and Aliz. Red (pink to purple); Gypsum
nodules (1/4-2” diam)

1381.3- 1383.3 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS

02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION

1383.3- 1383.9 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: VUGULAR, INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-05%, LIMESTONE-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Slow reaction to HCl and Aliz. Red.; Interbedded with
wackestone; Gypsum nodules and filled vugs/molds

1383.9- 1385.5 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
02% POROSITY: VUGULAR, INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Increase in gypsum and recrystallization with depth; Layer
of clay at 1384.3'; Layer of gypsum at 1385.1'; Increase in
vugs with depth.

1385.5- 1387 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: VUGULAR, PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, NODULAR
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Interbedded with unrecrystallized wackestone; Nodules of
wackestone present; Gypsum nodules and filled vugs/molds.

1387 - 1388.2 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1388.2- 1388.5 CHERT; VERY LIGHT GRAY TO MODERATE GRAY
% POROSITY:

1388.5- 1391.9 ANHYDRITE; WHITE TO LIGHT BROWN
% POROSITY:

1391.9- 1393.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; multiple mollusk molds; Small
chunks of unrecrystallized LS throughout.

1393.1- 1393.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX

1393.5- 1395.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Mottled/Interbedded with clays and mudstone (LS) as well as
gypsum nodules; Recovery of 4” from 1395-1400.

1395.5- 1397.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED, BANDED
FOSSILS: FOSSIL MOLDS
Top 3” of interval: gypsum fragments in LS matrix.

1397.8- 1405 GYPSUM; VERY LIGHT ORANGE TO LIGHT BROWN
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT

1405 - 1407 GYPSUM; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-15%

1407 - 1408 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERGRANULAR, VUGULAR, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ORGANIC MATRIX
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Recrystallized packstone/wackestone with dissolved grain
boundaries; Top 3” of interval: gypsum fragments in
limestone matrix

1408 - 1408.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1408.5- 1409 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERGRANULAR, VUGULAR, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%

1409 - 1410.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

Less recrystallization at top of interval and increasing
with depth; Gypsum filled vugs/molds; Moderate reaction to
HCl and Aliz. Red.

1410.2- 1410.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%, ORGANICS-<1%
OTHER FEATURES: CHALKY, LOW RECRYSTALLIZATION
Gypsum filled fractures; Organic clay layer at 1410.3.

1410.4- 1411.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, VUGULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE
ACCESSORY MINERALS: ORGANICS-03%, GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Interbedded with organic clays; Recrystallization varies
throughout.

1411.8- 1413.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%, GYPSUM-02%
OTHER FEATURES: LOW RECRYSTALLIZATION
Increase in micrite with depth

1413.2- 1413.3 CHERT; YELLOWISH GRAY TO MODERATE GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1413.3- 1415.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION

FOSSILS: FOSSIL MOLDS
Gypsum nodule at 1414.3; Organic clay layers @ 1413.8 and
1415.4

1415.4- 1417 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, FRACTURE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Recrystallization increase with depth

1417 - 1417.1 GYPSUM; VERY LIGHT ORANGE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1417.1- 1418.6 MUDSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Organic layers interbedded in top 1.5” of interval Gypsum
nodules and filled vugs/molds. Increase in vugs and gypsum
with depth; Increased recrystallization with depth

1418.6- 1419.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-20%, ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CALCAREOUS
FOSSILS: FOSSIL MOLDS
Little reaction to HCl, slow reaction to Aliz. Red

1419.1- 1419.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION

1419.4- 1419.5 GYPSUM; GRAYISH BROWN TO LIGHT GRAY

Thin layer of fractured gypsum

1419.5- 1419.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, PIN POINT VUGS
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Interbedded and mottled with micritic layers
(unrecrystallized) and dolomite; Increase in
recrystallization and dolomitization with depth

1419.8- 1421.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Good Permeability

1421.1- 1421.5 ANHYDRITE; WHITE TO LIGHT GRAY
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
ACCESSORY MINERALS: LIMESTONE-20%

1421.5- 1421.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION

1421.6- 1425 ANHYDRITE; WHITE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1425 - 1425.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds

1425.3- 1426.6 ANHYDRITE; VERY LIGHT GRAY TO VERY LIGHT ORANGE
ACCESSORY MINERALS: LIMESTONE-20%

1426.6- 1427.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: FRACTURE, VUGULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
FOSSILS: FOSSIL MOLDS

1427.5- 1427.7 CHERT; VERY LIGHT GRAY TO MODERATE GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1427.7- 1429.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, CALCILUTITE
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS
Gypsum filled molds/vugs; mollusk molds Varying amounts of
micrite and porosity throughout Layer of gypsum at 1429.7’

1429.7- 1430.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: IRON STAIN-<1%, ORGANICS-<1%
Varying amounts of micrite; Interbedded with organic clay
layers and micritic layers

1430.7- 1431.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

Lighter sand size limestone in darker slightly dolomitic
limestone matrix; Gypsum filled vugs; Distinct lithologic
change at end of interval

1431.4- 1431.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CALCAREOUS
Slow to moderate reaction to HCl and Aliz. Red

1431.7- 1432.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-30%
Sand size gypsum crystals in micrite matrix; Organic clay
layers at top and bottom of interval

1432.9- 1434.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Increase in gypsum nodules with depth; varying
recrystallization throughout

1434.4- 1435.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: GYPSUM-45%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Brecciated gypsum in recrystallized micritic matrix; Gypsum
amount varies from 80% at top to 10% at bottom

1435.8- 1437.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE

PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: LOW RECRYSTALLIZATION
Increase in recrystallization with depth

1437.3- 1438.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, VUGULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
Less indurated in some places; Gypsum nodules present
Increase in molds at 1438.0’

1438.3- 1439 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS
Gypsum filled molds/vugs; nodules in top 4” of interval

1439 - 1440 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: PLANT REMAINS
Recrystallization increase with depth; Presence of Iron
Oxide

1440 - 1440.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-<1%

OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Decrease in recrystallization with depth

1440.5- 1441.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, MOLDIC, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-<1%, LIMONITE-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1441.3- 1442 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED, FISSILE
Interbedded with thin organic layers

1442 - 1443 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-01%, LIMONITE-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Casts and molds present; Increase in recrystallization and
gypsum filled vugs and molds with depth

1443 - 1444.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Varying amounts of recrystallization; Layer of organics at
bottom

1444.2- 1444.3 GYPSUM; WHITE TO LIGHT GRAY

1444.3- 1445.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

<1% POROSITY: PIN POINT VUGS, VUGULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%, LIMONITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
Gypsum nodules (largest: 1.5” diam.)

1445.2- 1447 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; Layer of gypsum at bottom (~1/2”
thick); Varying amounts of recrystallization; Region of less
recrystallization at bottom of interval

1447 - 1448.3 LIMESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Well indurated recrystallized limestone; Gypsum nodules
present

1448.3- 1448.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
CLAY MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC, MUDDY
FOSSILS: FOSSIL MOLDS
Mixed reaction to HCl and Aliz. Red; Gypsum filled
vugs/molds

1448.7- 1449.1 MUDSTONE; WHITE TO VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS

GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
07% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%, ORGANICS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION

1449.1- 1450.7 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Gypsum nodules; Microcrystalline recrystallized LS with high induration.

1450.7- 1452.8 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Increase in gypsum; Areas of brecciated gypsum; Mold of Gunteria or Mollusk.

1452.8- 1454 WACKESTONE; VERY LIGHT ORANGE TO LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, BRECCIATED
ACCESSORY MINERALS: GYPSUM-10%, ORGANICS-03%
FOSSILS: FOSSIL MOLDS
Layer (~1/4") of gypsum at bottom

1454 - 1455.2 MUDSTONE; VERY LIGHT ORANGE TO VERY LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1455.2- 1455.3 WACKESTONE; VERY LIGHT ORANGE TO LIGHT GRAY
01% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1455.3- 1455.5 MUDSTONE; LIGHT GRAY TO GRAYISH BROWN
<1% POROSITY: FRACTURE, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SILICIC CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION
Silicified limestone

1455.5- 1456.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-30%
Large gypsum nodule; Area of recrystallization at 1455.9’

1456.1- 1456.4 PACKSTONE; GREENISH BLACK TO GRAYISH BROWN
1P% POROSITY: INTERGRANULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
Gypsum filled fractures (cross-bedded) and layers of
brecciated gypsum at 1456.3-1456.4’

1456.4- 1457.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION

FOSSILS: FOSSIL MOLDS
Sand-size gypsum; flakes of FeS; Organic layers interbedded
at 1457.4-1457.9; Increase in recrystallization in bottom
2”

1457.9- 1459.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%, ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
Organics appear to be crystallized

1459.3- 1459.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-<1%, ORGANICS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Recrystallization increases with depth

1459.8- 1460.5 LIMESTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Layer of organic clays at bottom

1460.5- 1461.1 LIMESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
A few gypsum nodules and filled molds

1461.1- 1462.8 WACKESTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN

<1% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
Mottled with gypsum and organic/iron material

1462.8- 1463.3 GYPSUM; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
<1% POROSITY: FRACTURE, INTERCRYSTALLINE; GOOD INDURATION
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: LIMESTONE-10%

1463.3- 1463.6 WACKESTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE

1463.6- 1465 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gastropod molds; Gypsum filled molds; Moderate reaction to
HCl and Aliz. Red, turns pinkish-purple; Fe present; Region
of silicification at 1464.5-1464.8; layer of orgs at 1464.4
& 1464.8

1465 - 1466.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, VUGULAR, FRACTURE
GRAIN TYPE: CRYSTALS; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-30%, CALCARENITE-01%
LIMONITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Slower reaciton to Aliz. Red at 1465.9, Area of increased

dolomite; low permeability

1466.2- 1466.5 MUDSTONE; WHITE TO VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION

1466.5- 1467.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Mottled/Interbedded with dolomitic iron-rich LS; Gypsum filled vugs; Nodule of fissile, prismatic crystals at 1467.3.

1467.8- 1470.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Organic layer at 1468.2; Area of high recrystallization from 1469.0 - 1469.5

1470.6- 1470.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-01%, HEAVY MINERALS-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION

1470.8- 1471.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodules; cross-section/mold of miliolid (~7mm) at
1471.4

1471.8- 1472.2 GYPSUM; WHITE TO LIGHT GRAY
<1% POROSITY: LOW PERMEABILITY
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: LIMESTONE-05%

1472.2- 1474.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED
ACCESSORY MINERALS: GYPSUM-05%, LIMONITE-02%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Mottled/interbedded with iron-rich minerals and gypsum
Layers of brecciated gypsum at 1472.6 & 1473.0; Gypsum
filled molds/vugs (~25%); Areas of low recrystallization
throughout interval. 64” in interval marked 1470.0 -
1474.6’. Top 2.0’ as described; Middle 0.7’: increased
recryst, dolomitized in some areas; Bottom 0.6’: High
recryst., crystalline LS with little gypsum, increased vugs
(~5%)

1474.6- 1475 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
At 1475.0’: Organic layer (1/8” thick)

1475 - 1475.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, FRACTURE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Fractures cross-bedded, some filled with gypsum; Variable
layers in top of interval; nodule of silicified LS

1475.8- 1475.9 GYPSUM; WHITE TO MODERATE LIGHT GRAY
<1% POROSITY:
Fractures infilled with calcareous organic mud.

1475.9- 1476.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Molds include mollusks, and possibly ostrocods

1476.4- 1476.6 PACKSTONE; GREENISH BLACK
1I% POROSITY: PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-15%
Interbedded with gypsum layers

1476.6- 1478.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION
Nodules of gypsum throughout

1478.3- 1479.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Good Permeability; presence of gypsum nodules in lower
portion; Increase in recryst. with depth; increase in vugs
and molds with depth.

1479.2- 1480.5 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Variable recryst. and grain/crystal size; some areas more
of a wackestone; brecciated gypsum at 1479.5 and
1480.3-1480.5; gypsum infilled vugs and molds.

1480.5- 1480.9 WACKESTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: IRON STAIN-02%, GYPSUM-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Decreased grain size with depth

1480.9- 1481.9 WACKESTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
Decrease in grain size with depth; decrease in vugs

1481.9- 1483.2 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%, HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; mollusk molds; gypsum nodules
Increase in recrystallization in top 1”; Area of low
recryst. at 1482.6 - 1482.8’.

1483.2- 1483.3 GYPSUM; WHITE TO MODERATE LIGHT GRAY
<1% POROSITY: LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-05%

1483.3- 1484.9 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-25%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Variable recrystallization; Areas of brecciated gypsum
throughout; Gypsum filled vugs/molds

1484.9- 1485.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%, HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
Unidentifiable cast and mold (~1' diam); Large gypsum
nodules at 1485.5 (~1.5" diam)

1485.7- 1488 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-45%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Brecciated gypsum, nodules in slightly dolomitic
recrystallized LS matrix

1488 - 1490.3 GYPSUM; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
PIN POINT VUGS; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-25%
FOSSILS: FOSSIL MOLDS
Fractures infilled with recrystallized LS; also interbedded
with LS at 1489.4 -1489.5 and 1489.7-1489.8; LS fragments
at top and bottom of interval (less recryst. at bottom)

1490.3- 1491.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
INTERCRYSTALLINE

GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-25%, ORGANICS-01%
HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
Variable recrystallization; Layer of gypsum (fractured and
infilled with LS) at 1491.0 - 1491.2

1491.5- 1492.5 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, VUGULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Small gypsum nodules and infilled molds and vugs

1492.5- 1492.7 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-08%
OTHER FEATURES: LOW RECRYSTALLIZATION
Less porous than above

1492.7- 1493.1 GYPSUM; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: LIMESTONE-30%
Brecciated gypsum and nodules in LS matrix (mudstone)

1493.1- 1493.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
Good Permeability

1493.7- 1494.3 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY

<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Between 1493.8-1495.0 there is 21" of core; Brecciated gypsum 6-8" into the interval; Subtle lithologic change 11 inches in (darker in color and increased vugs, decrease in recrystallization)

1494.3- 1496.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
01% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
A few gypsum nodules and fractures (cross-bedded) filled with gypsum; Area with calcite crystals from 1495.8 to 1496.0; Possibly some recrystallization near end of interval; At end of interval, pattern of recryst. bryozoa

1496.9- 1497.7 GYPSUM; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-15%
Top and bottom of interval: LS with gypsum nodules

1497.7- 1498 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
OTHER FEATURES: LOW RECRYSTALLIZATION

1498 - 1499.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS

Increase in grain size and porosity with depth; organic
clay layer at bottom

1499.2- 1500 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Increase in gypsum filled molds/vugs with depth

1500 - 1501.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%, LIMONITE-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Limonite crystals at top of interval; Interclasts more
dense (increase in compaction) with depth making it
difficult to determine grain size

1501.5- 1502.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

1502.9- 1505 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; large nodule (2” diam.) at

1504.3; Regions of low recryst. present; variable porosity
(3-15%); Area of slight dolomitization and increase of Fe
at 1504.1-1504.2

1505 - 1505.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Top of interval: 1/4” org. clay over 1” of micrite
Increase in recryst. with depth (along with porosity)

1505.3- 1505.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in recryst. with depth; Molds: dictyoconus and
mollusks

1505.6- 1507.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum filled molds

1507.2- 1507.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1507.6- 1508.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Variable dolomitization; increased molds and porosity

1508.6- 1509 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS

1509 - 1510.2 PACKSTONE; GREENISH BLACK TO GRAYISH GREEN
0V% POROSITY: MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Molds/vugs filled with gypsum and calcite crystals; Increase
in iron content with depth.

1510.2- 1510.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-<1%
Layer of organic clay at 1510.3’.

1510.4- 1511.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
Variable recrystallization and porosity throughout interval

1511.9- 1512 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: LOW RECRYSTALLIZATION

1512 - 1512.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodules at bottom of interval

1512.6- 1513.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Decrease in recryst. and gypsum nodules at 1513.0’; Gypsum
Gypsum filled vugs and molds

1513.5- 1514.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-01%, HEAVY MINERALS-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION
Area of recryst. at 1514.0; Gypsum nodules at 1514.5.

1514.8- 1516.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%

OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled fractures and vugs; gypsum nodules; Layer of more porous LS (and increase in gypsum) at 1515.6
Interbedded with thin org. clay layers

1516.3- 1517.6 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, SILICIC CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Layer of organics at top 1/8”; Nodules of silicified LS top 1” and lesser silicification throughout interval and decreasing with depth

1517.6- 1518 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Varying amounts of recrystallization; increase at bottom of interval; Gypsum nodules

1518 - 1520.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-05%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds and nodules; Mottled with less porous recrystal. LS; 1/4-1/2” layer of Anhydrite b/w this interval and next.

1520.1- 1525.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: IRON STAIN-<1%, GYPSUM-05%

OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Less recrystal. micrite at top 1” of interval; Layer of
gypsum (~1/4”) over 1/8” of orgs. at 1523.2’; Large
elongated gypsum nodules 1524.3-1524.6

1525.7- 1526.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION
Decrease in recrystallization with depth

1526.4- 1526.8 GYPSUM; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: LIMESTONE-05%
Two-toned gypsum interlaced in crystalline micritic matrix
Fissile layer of organics at top of interval

1526.8- 1528.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERGRANULAR, MOLDIC
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Variable amounts of recrystallization

1528.2- 1529.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: LOW RECRYSTALLIZATION
Gypsum nodules

1529.7- 1531.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; nodules

1531.1- 1531.2 MUDSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
ORGANIC MATRIX
ACCESSORY MINERALS: GYPSUM-30%
Top 1/2” of interval: organic rich micrite layer on top of
1” of gypsum nodules in micritic matrix

1531.2- 1532.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Decrease in porosity at 1531.6 to ~1%

1532.2- 1535 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodules and filled vugs/molds

1535 - 1536 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Increase in vugs from above and fewer molds; Organic clay
layer at 1535.3’

1536 - 1531.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Larger calcite crystals in recrystallized micritic matrix
Thin layers of organics at top of interval.

1531.2- 1538.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Interbedded with organic clays and gypsum

1538.2- 1539.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1539.5- 1542.8 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds and nodules; molds increasing with
depth; Slightly dolomitic and presence of Iron; region of
increased dolomite at 1540.7; Limonite crystals at 1540.0’

1542.8- 1543.3 CLAY; VERY LIGHT GRAY TO DARK YELLOWISH BROWN

GOOD INDURATION
CEMENT TYPE(S): CLAY MATRIX, ORGANIC MATRIX, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-25%
FOSSILS: ORGANICS
Large organic/carbonate clay nodule in gypsum layer
(possibly post-drilling evaporite formation)

1543.3- 1544.3 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; Difficult to determine amount of
dolomitization; Delayed reaction to HCl and Aliz. Red.

1544.3- 1544.4 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX
Micrite and organic clay layers

1544.4- 1546 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1546 - 1546.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS

1546.2- 1547.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Both casts and molds present; Gypsum filled vugs/molds
Variable dolomitization.

1547.7- 1548.3 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR, FRACTURE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%

1548.3- 1550 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled fractures; Recrystallization increase w/depth

1550 - 1552.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS; 03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds

1552.7- 1553.5 GYPSUM; GRAYISH ORANGE TO MODERATE LIGHT GRAY
01% POROSITY: FRACTURE; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-30%
Gypsum nodules in fissile micritic matrix

1553.5- 1555 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
02% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: GYPSUM-10%, ORGANICS-02%
HEAVY MINERALS-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Thin beds of varying grain size and recrystallization as
well as organics throughout

1555 - 1556 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Good reaction to HCl; mixed reaction to Aliz. Red; Presence
of Fe; Fracture filled with gypsum (perp. to bedding ~7"
into interval below)

1556 - 1556.4 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ORGANIC MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Thin beds of organic rich clays interbedded with micrite
Recrystallization decreasing with depth; Fractures across
length of interval infilled with gypsum

1556.4- 1556.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<P% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Increase in recrystallization and dolomitization w/ depth

1556.8- 1559 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%

OTHER FEATURES: CALCAREOUS, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Slow reaction to HCl and Aliz. Red; Gypsum filled molds at
1558.7; Organics in molds at bottom

1559 - 1559.1 MUDSTONE; WHITE TO VERY LIGHT ORANGE
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
OTHER FEATURES: CRYSTALLINE

1559.1- 1559.6 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: CALCAREOUS, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Possible pyrite visible with scope; area of iron stain and
limonite at top of interval

1559.6- 1562.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-<1%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Increased vugs and molds; gypsum filled molds

1562.5- 1562.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, ORGANIC MATRIX
ACCESSORY MINERALS: ORGANICS-03%, LIMONITE-<1%
OTHER FEATURES: LOW RECRYSTALLIZATION
Layer of gypsum (~1/4” thick) between 2 clay layers at top

1562.7- 1563.4 DOLOSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%, HEAVY MINERALS-<1%
FOSSILS: FOSSIL MOLDS
Gypsum filled molds and fractures; Decrease in
dolomitization w/ depth after 1563.0’

1563.4- 1565 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum nodules; mollusk casts and molds

1565 - 1565.4 ANHYDRITE; WHITE TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1565.4- 1566 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Organic clay layer at top; Gypsum filled molds/vugs; Gypsum
nodule at bottom of interval

1566 - 1566.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-01%, IRON STAIN-01%
LIMONITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Mix reaction to Aliz. Red (dark purple): dolomitic ferroan
calcite; Increase in dolomite with depth

1566.4- 1567.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
12% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-03%, IRON STAIN-01%
LIMONITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodule at top of interval

1567.2- 1567.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
Gypsum nodules; increase in vugs/molds with depth; Increase
in compaction and recrystallization w/ depth

1567.9- 1568.2 GYPSUM; WHITE TO MODERATE LIGHT GRAY
ACCESSORY MINERALS: LIMESTONE-10%
Fractured gypsum infilled with limestone

1568.2- 1568.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS

1568.4- 1568.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: BANDED, MOTTLED
ACCESSORY MINERALS: LIMONITE-01%
OTHER FEATURES: LOW RECRYSTALLIZATION
Good permeability

1568.6- 1571.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE

03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-03%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
1568.6 - 1569.2: Compact with little to no porosity
1569.2-1570.0: Increase in gypsum and mottling
1570.0-1571.1:Increase in vugs/molds (porosity ~3%)

1571.1- 1571.4 GYPSUM; WHITE TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-20%
Layers of gypsum with layer of micrite between

1571.4- 1573.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Top 1" is Unrecrystallized; variable recrystallization and
dolomitization (with mottled texture) in upper 6"; Gypsum
nodules and filled vugs/molds

1573.2- 1573.5 GYPSUM; WHITE TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
ACCESSORY MINERALS: LIMESTONE-08%
Fractured gypsum nodules infilled with limestone

1573.5- 1574.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Good Permeability but lower with depth; less recrystallized
with depth; Gypsum nodules and filled vugs/molds; Recovery:
67" from 1570.0-1575.0

1574.3- 1574.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR

GRAIN TYPE: CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%, LIMONITE-01%

1574.7- 1578.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds; gypsum nodules at 1575.8-1576.0
Decrease in porosity after 1576.0; Increase in crystal size
at 1576.9-1577.1 (re-recrystalized); Organic clay layer at
bottom of interval

1578.2- 1579.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
At top 1”: more compact with flecks of either heavies or
organics and gypsum nodule; Some secondary recrystallization
present; Increase in molds with depth

1579.1- 1579.5 MUDSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: PIN POINT VUGS, FRACTURE, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-05%
Interbedded with organic clays

1579.5- 1582 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-02%

LIMONITE-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Mollusk casts; moderate permeability; At 1580.4: veins of brown mineral (unresponsive to Aliz. Red but slightly to HCl) At 1582.0: Can make out interclasts and infill (unrecrystallized)

1582 - 1582.1 GYPSUM; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
GOOD INDURATION
ACCESSORY MINERALS: LIMESTONE-40%
Gypsum nodules in crystalline limestone matrix

1582.1- 1583.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-02%, HEAVY MINERALS-02%
GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Aliz. Red: pink to purple, good reaction except in areas of secondary recrystallization/dolomitization; Good permeability; gypsum nodules (small, <1”)

1583.9- 1585 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-10%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Good permeability; less vugs; mottled texture; gypsum nodules (larger and brecciated) and infilled fractures

1585 - 1587.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Good permeability; gypsum filled fractures

1587.7- 1589.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodules & filled molds and fractures; large nodules
at 1588.0 and 1589.7; Increased vugs with depth

1589.9- 1594.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-08%, LIMONITE-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum nodules and filled molds; Area of brecciated gypsum
at 1593.0-1593.2; Slight increase in porosity at 1593.2

1594.2- 1595 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
04% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%, HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Secondary recrystallization/dolomitization starting
speckled; Thin layers of organics; Decrease in porosity/
permeability at 1594.6

1595 - 1596 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: PIN POINT VUGS, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Gypsum filled molds/vugs

1596 - 1597.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Variable permeability; large amount of molds

1597.4- 1598.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Can see structural artifacts (pre-recrystallization)

1598.3- 1600.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-05%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum nodules (1/4-1.5” diam); Speckled with dolomitic
limestone; Fractures infilled with dolomitized LS; Molds
include mollusks and possibly singular coral and forams
Iron specks at 1600.0’

1600.5- 1603.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%, HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL MOLDS
Large amount of molds (and casts); Gypsum filled molds
(include mollusks & possibly bryozoa, corals, and forams)
Large gypsum nodule (3” diam) at 1602.9’

1603.6- 1604.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE

GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Nodules of vuggy dolomitic LS with dolomitic fill; Increase
in dolomitization with depth; Gypsum filled molds and
fractures

1604.3- 1609.2 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ORGANIC MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, INTERBEDDED, NODULAR
ACCESSORY MINERALS: GYPSUM-01%, HEAVY MINERALS-01%
ORGANICS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Variable amounts of dolomitization; Area of dolomitization
at 1604.5; Very few molds; Flecks of organics, heavies, and
gypsum; Gypsum crystals in vugs/molds

1609.2- 1610 WACKESTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ORGANIC MATRIX
ACCESSORY MINERALS: ORGANICS-03%, HEAVY MINERALS-02%
GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Moderate reaction to Aliz. Red and HCl (delayed); Increase
in dolomite from above; darker in color

1610 - 1614.5 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ORGANIC MATRIX
ACCESSORY MINERALS: ORGANICS-01%, HEAVY MINERALS-01%
GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

DOLOMITIC
Small gypsum nodules; lighter color with depth; Varies
between mudstone and wackestone; primarily mudstone, but
areas with larger grain size present; Flecks of organics
and heavies throughout

1614.5- 1617.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 10% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ORGANIC MATRIX
ACCESSORY MINERALS: ORGANICS-02%, HEAVY MINERALS-01%
GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Similar to above; Specks of Dolomite; Thin organic layers
Increased dolomitization with depth; Area of flattened
gypsum nodules at 1616.3-1616.8

1617.4- 1618 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
CALCAREOUS
Slow reaction to Aliz. Red

1618 - 1621.6 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum nodules and filled fractures; Variable
dolomitization

1621.6- 1622.1 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT

GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-40%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Area of gypsum nodules (1-2” diam)

1622.1- 1625 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%, ORGANICS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum nodules (1/4-1” diam); Flecks of organics

1625 - 1627 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%, ORGANICS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Moderate permeability; few gypsum nodules and filled molds
near bottom of interval

1627 - 1673.4 MUDSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, ORGANIC MATRIX
CLAY MATRIX
SEDIMENTARY STRUCTURES: BEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum nodules; moderate permeability; Multiple layers of
clays and organics interbedded with recrystallized micrite
and lighter colored LS nodules

1673.4- 1628 ANHYDRITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
Veins of gypsum and large “healed” fracture at 1627.7’

1628 - 1630 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE

GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%, PYRITE-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Thin layers of organics and clays; Gypsum nodules and
filled vugs; pyrite filled vugs

1630 - 1630.4 ANHYDRITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BANDED
ACCESSORY MINERALS: GYPSUM-20%, LIMESTONE-10%
Fractured anhydrite/gypsum with nodules of recrystallized
limestone

1630.4- 1630.8 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum filled vugs; increase in dolomitization with depth
Presence of iron

1630.8- 1631.4 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE

1631.4- 1631.7 MUDSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum nodules; layers of organics and clay interbedded at
10-50 degree angle

1631.7- 1633.7 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN

10% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

1633.7- 1633.8 MUDSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Interbedded with clays and organics

1633.8- 1635.3 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
FOSSILS: FOSSIL MOLDS
Gypsum filled fractures (perpendicular to bedding)

1635.3- 1637.5 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
01% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
FOSSILS: FOSSIL MOLDS
Gypsum filled fractures (parallel to 30 degrees from
bedding); May be partially silicified

1637.5- 1639 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH ORANGE
10% POROSITY: VUGULAR, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, SHELL-03%
HEAVY MINERALS-<1%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, ECHINOID
BENTHIC FORAMINIFERA, MOLLUSKS
Cones present; Only 54” between 1635.0-1640.0’

1639 - 1640.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
20% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY

90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

1640.1- 1641.2 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS

1641.2- 1641.3 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
20% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS
Good Permeability

1641.3- 1642.3 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Pocket of more porous dolostone at 1642.1-1642.3 (~15%)

1642.3- 1644.2 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
OTHER FEATURES: CALCAREOUS
Variable porosity; possibly partial silicification (or
gypsum)

1644.2- 1644.9 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%
FOSSILS: FOSSIL MOLDS

1644.9- 1645.7 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS

GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: LIMONITE-02%, SHELL-02%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
Aliz. Red: good reaction, purple; Layer of iron minerals at
1645.4

1645.7- 1647 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: LIMONITE-01%, GYPSUM-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1647 - 1647.8 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
15% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Good permeability; Gypsum filled vugs/molds

1647.8- 1650 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Increase in grain size, decrease in vugs and molds; Gypsum
filled vugs, molds, and fractures

1650 - 1650.8 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%, SHELL-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, ECHINOID
BENTHIC FORAMINIFERA
Sand size dolomite and fossil fragments coated with gypsum
(primarily echinoid fragments and spines)

1650.8- 1651.5 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
10% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-05%, SHELL-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, ECHINOID
Gypsum filled vugs and molds

1651.5- 1652 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%, SHELL-10%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, ECHINOID
BENTHIC FORAMINIFERA
Decrease in gypsum and increase in porosity in bottom 2” of
interval

1652 - 1654.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: SHELL-02%
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Large number of gypsum filled fractures (~15 degrees from
bedding) between 1652.5 and 1652.8’ then every 1-2’
throughout interval

1654.3- 1654.6 ANHYDRITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: LIMESTONE-10%

1654.6- 1655 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE

1655 - 1655.8 ANHYDRITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE

GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: NODULAR, BRECCIATED
ACCESSORY MINERALS: LIMESTONE-30%

1655.8- 1656.3 ANHYDRITE; VERY LIGHT GRAY TO MODERATE LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT

1656.3- 1657.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: ANHYDRITE-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Gypsum/anhydrite nodules and filled fractures; Layer of
gypsum at bottom of interval at 30 degrees from bedding

1657.1- 1658.5 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
M1% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CALCILUTITE, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
Gypsum filled fractures POSSIBLE TOP OF OLDSMAR FORMATION
LITHOLOGY FITS PUBLISHED DESCRIPTIONS, BUT TYPICAL INDEX
FOSSILS NOT OBSERVED, ACTUAL TOP COULD BE DEEPER.

1658.5- 1659.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: MOLDIC, INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-35%, GYPSUM-15%
OTHER FEATURES: CALCAREOUS
FOSSILS: CONES, BENTHIC FORAMINIFERA, FOSSIL MOLDS
Vuggy/moldic dolostone with fossils still intact
interbedded with slightly recrystallized fossiliferous LS

1659.2- 1660 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERGRANULAR, INTERCRYSTALLINE

PIN POINT VUGS
GRAIN TYPE: SKELETAL CAST, CALCILUTITE, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: BENTHIC FORAMINIFERA, CONES, FOSSIL MOLDS
Multiple rotalina-type fossils/casts; specific genus is
unidentifiable; flattened cones and/or Fabiana also
present. Dolomite crystals throughout and increasing with
depth.

1660 - 1662.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: SKELETAL CAST, CALCILUTITE, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: DOLOMITE-25%, GYPSUM-15%
OTHER FEATURES: LOW RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: MOLLUSKS, CONES, BENTHIC FORAMINIFERA
FOSSIL MOLDS
Mottled with dolomite and gypsum; Good permeability

1662.4- 1663.1 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: SKELETAL CAST, CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-20%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: CONES, BENTHIC FORAMINIFERA, FOSSIL MOLDS
Good Permeability

1663.1- 1665 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: LIMESTONE-40%
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
FOSSIL MOLDS

Mottled with recrystallized fossiliferous mudstone; good
permeability

1665 - 1668.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: LIMESTONE-25%, LIMONITE-02%
GYPSUM-01%
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
Moderate permeability; Mottled with recrystallized
fossiliferous mudstone

1668.5- 1670.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: SKELETAL CAST, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-10%, LIMONITE-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, CONES, BENTHIC FORAMINIFERA
FOSSIL MOLDS
At 1669.1: unidentifiable foram, possibly Helicostegina

1670.5- 1670.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: DOLOMITE-03%, LIMONITE-02%
HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Moderate permeability

1670.7- 1674 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-03%, HEAVY MINERALS-02%

OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
Good permeability; presence of medium size euhedral
crystals (rhombohedral and scalenohedral) in recrystallized
micrite matrix; Gypsum filled vugs and molds; Gypsum
crystals also present

1674 - 1677.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Fossil at 1675.1: possibly a miliolid; Variable crystals
decrease with depth

1677.5- 1679.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, CRYSTALS
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-02%, HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Increase in large crystals with depth; moderate
permeability; At 1677.8: brachiopod looking mold; Large
crystals mottled with fossiliferous mudstone

1679.3- 1685 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL CAST
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-02%, LIMONITE-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

1685 - 1686.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-40%, LIMONITE-01%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Recrystallized fossils; Gypsum nodules and filled fractures
at end of interval; Areas of recrystallized LS; Dolomite
becoming more dominant with depth

1686.8- 1687.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: LIMESTONE-15%, GYPSUM-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
Gypsum nodules

1687.5- 1688.9 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: ANHYDRITE-15%, LIMESTONE-03%
FOSSILS: FOSSIL MOLDS
Anhydrite nodules and gypsum filled fractures

1688.9- 1693.2 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: ANHYDRITE-10%
FOSSILS: FOSSIL MOLDS
Multiple fractures infilled with gypsum; Presence of iron
Increase in molds and porosity at 1691.2-1692.8 (~2%)

1693.2- 1694.1 DOLOSTONE; DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%

OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS

1694.1- 1694.6 ANHYDRITE; VERY LIGHT GRAY TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1694.6- 1695 DOLOSTONE; DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN
02% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: VERY FINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, IRON CEMENT
ACCESSORY MINERALS: IRON STAIN-03%
OTHER FEATURES: CALCAREOUS
Very fine to fine dolomite sands with iron stain; Increase
in consolidation with depth

1695 - 1697.5 DOLOSTONE; DARK YELLOWISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS
Gypsum nodules and filled fractures

1697.5- 1697.7 ANHYDRITE; VERY LIGHT GRAY TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1697.7- 1699.1 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-08%
FOSSILS: FOSSIL MOLDS
Gypsum nodules; bottom 4” of interval: decrease in fossils
increase in limestone

1699.1- 1700 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, CRYSTALS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-40%, HEAVY MINERALS-03%
LIMONITE-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE

DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS
BENTHIC FORAMINIFERA, MOLLUSKS
Moderate permeability; sand size dolomite crystals in
micritic fossiliferous matrix; crystals/flecks of heavy
minerals at bottom of interval (dark greenish blue to
reddish orange)

1700 - 1701.9 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, SKELETAL CAST, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-02%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
Sand-size euhedral crystals (calcite and/or dolomite); Good
permeability; small grains of greenish-blue mineral and
iron-stained mineral; variable crystals: some areas more of
a packstone

1701.9- 1704 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL CAST
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-20%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, CONES, FOSSIL MOLDS
Gypsum nodules (with white evaporite) at 1702.0’; Nodules
of fractured dolomitized matrix at 1702.5’

1704 - 1705.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
10% POROSITY: FRACTURE, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM
ACCESSORY MINERALS: LIMESTONE-35%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, CONES, MILIOLIDS
Large open fracture (~6” long) at edge of contact between
dense dolostone and calcic dolostone which changes to
dolomitic limestone (variable dolomite crystals in
wackestone) at 1704.5 and becomes dominant.

1705.6- 1706.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL CAST
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-20%, HEAVY MINERALS-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
At 1706.5’: Cylindrical fossil ~3/4” diam through core
(mollusk) infilled with same material as surroundings

1706.5- 1707.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, SKELETAL CAST
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-40%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
Increase in dolomitization with depth

1707.7- 1708.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-35%, HEAVY MINERALS-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
Increased compaction and molds with depth

1708.3- 1709.6 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Increase in vugs/molds at 1708.7 but still low permeability
(~2%); Healed fractures present

1709.6- 1710.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
End of interval: slight increase in porosity and molds

1710.6- 1711.7 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: CALCAREOUS
Very dense; Gypsum filled vugs

1711.7- 1712.6 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: CALCAREOUS
Thin layers at bottom of interval

1712.6- 1715.1 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; EUHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: GYPSUM-02%, CHERT-02%

1715.1- 1716 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: CALCAREOUS
Gypsum filled fractures; dolomitized clay layer at bottom
of interval

1716 - 1719.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-10%, ANHYDRITE-20%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum filled molds; Large anhydrite nodules from
1717.3-1718.8; Less molds with depth

1719.5- 1722.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, VUGULAR, INTERCRYSTALLINE

GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: LIMONITE-02%, GYPSUM-05%, DOLOMITE-25%
OTHER FEATURES: LOW RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS
Good permeability; Gypsum nodules; Variable dolomite
crystals throughout

1722.7- 1727.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL, INTRACLASTS
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMONITE-01%, GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA
Very fossiliferous; increase in crystals and micrite at
1726.2; crystals becoming more dolomitic

1727.3- 1730.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-40%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
Moderate permeability; variable dolomitization; Interbedded
with dolomitic wackestone (dolomite crystals in
recrystallized fossiliferous limestone)

1730.2- 1733.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%, DOLOMITE-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS

Variable recrystallization and dolomitization throughout

1733.6- 1735.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-30%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Variable dolomitization; Variable permeability

1735.8- 1740 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, INTRACLASTS, CRYSTALS
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS
Moderate permeability; Variable recrystallization

1740 - 1741.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-40%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MILIOLIDS
MOLLUSKS
Increase in dolomite from above; Interbedded with less
dolomitic limestone (as above)

1741.5- 1746.5 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: ANHYDRITE-20%
Gypsum filled fractures; Large gypsum/anhydrite nodules
throughout (>1” diam.); Crystal size decreasing with depth
Some silicification possible

1746.5- 1750.2 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: GYPSUM-10%
FOSSILS: FOSSIL MOLDS
Anhydrite/Gypsum nodules and infilled fractures throughout
Lighter in color

1750.2- 1750.5 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: ANHYDRITE-30%
Large gypsum/anhydrite nodules, distinct lithology change
within the interval. Possible Top of Oldsmar, lithology
fits description, but index fossils not observed, actual
top may be shallower.

1750.5- 1751.5 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-15%, DOLOMITE-05%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Good permeability; Gypsum nodules

1751.5- 1752.2 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: SKELETAL CAST, INTRACLASTS, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-10%, LIMONITE-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Gypsum filled molds/vugs; molds include mollusks

1752.2- 1753.7 PACKSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC, VUGULAR
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM

GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: LIMONITE-03%
OTHER FEATURES: LOW RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
MILIOLIDS
High Permeability

1753.7- 1753.7 PACKSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC, VUGULAR
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: PYRITE-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
ECHINOID, BENTHIC FORAMINIFERA
Miliolids; Forams unidentifiable due to recrystallization
Increase in micrite at 1759.3’

1753.7- 1765.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS, BRYOZOA
BENTHIC FORAMINIFERA
Increased crystals at 1762.7-1763.7; Casts of gastropods
Layer of micrite at 1765.0-1765.1

1765.3- 1765.7 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, BENTHIC FORAMINIFERA

1765.7- 1769.9 PACKSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH ORANGE
05% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-01%, GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
Good permeability; Presence of Iron; Slightly dolomitized
in places (Interbedded); Gypsum nodules 1769.1-1769.8

1769.9- 1775 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: BIOGENIC, INTRACLASTS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: LIMONITE-02%, GYPSUM-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
BENTHIC FORAMINIFERA, BARNACLES
Thin layer of Iron minerals at 1770.0; Less calcite
crystals with depth; Gypsum infilled at top of interval

1775 - 1778.4 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: LIMONITE-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
Good permeability

1778.4- 1780 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, VUGULAR, MOLDIC
GRAIN TYPE: BIOGENIC, CALCILUTITE, INTRACLASTS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
BENTHIC FORAMINIFERA
Good permeability

1780 TOTAL DEPTH

Appendix C3. Lithologic Log for Core Hole 3 at the ROMP 45.5 - Progress Energy Well Site in Polk County, Florida

LITHOLOGIC WELL LOG PRINTOUT SOURCE - FGS

WELL NUMBER: W-18987 COUNTY - POLK
TOTAL DEPTH: 2707 FT. LOCATION: T.31S R.24E S.11
106 SAMPLES FROM 1707 TO 2707 FT. LAT = 27D 47M 46S
LON = 81D 53M 14S
COMPLETION DATE: 03/ /08 ELEVATION: 168 FT
OTHER TYPES OF LOGS AVAILABLE - GEOLOGIST, CALIPER, GAMMA, FLUID CONDUCTIVITY

OWNER/DRILLER:SWFWMD / ROMP 45.5 CORE HOLE 3

WORKED BY:Michelle Ladle
Description Started 05/18/10; Completed 01/27/11
SEE ALSO W-18803,ROMP 45.5 CH1 AND W-18799,ROMP 45.5 CH2

1707.0 - 2509.0 124OLDM OLDSMAR LIMESTONE
2509.0 - 2707.0 125CDRK CEDAR KEYS LIMESTONE

0 - 1708.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-30%, PYRITE-<1%
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
Sand-size calcite/dolomite crystals in recrystallized
micritic matrix; Increase in dolomite with depth

1708.1- 1709.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE; 50-90% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: LIMESTONE-30%
OTHER FEATURES: CALCAREOUS
Decrease in Limestone and increase in compaction w/depth

1709.6- 1716.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%, ORGANICS-<1%
FOSSILS: FOSSIL MOLDS, PLANT REMAINS
Organic layer @ 1713.8; Plant fossils @ 1715.1

1716.3- 1716.5 ANHYDRITE; WHITE TO VERY LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY

1716.5- 1717 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-20%, HEAVY MINERALS-01%
ORGANICS-<1%
OTHER FEATURES: DOLOMITIC, LOW RECRYSTALLIZATION

1717 - 1718.4 MUDSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS; 05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-45%
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Large gypsum/anhydrite nodules and filled molds/vugs

1718.4- 1721 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 50-90% ALTERED
EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL MOLDS, CONES, FOSSIL FRAGMENTS

1721 - 1721.8 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-10%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Packstone-type texture; Increase in limestone with depth

1721.8- 1723 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: DOLOMITE-20%

OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
Variable amount of dolomitization throughout interval

1723 - 1725.6 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS

1725.6- 1726 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: SKELETAL, CRYSTALS, BIOGENIC
20% ALLOCHEMICAL CONSTITUENTS
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-30%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Increase in dolomitization with depth

1726 - 1726.8 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
50-90% ALTERED; EUHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-15%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Increase in compaction with depth

1726.8- 1728.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
FOSSILS: FOSSIL MOLDS
Gypsum nodules

1728.6- 1729.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: LIMESTONE-15%

OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS, MOLLUSKS

1729.5- 1733.7 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, INTERGRANULAR, VUGULAR
GRAIN TYPE: CRYSTALS, SKELETAL, SKELETAL CAST
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: HEAVY MINERALS-01%, DOLOMITE-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
ECHINOID, MILIOLIDS
Interbedded with regions of increased dolomitization
flecks of pyrite/glauconite; Mold at 1733.4

1733.7- 1735.5 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: SKELETAL, CALCILUTITE, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-35%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
Increased compaction and variable dolomitization w/depth
Decrease in grain size to wackestone

1735.5- 1737 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: DOLOMITE-10%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, BENTHIC FORAMINIFERA
Increased micrite with depth; Mottled/interbedded with
wackestone; flecks of bluish mineral (glauconite?); At
1739.2: Unidentifiable rotalia (unidentifiable due to
recrystallization

1737 - 1739 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM

GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-03%, HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
Grain boundaries semi-dissolved; Interbedded with dolomitic
packstone

1739 - 1741.2 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
Interbedded with calcareous dolarenite

1741.2- 1742.3 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-15%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
Interbedded with dolomitic recrystallized wackestone

1742.3- 1749.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
Gypsum nodules and filled vugs; Gypsum/anhyd. filled
fractures (1747-1749)

1749.1- 1751.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT

ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Possible silicification (1749.1-1750.2, 1750.9-1751.5)
Gypsum filled vugs/molds; Large gypsum/anhydrite nodules
(1/2 - 2" diam.) Possible low Top for Oldsmar Formation.

1751.5- 1752.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: DOLOMITE-25%, GYPSUM-20%
OTHER FEATURES: DOLOMITIC
FOSSILS: FOSSIL MOLDS
Compact limestone with brecciated gypsum nodules and
silicified dolostone

1752.1- 1756.1 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: DOLOMITE-03%, GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
FOSSIL MOLDS, BENTHIC FORAMINIFERA
Transitioning from compact fine wackestone to more porous
packstone; some areas of dolomitization; Gypsum filled
molds; Less gypsum and less porous with depth; Dictyoconus
or Bryozoa at 1753.4; Other unidentifiable (recrystallized)
forams

1756.1- 1764.7 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: SKELETAL, INTRACLASTS, CRYSTALS
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: IRON STAIN-03%, GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
FOSSIL MOLDS, BENTHIC FORAMINIFERA
Dissolved grain boundaries (due to recrystallization)
Miliolids; Increase in micrite and dolomitization w/depth

1764.7- 1765.8 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN

<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SILICIC CEMENT
ACCESSORY MINERALS: DOLOMITE-35%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
BENTHIC FORAMINIFERA
At 1766.1: Possible silicification; Very dense and hard
mineral infilling vugs

1765.8- 1770 DOLOSTONE; GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: ANHYDRITE-05%
Gypsum filled fractures; Anhydrite nodules; Large nodule at
1768.9-1769.2

1770 - 1771.8 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: SKELETAL, CALCILUTITE, CRYSTALS
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MILIOLIDS
ECHINOID, CORAL
At 1770.7: recrystallized casts (Helicostegina sp. or
Archais sp. and Nummulites sp.)

1771.8- 1775 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL, CALCILUTITE, INTRACLASTS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
IRON CEMENT
ACCESSORY MINERALS: IRON STAIN-05%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA, MILIOLIDS
ECHINOID, MOLLUSKS
Increase in recrystallization with depth

1775 - 1780.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE

05% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: SKELETAL, CALCILUTITE, INTRACLASTS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS, ECHINOID
BENTHIC FORAMINIFERA
More indurated and less porous than above; Some areas less
indurated; Increase in micrite at end of interval

1780.3- 1782.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, SKELETAL
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
Interbedded with packstone

1782.1- 1785.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, VUGULAR
GRAIN TYPE: SKELETAL, CALCILUTITE, CRYSTALS
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-02%, IRON STAIN-<1%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS
Interbedded with wackestone

1785.3- 1788.8 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, SKELETAL, CALCILUTITE
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: DOLOMITE-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MILIOLIDS
Dissolved grain boundaries; Highly recrystallized fossil
fragments; Increase in dolomitization with depth

1788.8- 1792.8 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT

CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-30%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS
Interbedded with dolomitic recrystallized wackestone
Decrease in limestone and increase in compaction w/depth

1792.8- 1797.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: CALCAREOUS
Compact dolomite; gypsum nodules

1797.7- 1798.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Gypsum filled molds (bivalves)

1798.2- 1808.4 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

1808.4- 1811.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: FISSILE
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1811.3- 1812.8 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY

50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Increase in compaction with depth

1812.8- 1818.3 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: CALCAREOUS
Possibly partially silicified

1818.3- 1820.3 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: MICROCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: LIMESTONE-25%, GYPSUM-20%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Interbedded with dolomitic recrystallized wackestone; Gypsum
nodules

1820.3- 1821.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, INTERGRANULAR
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-40%
OTHER FEATURES: LOW RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Greenish-blue clay flecks (glauconite?)

1821.3- 1827 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: CALCAREOUS
Gypsum filled fractures and vugs; Some very euhedral
crystals in vugs; Gypsum nodules; Variable compaction
Larger amounts of gypsum 1824.2-1826.2

1827 - 1829.3 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
15% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in dolomitization with depth

1829.3- 1836.8 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
10% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: LIMESTONE-05%, GYPSUM-05%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL MOLDS
Variable compaction; Decrease in porosity with depth
Increase in gypsum filled vugs (and increased induration)
with depth

1836.8- 1841.6 DOLOSTONE; DARK YELLOWISH ORANGE TO LIGHT BROWN
10% POROSITY: VUGULAR, INTERCRYSTALLINE; 90-100% ALTERED
SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: IRON STAIN-05%, GYPSUM-05%
OTHER FEATURES: SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

1841.6- 1857 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-10%
FOSSILS: PLANT REMAINS
Massive compact dolomite; Gypsum filled fractures & vugs
Large anhydrite nodules at 1847.4 (~3” diam), 1849.8, and
1854.8; Region of anhydrite at 1851.2-1852.1; Plant fossil
at 1856.2

1857 - 1857.7 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL

GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: LIMESTONE-15%, GYPSUM-05%
OTHER FEATURES: CALCAREOUS
FOSSILS: ORGANICS
Organic layer at 1857.7

1857.7- 1863.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
05% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL MOLDS
Gypsum nodules mostly at 1860.3-1861.2.

1863.6- 1864.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
Increased compaction with depth

1864.6- 1865.9 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: GREASY
FOSSILS: FOSSIL MOLDS

1865.9- 1870.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-04%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum filled molds/vugs and fractures

1870.7- 1872.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Variable dolomitization

1872.7- 1874.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs/molds

1874.7- 1877.3 DOLOSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
Gypsum infilling between grains

1877.3- 1880.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS
Gypsum filled molds; Increase in molds

1880.1- 1881.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT

ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Brecciated layers of gypsum; Gypsum nodules

1881.3- 1883 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
03% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
FOSSILS: FOSSIL MOLDS

1883 - 1885 MUDSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: ANHYDRITE-03%, IRON STAIN-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Anhydrite/gypsum nodules; Increased grain size with depth

1885 - 1887.9 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
20% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-08%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC, FROSTED, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, ECHINOID, MOLLUSKS
Variable grain size and porosity throughout; Variable
dolomitization; Large gypsum nodule at 1885.6; Interbedded
with calcareous dolostone

1887.9- 1895.2 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: MOLDIC, INTERCRYSTALLINE; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: GYPSUM-03%

OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Massive; Compact; Gypsum filled fractures; Gypsum nodules
at 1889.0; Interbedded with dolomitic recrystallized LS

1895.2- 1902 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
15% POROSITY: MOLDIC, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC, SUCROSIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, ECHINOID
FOSSIL MOLDS
Reworked dolomitic recrystallized LS and dolarenite
(difficult to determine amt of dolomitization); Can make
out some rhombohedral crystals; Variable compaction and
dissolved crystal boundaries; Gypsum nodule at 1896.2

1902 - 1902.2 ANHYDRITE; WHITE TO VERY LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED

1902.2- 1904 PACKSTONE; GRAYISH ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
70% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-08%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC, SUCROSIC
Interbedded with calcareous dolomite; Large gypsum nodules
at 1903.3 and 1903.9

1904 - 1919.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum filled molds and fractures; Increased
anhydrite/gypsum nodules at 1918.0-1919.1; Decrease in
alteration/dolomitization after 1918.0

1919.1- 1922 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-08%
OTHER FEATURES: CALCAREOUS, SUCROSIC
FOSSILS: FOSSIL MOLDS, FOSSIL FRAGMENTS
Decrease in dolomitization with depth; Gypsum filled molds
and nodules

1922 - 1923.5 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: INTERCRYSTALLINE, INTERGRANULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC, SUCROSIC

1923.5- 1928.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-02%
Anhydrite layers/nodules at 1925.9 and 1927.7

1928.5- 1930.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: VERY FINE; RANGE: MICROCRYSTALLINE TO FINE
MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: CALCILUTITE-25%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL FRAGMENTS
Many euhedral rhombohedral crystals; Decrease in crystals
after 1930.4

1930.7- 1944.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERGRANULAR, POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, CRYSTALS, SKELETAL
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

1944.3- 1950.7 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: ANHYDRITE-10%
OTHER FEATURES: CALCAREOUS
Large anhydrite/gypsum nodules (large group at 1944.3-
1944.7 with rapid change in lithology); Some areas are less
dolomitized

1950.7- 1951.5 ANHYDRITE; WHITE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY
ACCESSORY MINERALS: LIMESTONE-02%

1951.5- 1955 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
LOW PERMEABILITY; 90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-04%

1955 - 1955.3 MUDSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERGRANULAR, LOW PERMEABILITY
GRAIN TYPE: CALCILUTITE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, CLAY MATRIX
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-25%
OTHER FEATURES: DOLOMITIC
Carbonate mudstone with gypsum nodules within matrix
layers aligned with nodules; Marker at 1955.7 should be
1955.1.

1955.3- 1956.1 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-05%
FOSSILS: FOSSIL MOLDS

1956.1- 1956.6 ANHYDRITE; WHITE TO MODERATE LIGHT GRAY
<1% POROSITY: FRACTURE, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): GYPSUM CEMENT, ANHYDRITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: GYPSUM-40%, DOLOMITE-03%

1956.6- 1966.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

<1% POROSITY: MOLDIC, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ANHYDRITE CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum/anhydrite nodules especially at 1959.6-1961.2

1966.6- 1963.2 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, FRACTURE
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-15%, ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
Increased dolomitization with depth

1963.2- 1967.5 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: MOLDIC, LOW PERMEABILITY; 50-90% ALTERED
SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%, IRON STAIN-03%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum nodules

1967.5- 1968.5 MUDSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
05% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, DOLOMITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-20%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL MOLDS
Gypsum nodules

1968.5- 1993.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: MOLDIC, PIN POINT VUGS, INTERCRYSTALLINE
90-100% ALTERED; ANHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%, IRON STAIN-02%
ORGANICS-01%
OTHER FEATURES: CALCAREOUS
Flecks of organic remains at 1976.0; Visible
pre-crystallized boundaries at 1977.0-1979.0
Gypsum/anhydrite nodules throughout; At 1993.3: Weathered
anhydrite; Increased fractures with depth (infilled with
gypsum)

1993.3- 2002 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: GYPSUM-20%, ANHYDRITE-02%
OTHER FEATURES: CALCAREOUS
Some places more of a very fine dolomitic packstone (with
variable dolomitization); Large (~2") nodules and layers of
gypsum with limestone at contacts

2002 - 2009.8 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
LOW PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: ANHYDRITE-10%
OTHER FEATURES: CALCAREOUS
Gypsum/anhydrite nodules/layers; Layer at 2006.9: possibly
silicified

2009.8- 2030.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, CRYSTALLINE
DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS
Anhydrite Nodules 2011.0-2011.7, 2015.7-2016.3
2023.5-2025.3, 2028.2-2028.8 Increased Dolomitization
2011.7-2013.4, 2016.7-2017.0, 2026.1-2026.6

2030.5- 2040 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
CHALKY
Organics/plant remains @ 2033.8-2040.0

2040 - 2047.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: MOLDIC, PIN POINT VUGS, INTERGRANULAR
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, DOLOMITIC
CHALKY
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS

2047.8- 2076 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, INTERGRANULAR
INTERCRYSTALLINE
GRAIN TYPE: CALCILUTITE, CRYSTALS, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Flecks and laminae of organics (oriented parallel to bedding); Increase in recrystallization w/ depth; Visible remnant grain boundaries; Interbedded with more porous wackestone (mottled texture); Sorites sp at 2062' and 2064'; Layer of silicified LS at 2073.6-2073.8

2076 - 2077.7 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION

2077.7- 2079.9 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: MICROCRYSTALLINE TO VERY FINE
ACCESSORY MINERALS: GYPSUM-40%, DOLOMITE-05%
OTHER FEATURES: DOLOMITIC, HIGH RECRYSTALLIZATION
Gypsum/Anhydrite veins perpendicular to bedding to 2079.5
After 2079.5: organic laminae and increase in dolomite.

2079.9- 2081 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS, HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2081 - 2090 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-03%
OTHER FEATURES: DOLOMITIC, LOW RECRYSTALLIZATION
FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS, ORGANICS
Less dolomite and recrystallization at 2082.0’; Gypsum and
Anhydrite nodules; Good fossil fragments and casts in

2090 - 2094.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, MOLDIC, INTERGRANULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
Gypsum filled molds and nodules

2094.5- 2098 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, GYPSUM CEMENT

ACCESSORY MINERALS: GYPSUM-35%
OTHER FEATURES: LOW RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
FOSSIL MOLDS
Gypsum/Anhydrite nodules and filled molds

2098 - 2106.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-05%, GYPSUM-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, MOLLUSKS
Gypsum nodules; Increased recrystallization and decreased
porosity at 2106.8

2106.8- 2108 MUDSTONE; LIGHT YELLOWISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, ORGANIC MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: ORGANICS-10%, PYRITE-02%
HEAVY MINERALS-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS
Pyrite lined voids between organic laminae (as well as dry
sulfur); Moderate permeability; Increase in fossils at
2108.0

2108 - 2115.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL
25% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ORGANIC MATRIX
ACCESSORY MINERALS: ORGANICS-05%, HEAVY MINERALS-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MOLLUSKS
BENTHIC FORAMINIFERA
At 2115.0: Layer of large Sorites sp. (up to 6 mm); Core
removed from 2115.0-2115.3

2115.3- 2117 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: ORGANICS-01%, HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS

2117 - 2123.8 MUDSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
ACCESSORY MINERALS: ORGANICS-05%, HEAVY MINERALS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
CRYSTALLINE
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA
Layers of organics and fossils throughout; Sorites sp.
Helicostegina gyralis? (recrystallized)

2123.8- 2143 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ORGANICS-05%, HEAVY MINERALS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Variable recrystallization; also intergranular porosity; At
2133’: Bryozoa or hydrozoa molds; Interbedded with mudstone

2143 - 2147 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: INTERGRANULAR, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: ORGANICS-02%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Interbedded with wackestone

2147 - 2150.8 MUDSTONE; LIGHT YELLOWISH ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
ACCESSORY MINERALS: ORGANICS-01%

OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Dissolved grain boundaries; Increase in iron stain

2150.8- 2157.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Anhydrite/gypsum filled vugs/molds and nodules; More fossil
molds than above (decrease in molds and gypsum at 2157.4)
Dissolved grain boundaries (some areas more of a
wackestone/packstone); Variable compaction

2157.4- 2165 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: INTERGRANULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS
BENTHIC FORAMINIFERA
Nodules of fossiliferous/peloidal grainstone/packstone
(also interbedded); Matrix: Highly recrystallized compact
mudstone; Increase in gypsum nodules and filled molds at
2164.2

2165 - 2168.3 GRAINSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
08% POROSITY: INTERGRANULAR, VUGULAR, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL, SKELETAL CAST, CRYSTALS
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: MICROCRYSTALLINE TO COARSE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS
BENTHIC FORAMINIFERA
Increase in micrite (as well as recrystallization and
compaction) with depth

2168.3- 2179.8 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS, MILIOLIDS
BENTHIC FORAMINIFERA

2179.8- 2181 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
Increase in recrystallization and compaction with depth
Good permeability

2181 - 2183.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, SKELETAL CAST
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

2183.3- 2185.2 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
2186-2187’: Dense, low porosity (and low permeability)
possibly some silicification; Layer of grainstone at
2187.0-2187.2’

2185.2- 2196.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL CAST
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL FRAGMENTS, FOSSIL MOLDS
BENTHIC FORAMINIFERA

2196.1- 2198.8 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS

GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: VERY FINE; RANGE: CRYPTOCRYSTALLINE TO FINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: HEAVY MINERALS-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL FRAGMENTS, BENTHIC FORAMINIFERA
Good permeability

2198.8- 2203.9 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
SILICIC CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION
2200.1-2200.9’: Layer of low recrystallization; At 2202.2’:
Nodules of crystalline grainstone with micritic matrix
Fissile dolomitic clay layer at end of interval

2203.9- 2207 MUDSTONE; VERY LIGHT ORANGE
<1% POROSITY: INTERGRANULAR
GRAIN TYPE: CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
OTHER FEATURES: LOW RECRYSTALLIZATION
Moderate permeability

2207 - 2208 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, GYPSUM CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: LAMINATED
ACCESSORY MINERALS: ORGANICS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION

2208 - 2212.3 PACKSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT

ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Reworked calcite in matrix with variable micrite (grainstone to wackestone); Gypsum nodules; increase in gypsum with depth

2212.3- 2215.3 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR
OTHER FEATURES: CALCAREOUS

2215.3- 2217.4 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: INTRACLASTS, CALCILUTITE, CRYSTALS
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Semi-dissolved grain boundaries; recrystallization increasing with depth

2217.4- 2219.3 DOLOSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
Dissolved grain boundaries; Nodules of gypsum; Nodules of micrite (2217.4-2217.7)

2219.3- 2227 WACKESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
03% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-04%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Less recrystallization (and increasing permeability) with depth

2227 - 2229.7 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN

01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: HIGH RECRYSTALLIZATION

2229.7- 2231.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, MOLDIC, VUGULAR
GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2231.8- 2233 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERGRANULAR, INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT
OTHER FEATURES: HIGH RECRYSTALLIZATION

2233 - 2240.4 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION

2240.4- 2242.1 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: GYPSUM-30%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2242.1- 2245.7 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
04% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE

60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Semi-dissolved grain boundaries; Decrease in grain size
with depth; pyrite crystals at 2246.5’

2245.7- 2254.3 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
01% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR, BRECCIATED
ACCESSORY MINERALS: GYPSUM-05%, LIMESTONE-40%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gypsum nodules present; Variable amts of recrystallized
mudstone throughout; Decrease in dolomite and gypsum with
depth

2254.3- 2255.1 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT

2255.1- 2260.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
02% POROSITY: INTERGRANULAR, INTERCRYSTALLINE
PIN POINT VUGS
GRAIN TYPE: INTRACLASTS, CRYSTALS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
IRON CEMENT
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MILIOLIDS

2260.3- 2269.1 GRAINSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION

FOSSILS: FOSSIL MOLDS
Variable amounts of micrite

2269.1- 2271.2 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED, INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION
Interbedded with micrite layers

2271.2- 2273.2 WACKESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: DOLOMITE-10%, GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum nodules

2273.2- 2275.3 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BANDED, INTERBEDDED
OTHER FEATURES: HIGH RECRYSTALLIZATION
Similar to 2269.1-2271.2

2275.3- 2276 WACKESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: DOLOMITE-10%, GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Similar to 2271.2-2273.2

2276 - 2280.6 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
90-100% ALTERED; SUBHEDRAL

GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SPARRY CALCITE CEMENT
ACCESSORY MINERALS: CALCILUTITE-05%
OTHER FEATURES: CALCAREOUS

2280.6- 2281.5 WACKESTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
02% POROSITY: INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
40% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR, BRECCIATED
ACCESSORY MINERALS: GYPSUM-03%, PYRITE-<1%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2281.5- 2285 GRAINSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION

2285 - 2291.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR, BEDDED
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, MILIOLIDS
Gypsum nodules with allochems; Some areas slightly
dolomitized; At 2288’: Fossil in gypsum possibly
coskinolina elongata; Decrease in gypsum at 2288.9’ with
thin beds of micrite

2291.5- 2296.5 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
75% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM
RANGE: CRYPTOCRYSTALLINE TO VERY COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS

FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
MILIOLIDS
Coskinolina elongata; At 2296.0’: Layer of wackestone/
mudstone (see below)

2296.5- 2297.8 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, VUGULAR
GRAIN TYPE: CRYSTALS, SKELETAL CAST, CALCILUTITE
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
Dissolved grain boundaries decreasing with depth to become
more of a packstone

2297.8- 2307 GRAINSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED, INTERBEDDED
ACCESSORY MINERALS: GYPSUM-25%, DOLOMITE-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA
Large areas of allochems in gypsum matrix; gypsum filled
vugs and nodules; Increase in compaction with depth to
packstone; Some areas are mottled with less porous
dolomitic wackestone.

2307 - 2316 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%, PYRITE-<1%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MILIOLIDS
Region with high recrystallization and gypsum filled vugs/
molds; Layer of mud at end of interval

2316 - 2317.4 GRAINSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
10% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX

GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MILIOLIDS
Gypsum nodules, filled vugs and molds

2317.4- 2318.3 PACKSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum filled vugs; Dissolved grain boundaries

2318.3- 2319 GRAINSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
05% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
95% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2319 - 2323 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: SKELETAL CAST, CRYSTALS, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Gypsum nodules; Decrease in grain size (to wackestone) and
increase in recrystallization with depth

2323 - 2325.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, INTRACLASTS, CALCILUTITE
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%, PYRITE-<1%

FOSSILS: FOSSIL MOLDS
Increased compaction and dissolved grain boundaries (to mudstone) with depth

2325.5- 2329.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-02%
FOSSILS: FOSSIL MOLDS
At 2328.4: organic layer with green mud

2329.5- 2336.4 MUDSTONE; WHITE TO VERY LIGHT ORANGE
GRAIN TYPE: CALCILUTITE, CRYSTALS
02% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
MODERATE INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%, PYRITE-<1%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
Regions of low recrystallization/chalk as well as regions of higher recrystallization (with vugs and gypsum)

2336.4- 2354.2 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
01% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CALCILUTITE, INTRACLASTS, CRYSTALS
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: GYPSUM-01%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS

2354.2- 2362.5 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL CAST, CALCILUTITE
80% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR, MOTTLED
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: MEDIUM RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
MILIOLIDS
Gypsum nodules and filled vugs; 2354.5-2354.7’: Large gypsum nodule

2362.5- 2363 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, SKELETAL CAST, CALCILUTITE
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
MILIOLIDS
Increase in recrystallization, dissolved grain boundaries
and micrite with depth

2363 - 2365.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
<1% POROSITY: PIN POINT VUGS, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION
2364-2364.5’: Layer of vuggy, moldic wackestone

2365.5- 2370.8 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
05% POROSITY: VUGULAR, INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL CAST
65% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, FOSSILIFEROUS
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
MILIOLIDS
Gypsum filled vugs and molds; increase in recrystallization
with depth

2370.8- 2377.5 WACKESTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
03% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
30% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Top of interval: slightly dolomitic mudstone; Gypsum
nodules and filled vugs/molds; Less gypsum after 2375.5’

2377.5- 2384.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE

08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS, MOLLUSKS, BENTHIC FORAMINIFERA
MILIOLIDS
Some areas slightly dolomitic; decrease in dissolved grain
boundaries at bottom of interval

2384.3- 2388.2 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MILIOLIDS
2386.0-2386.5’: Dolomitic mudstone

2388.2- 2389 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
FOSSILS: FOSSIL MOLDS, MILIOLIDS

2389 - 2389.7 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, VUGULAR
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
85% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS, BENTHIC FORAMINIFERA, MILIOLIDS
Similar to 2384.3-2388.2’

2389.7- 2393.5 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL CAST
45% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS, MILIOLIDS
Wackestone/packstone with dissolved grain boundaries

2393.5- 2394.8 MUDSTONE; VERY LIGHT ORANGE TO MODERATE LIGHT GRAY
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-15%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Increase in dolomitization with depth

2394.8- 2401.5 DOLOSTONE; GRAYISH BROWN TO MODERATE YELLOWISH BROWN
03% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, BRECCIATED
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Top of interval: calcareous DS transitioning to dense
(non-permeable) DS; Nodules of gypsum; Brecciated mudstone
with large dolomite rhombs at 2401.0-2401.5’

2401.5- 2404.5 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR
FOSSILS: FOSSIL MOLDS
Dense dolostone with nodules of gypsum, anhydrite, and
subhedral dolarenite

2404.5- 2406.3 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Dolomite crystals throughout

2406.3- 2411.5 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE

RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR
OTHER FEATURES: CALCAREOUS
2406.3-2408.0': Nodules of gypsum/anhydrite and limestone

2411.5- 2413.3 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
15% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Gypsum nodules and filled vugs; Increase in dolomitization
with depth

2413.3- 2420.2 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-02%
Some places less dense dolarenite

2420.2- 2425.9 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-30%, GYPSUM-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Dolomite crystals vary to up to 75% in some areas

2425.9- 2426.9 DOLOSTONE; GRAYISH BROWN TO LIGHT GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: VARIEGATED

2426.9- 2429.2 PACKSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
03% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
GRAIN TYPE: CRYSTALS, SKELETAL CAST, CALCILUTITE
60% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION

CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: DOLOMITE-20%
OTHER FEATURES: HIGH RECRYSTALLIZATION
FOSSILS: FOSSIL MOLDS
Top 2” of interval: 40% dolomite crystals breaking LS into
nodules/breccias; Dolomite becoming dominant at 2429.2’

2429.2- 2430.3 DOLOSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
08% POROSITY: VUGULAR, MOLDIC, INTERCRYSTALLINE
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED, NODULAR
ACCESSORY MINERALS: LIMESTONE-40%
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Brecciated/nodular limestone (see above)

2430.3- 2435.8 DOLOSTONE; LIGHT GRAY TO OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%
OTHER FEATURES: VARIEGATED
FOSSILS: FOSSIL MOLDS
Gypsum/Anhydrite nodules (less after 2432.0)

2435.8- 2437.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): CALCILUTITE MATRIX, SPARRY CALCITE CEMENT
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-35%, HEAVY MINERALS-01%
OTHER FEATURES: DOLOMITIC
Variable amts of dolomite crystals in recrystallized
mudstone matrix

2437.5- 2454.3 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
ACCESSORY MINERALS: GYPSUM-03%, LIMESTONE-01%
OTHER FEATURES: VARIEGATED
FOSSILS: FOSSIL MOLDS

A few nodules of limestone and gypsum; Mottled at
2450.7-2451.5 & 2453.2-2454.3 with increased molds; At
2451.5': bed of dolomitic LS

2454.3- 2457.9 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
03% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: BEDDED
ACCESSORY MINERALS: GYPSUM-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Increase in grain size and gypsum filled vugs with depth

2457.9- 2458.6 DOLOSTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC; 50-90% ALTERED
EUHEDRAL
GRAIN SIZE: MEDIUM; RANGE: FINE TO COARSE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: LIMESTONE-45%
OTHER FEATURES: CALCAREOUS
Mottled with recrystallized mudstone

2458.6- 2460 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-02%
FOSSILS: FOSSIL MOLDS

2460 - 2465 WACKESTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: DOLOMITE-20%, GYPSUM-05%, ORGANICS-02%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
FOSSILS: FOSSIL MOLDS
Interbedded with layers of dolomite crystals and gypsum
organic laminae; Gypsum filled vugs

2465 - 2469.7 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: VARIEGATED
At 2468.3-2468.9’: LS intraclasts in dolomitic matrix

2469.7- 2474.8 DOLOSTONE; GRAYISH BROWN TO DARK YELLOWISH BROWN
03% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MEDIUM; RANGE: CRYPTOCRYSTALLINE TO COARSE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, CALCILUTITE MATRIX
GYPSUM CEMENT
ACCESSORY MINERALS: LIMESTONE-05%, GYPSUM-02%
OTHER FEATURES: CALCAREOUS

2474.8- 2476 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: DOLOMITE-35%, GYPSUM-05%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Interbedded with layers of dolomite crystals; Small
gypsum/anhydrite nodules and filled molds

2476 - 2477.5 MUDSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
GRAIN TYPE: CRYSTALS, CALCILUTITE
08% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE
ACCESSORY MINERALS: GYPSUM-08%, DOLOMITE-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Gypsum nodules

2477.5- 2479.5 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-01%
Anhydrite nodules and filled fractures (perpendicular to
bedding)

2479.5- 2480.1 WACKESTONE; VERY LIGHT ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
20% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-20%
OTHER FEATURES: HIGH RECRYSTALLIZATION

2480.1- 2481 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE

2481 - 2481.5 MUDSTONE; VERY LIGHT ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
GRAIN TYPE: CRYSTALS, CALCILUTITE, INTRACLASTS
05% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: DOLOMITE-10%
OTHER FEATURES: HIGH RECRYSTALLIZATION
Interbedded with layers of dolomite crystals

2481.5- 2487.2 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-03%
Anhydrite/gypsum filled fractures and nodules

2487.2- 2487.4 ANHYDRITE; WHITE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT

2487.4- 2500.9 DOLOSTONE; GRAYISH ORANGE TO DARK YELLOWISH BROWN
03% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ANHYDRITE-02%
Less porous anhedral dolostone interbedded with fine subhedral dolarenite (more porous and permeable, less indurated); Anhydrite/gypsum nodules

2500.9- 2504.8 DOLOSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-03%
OTHER FEATURES: VARIEGATED

2504.8- 2508 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, PIN POINT VUGS

90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED
Mottled with less massive ferroan dolosilt; Organic
laminae; Anhydrite/gypsum nodules and filled fractures

2508 - 2508.8 DOLOSTONE; MODERATE YELLOWISH BROWN TO MODERATE LIGHT GRAY
08% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO VERY FINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, BEDDED, NODULAR
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: SUCROSIC
Gypsum/anhydrite nodules

2508.8- 2512 DOLOSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: VARIEGATED
At 2509.1': Increase in molds; Anhydrite/gypsum
layer/nodule at 2511.4-2511.5'; 2509.7-2509.8':
Recrystallized dolomitic (silt-size) mudstone

2512 - 2513.1 DOLOSTONE; GRAYISH BROWN TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: GREASY

2513.1- 2513.7 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
03% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: FINE; RANGE: CRYPTOCRYSTALLINE TO MEDIUM
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: GYPSUM-25%
OTHER FEATURES: SUCROSIC
2513.4-2513.7': Good permeability and less indurated; Area
of ferroan calcarenite at 2513.7; Flecks of iron minerals
Gypsum/anhydrite nodule
2513.7- 2526.7 DOLOSTONE; GRAYISH BROWN TO MODERATE LIGHT GRAY
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION

CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-15%
OTHER FEATURES: GREASY, VARIEGATED
Some areas more subhedral and less compact with larger crystals; Larger crystals lining fractures and molds; Large anhydrite nodules

2526.7- 2527.7 ANHYDRITE; WHITE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT

2527.7- 2548.1 DOLOSTONE; LIGHT GRAY TO LIGHT OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED
ACCESSORY MINERALS: ANHYDRITE-40%
OTHER FEATURES: VARIEGATED
Gypsum filled fractures; Intercrystalline anhydrite as well as anhydrite nodules, beds, and veins

2548.1- 2549.5 DOLOSTONE; LIGHT GRAY TO LIGHT OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR, BRECCIATED
ACCESSORY MINERALS: ANHYDRITE-30%
OTHER FEATURES: VARIEGATED, GREASY
Intercrystalline anhydrite

2549.5- 2555.6 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
01% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
ACCESSORY MINERALS: ANHYDRITE-40%
OTHER FEATURES: VARIEGATED
Intercrystalline anhydrite, anhyd. nodules and filled fractures

2555.6- 2556.2 DOLOSTONE; LIGHT GRAY TO LIGHT OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR
ACCESSORY MINERALS: ANHYDRITE-45%

Anhydrite nodules

2556.2- 2560.2 ANHYDRITE; WHITE TO LIGHT OLIVE GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR, BRECCIATED
ACCESSORY MINERALS: DOLOMITE-40%
Large nodules of anhydrite within dolomite matrix
Brecciated dolostone within anhydrite nodules

2560.2- 2563.3 DOLOSTONE; VERY LIGHT GRAY TO OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
GYPSUM CEMENT
SEDIMENTARY STRUCTURES: NODULAR, BRECCIATED, MOTTLED
ACCESSORY MINERALS: GYPSUM-3%
Intercrystalline gypsum; gypsum filled fractures; Anhydrite
nodules

2563.3- 2567.9 ANHYDRITE; WHITE TO LIGHT GRAY
POROSITY: NOT OBSERVED, LOW PERMEABILITY; GOOD INDURATION
CEMENT TYPE(S): ANHYDRITE CEMENT, GYPSUM CEMENT

2567.9- 2569.5 DOLOSTONE; VERY LIGHT ORANGE TO OLIVE GRAY
<1% POROSITY: INTERCRYSTALLINE, MOLDIC, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, ANHYDRITE CEMENT
SEDIMENTARY STRUCTURES: BANDED, MOTTLED
ACCESSORY MINERALS: ANHYDRITE-20%
FOSSILS: FOSSIL MOLDS
Anhydrite filled molds and vugs, smaller nodules

2569.5- 2574 DOLOSTONE; GRAYISH BROWN TO MODERATE GRAY
<1% POROSITY: MOLDIC, FRACTURE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-05%
Several gypsum filled fractures; Iron present; Decrease in
grain size and increased compaction with depth

2574 - 2578.5 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT OLIVE GRAY
<1% POROSITY: PIN POINT VUGS, MOLDIC, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
OTHER FEATURES: VARIEGATED

2578.5- 2595 DOLOSTONE; LIGHT OLIVE GRAY TO GRAYISH BROWN
01% POROSITY: MOLDIC, FRACTURE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: LITHOGRAPHIC TO MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: GYPSUM-05%
OTHER FEATURES: VARIEGATED, GREASY
Gypsum filled fractures and molds; Larger subhedral to
euhedral crystals lining vugs and fractures; Remnant
brecciated structures

2595 - 2603 DOLOSTONE; MODERATE YELLOWISH BROWN TO DARK YELLOWISH BROWN
<1% POROSITY: MOLDIC, FRACTURE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: LITHOGRAPHIC TO MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: BRECCIATED
ACCESSORY MINERALS: GYPSUM-10%
Increase in Iron with depth; Remnant brecciated structures

2603 - 2609.4 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
<1% POROSITY: PIN POINT VUGS, FRACTURE, LOW PERMEABILITY
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: LITHOGRAPHIC TO MICROCRYSTALLINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-01%
Increase in vugs and larger crystals at 2605.6-2605.8'
Organics at 2605.8'

2609.4- 2609.6 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
01% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
OTHER FEATURES: CALCAREOUS
Thin layer of recrystallized wackestone at 2609.4'; Remnant
grain boundaries; Good permeability

2609.6- 2610.9 DOLOSTONE; LIGHT OLIVE GRAY TO MODERATE LIGHT GRAY
<1% POROSITY: PIN POINT VUGS, LOW PERMEABILITY
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS

2610.9- 2618.7 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
04% POROSITY: MOLDIC, FRACTURE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL

GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Gastropod Molds; Open vugs of dissolution; top 1' less porous

2618.7- 2623.3 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
10% POROSITY: INTERCRYSTALLINE, FRACTURE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-<1%
OTHER FEATURES: CALCAREOUS
Good permeability; Less permeable at end of interval (also darker in color); Large areas of broken core/rubble

2623.3- 2625 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
OTHER FEATURES: CALCAREOUS
FOSSILS: FOSSIL MOLDS
Remnant grain boundaries visible and fossil casts (unidentifiable); Gypsum filled fractures

2625 - 2626.7 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
02% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
SEDIMENTARY STRUCTURES: NODULAR
FOSSILS: FOSSIL MOLDS
Organic layer at 2626.5'

2626.7- 2634 DOLOSTONE; VERY LIGHT ORANGE TO LIGHT GRAY
08% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
FOSSILS: FOSSIL MOLDS
Laminae of organics and gypsum; gypsum nodules; Less porous cryptocrystalline to microcrystalline vuggy (pinpoint) DS interbedded with more porous moldic DS with visible remnant grain boundaries

2634 - 2644.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC

50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR
ACCESSORY MINERALS: GYPSUM-10%
FOSSILS: FOSSIL MOLDS
Intergranular gypsum; 2638.2-2640.0': Lighter in color
less molds; Good permeability; Remnant grain boundaries

2644.5- 2645 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
POOR INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-05%
OTHER FEATURES: CALCAREOUS
Could almost be considered dolomitic chalk

2645 - 2647 WACKESTONE; GRAYISH ORANGE TO GRAYISH BROWN
04% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS
POSSIBLY HIGH PERMEABILITY
GRAIN TYPE: CRYSTALS, CALCILUTITE, SKELETAL
35% ALLOCHEMICAL CONSTITUENTS
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): SPARRY CALCITE CEMENT, CALCILUTITE MATRIX
DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-03%
OTHER FEATURES: HIGH RECRYSTALLIZATION, DOLOMITIC
Organic laminae

2647 - 2647.5 DOLOSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
04% POROSITY: MOLDIC, FRACTURE, VUGULAR; 90-100% ALTERED
ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
GYPSUM CEMENT
ACCESSORY MINERALS: GYPSUM-10%, HEAVY MINERALS-02%
Intercrystalline gypsum; Gypsum filled fractures and
nodules

2647.5- 2652.5 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
20% POROSITY: MOLDIC, VUGULAR, POSSIBLY HIGH PERMEABILITY
90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
Remnant grain boundaries of pre-dolomitized fossiliferous
grainstone

2652.5- 2679.4 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: INTERCRYSTALLINE, VUGULAR

POSSIBLY HIGH PERMEABILITY; 90-100% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, NODULAR, INTERBEDDED
ACCESSORY MINERALS: CHERT-10%, GYPSUM-05%
HEAVY MINERALS-02%
FOSSILS: FOSSIL MOLDS
Some areas silicified; Gypsum nodules; Organic laminae at
2663.4’

2679.4- 2673 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
05% POROSITY: INTERCRYSTALLINE, PIN POINT VUGS, MOLDIC
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: LITHOGRAPHIC TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, GYPSUM CEMENT
SEDIMENTARY STRUCTURES: MOTTLED, BRECCIATED, INTERBEDDED
ACCESSORY MINERALS: CHERT-08%, GYPSUM-02%
Less porous cryptocrystalline DS interbedded with more
porous microcrystalline DS; Remnant structures visible
including mottling, brecciation, and laminae; Regions of
silicification; Layer of chert at 2668.4-2668.6’; Large vugs
in last 9” of interval

2673 - 2676 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
08% POROSITY: INTERCRYSTALLINE, VUGULAR, MOLDIC
90-100% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
Remnant grain boundaries; Organic laminae; Iron present

2676 - 2677 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
15% POROSITY: VUGULAR, INTERCRYSTALLINE
POSSIBLY HIGH PERMEABILITY; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; MODERATE INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-40%
OTHER FEATURES: CALCAREOUS
Largely rubble/broken core; Dolomitized packstone/
wackestone (not complete)

2677 - 2681.6 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, INTERCRYSTALLINE, MOLDIC
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
ACCESSORY MINERALS: LIMESTONE-15%
OTHER FEATURES: CALCAREOUS
Dolomitized packstone/grainstone; Remnant grain
boundaries; Selenite? crystals lining vugs and molds at 2681.3’

2681.6- 2687 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH ORANGE
08% POROSITY: PIN POINT VUGS, MOLDIC, FRACTURE
50-90% ALTERED; ANHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
CALCILUTITE MATRIX
SEDIMENTARY STRUCTURES: MOTTLED, BRECCIATED
ACCESSORY MINERALS: HEAVY MINERALS-10%, GYPSUM-10%
OTHER FEATURES: CALCAREOUS
Dolomitized mudstone; Intercrystalline gypsum; Gypsum
(and/or chert) filled fractures

2687 - 2688.5 CHERT; GRAYISH BROWN TO MODERATE GRAY
01% POROSITY: VUGULAR, FRACTURE, LOW PERMEABILITY
GOOD INDURATION
CEMENT TYPE(S): SILICIC CEMENT, DOLOMITE CEMENT
ACCESSORY MINERALS: DOLOMITE-20%, GYPSUM-03%
IRON STAIN-02%

2688.5- 2691 DOLOSTONE; GRAYISH ORANGE TO MODERATE YELLOWISH BROWN
01% POROSITY: MOLDIC, FRACTURE, LOW PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
SEDIMENTARY STRUCTURES: INTERBEDDED, MOTTLED
ACCESSORY MINERALS: HEAVY MINERALS-05%, GYPSUM-03%
OTHER FEATURES: VARIEGATED
Massive non-porous DS; Interbedded with more porous
calcarenitic DS; Gypsum nodules

2691 - 2693.2 DOLOSTONE; GRAYISH ORANGE TO MODERATE LIGHT GRAY
15% POROSITY: VUGULAR, MOLDIC; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
50% filled vugs (chert?)

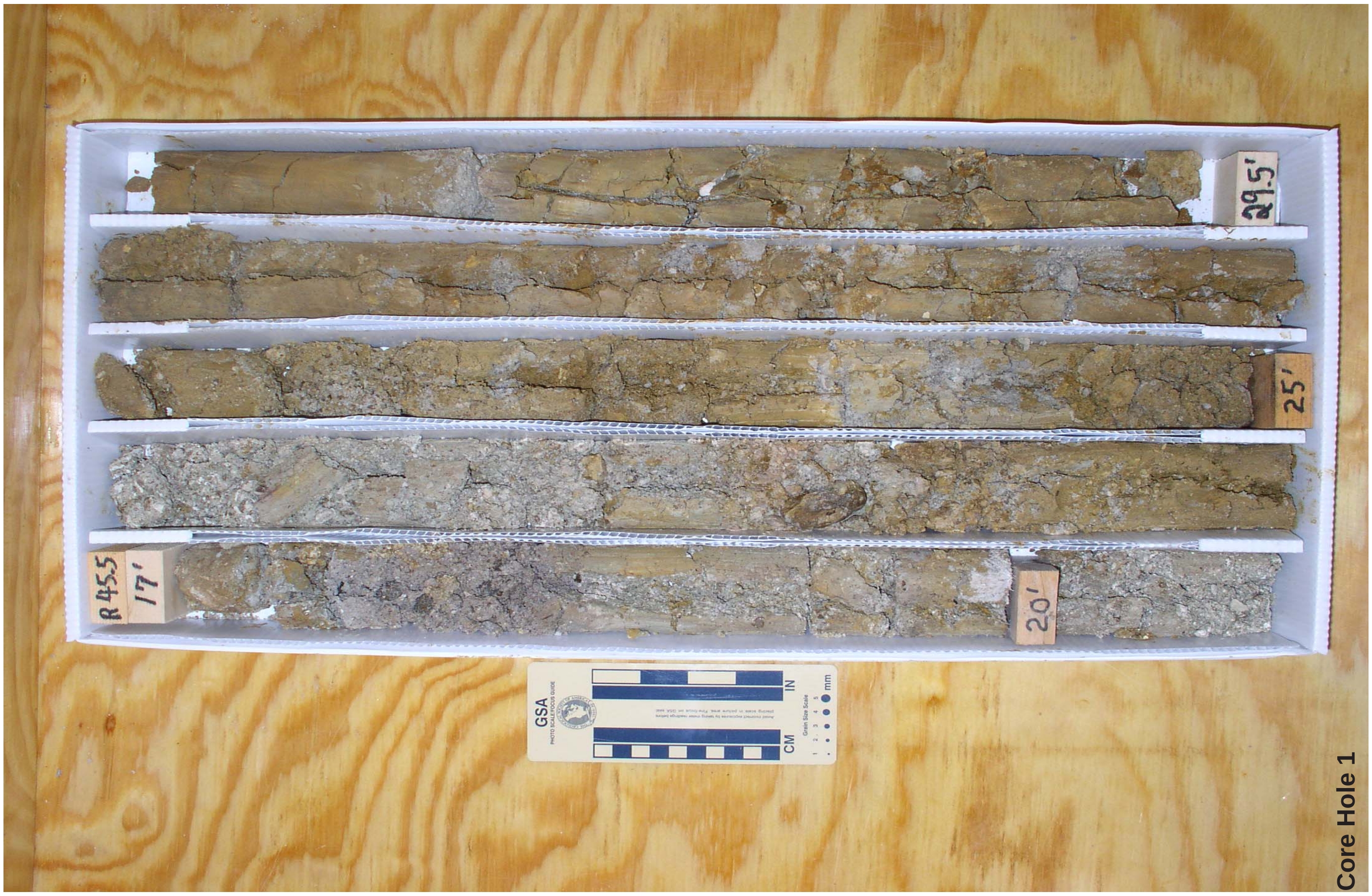
2693.2- 2697.1 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
20% POROSITY: VUGULAR, MOLDIC, POSSIBLY HIGH PERMEABILITY
50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO VERY FINE; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-05%
Dolomitized grainstone

2697.1- 2699 DOLOSTONE; GRAYISH ORANGE TO GRAYISH BROWN
10% POROSITY: VUGULAR, MOLDIC; 50-90% ALTERED; SUBHEDRAL
GRAIN SIZE: MICROCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MEDIUM; GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SPARRY CALCITE CEMENT
ACCESSORY MINERALS: HEAVY MINERALS-10%
OTHER FEATURES: CALCAREOUS
Remnant grains

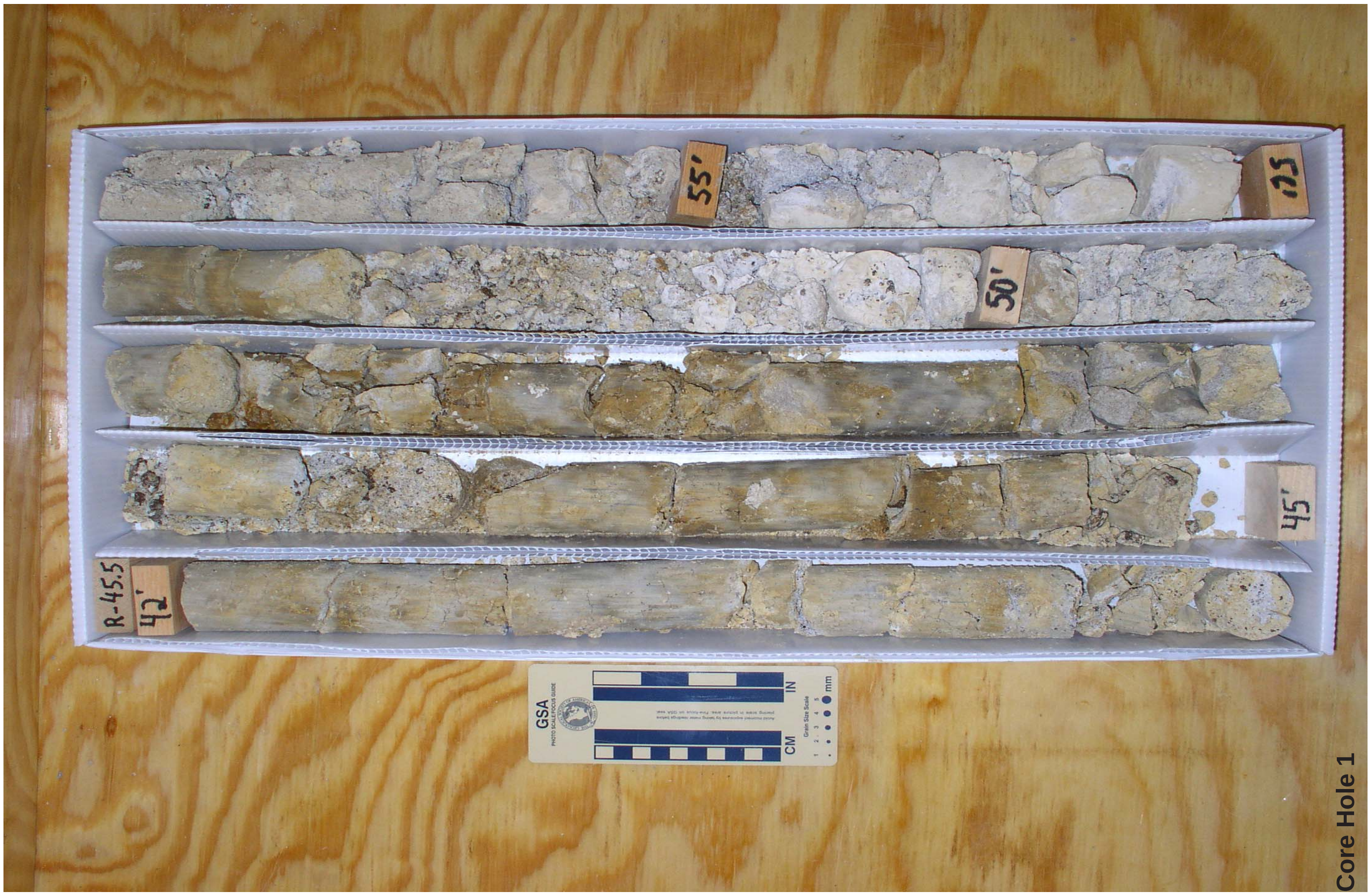
2699 - 2707 DOLOSTONE; VERY LIGHT ORANGE TO GRAYISH BROWN
03% POROSITY: VUGULAR, MOLDIC; 50-90% ALTERED; ANHEDRAL
GRAIN SIZE: CRYPTOCRYSTALLINE
RANGE: CRYPTOCRYSTALLINE TO MICROCRYSTALLINE
GOOD INDURATION
CEMENT TYPE(S): DOLOMITE CEMENT, SILICIC CEMENT
ACCESSORY MINERALS: GYPSUM-15%, CHERT-10%
OTHER FEATURES: CALCAREOUS
50% Recovery in end 10 feet of core (close to 100% above
2699’ but less below); 4” of recovered material:
dolomitized wackestone with selenite? crystals lining vugs
and molds, possibly reefal in origin

2707 TOTAL DEPTH

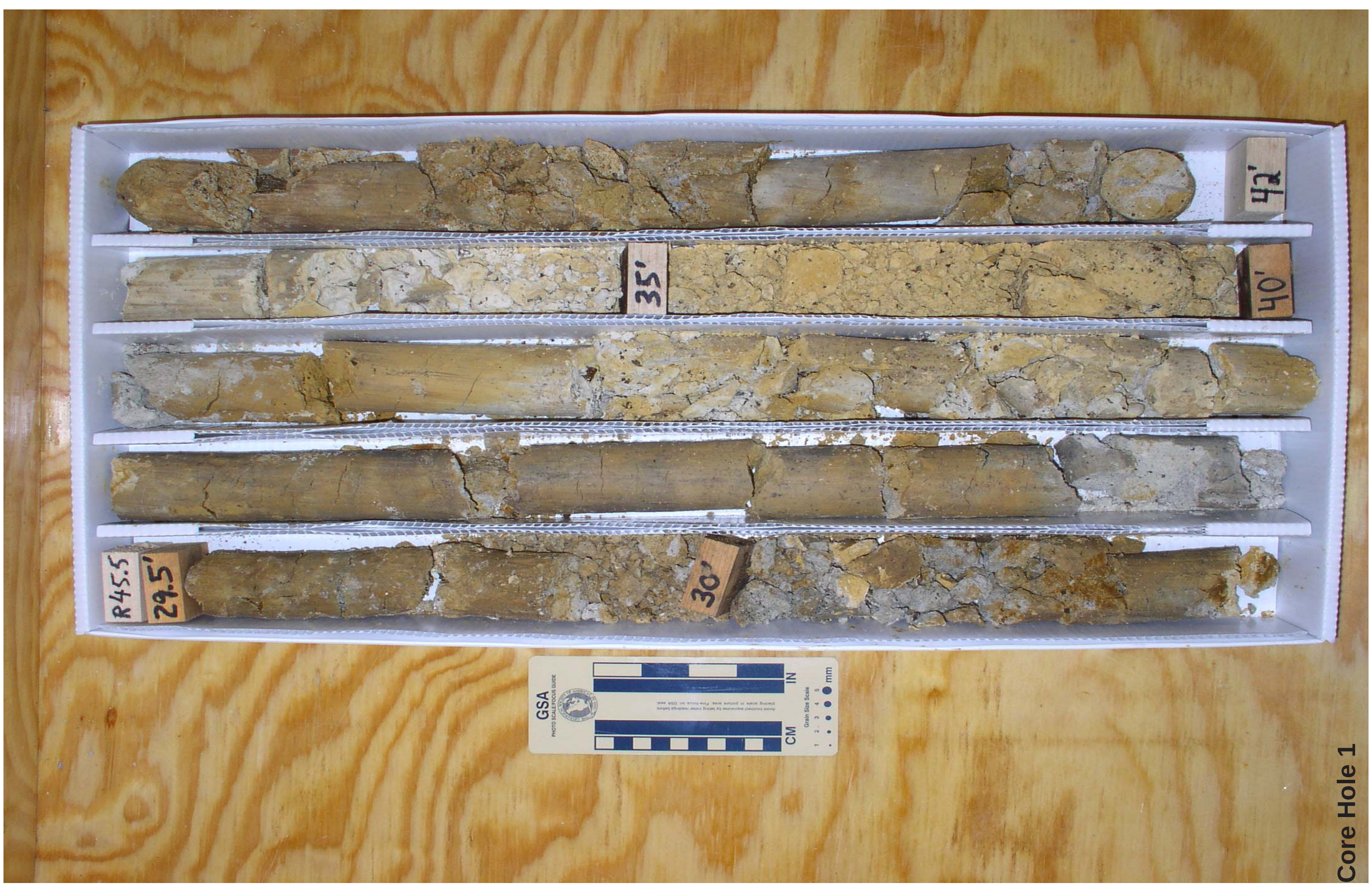
Appendix D. Digital Photographs of Core Samples Retrieved from Core Hole 1, 2, and 3 at the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida


29.5'
25'
R 45.5
17'
20'
GSA
IN
CM
Core Hole 1


15'
17'
10'
R-45.5
0'
2'
5'
GSA
IN
CM
Core Hole 1



Core Hole 1



Core Hole 1


85'
86'
80'
75'
R-45.5
71'
GSA
IN
CM
Core Hole 1


70'
71'
65'
60'
R-45.5
56'
GSA
IN
CM
Core Hole 1

Core Hole 1

Core Hole 1


149'
145'
140'
R45.5
134'
135'
GSA
IN
CM
Core Hole 1


134'
130'
125'
120'
GSA
IN
CM
Core Hole 1

Core Hole 1

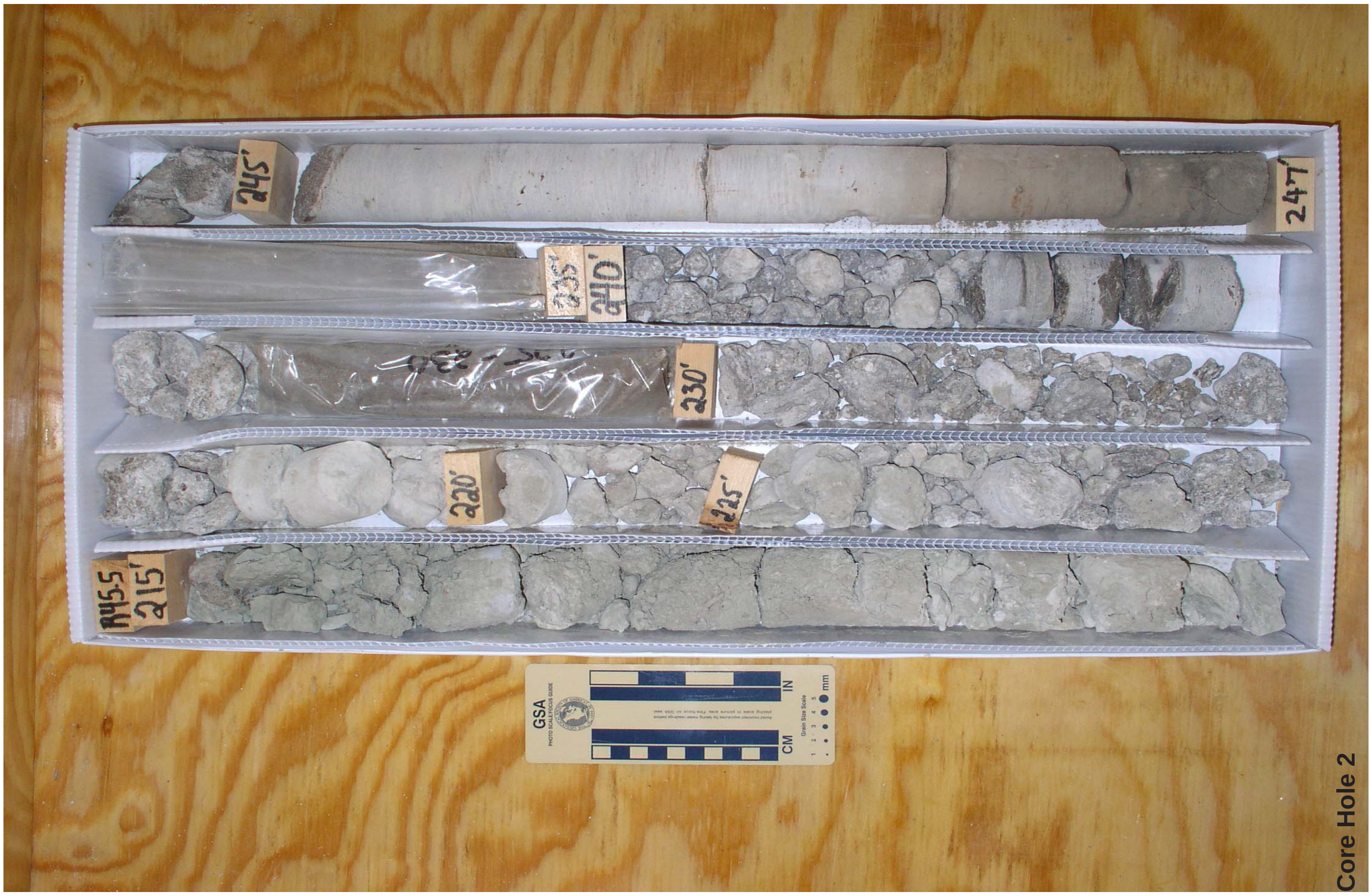
Core Hole 1


R-45.5
197'
200'
T.D.
CH-1
GSA
IN
CM
Core Hole 1

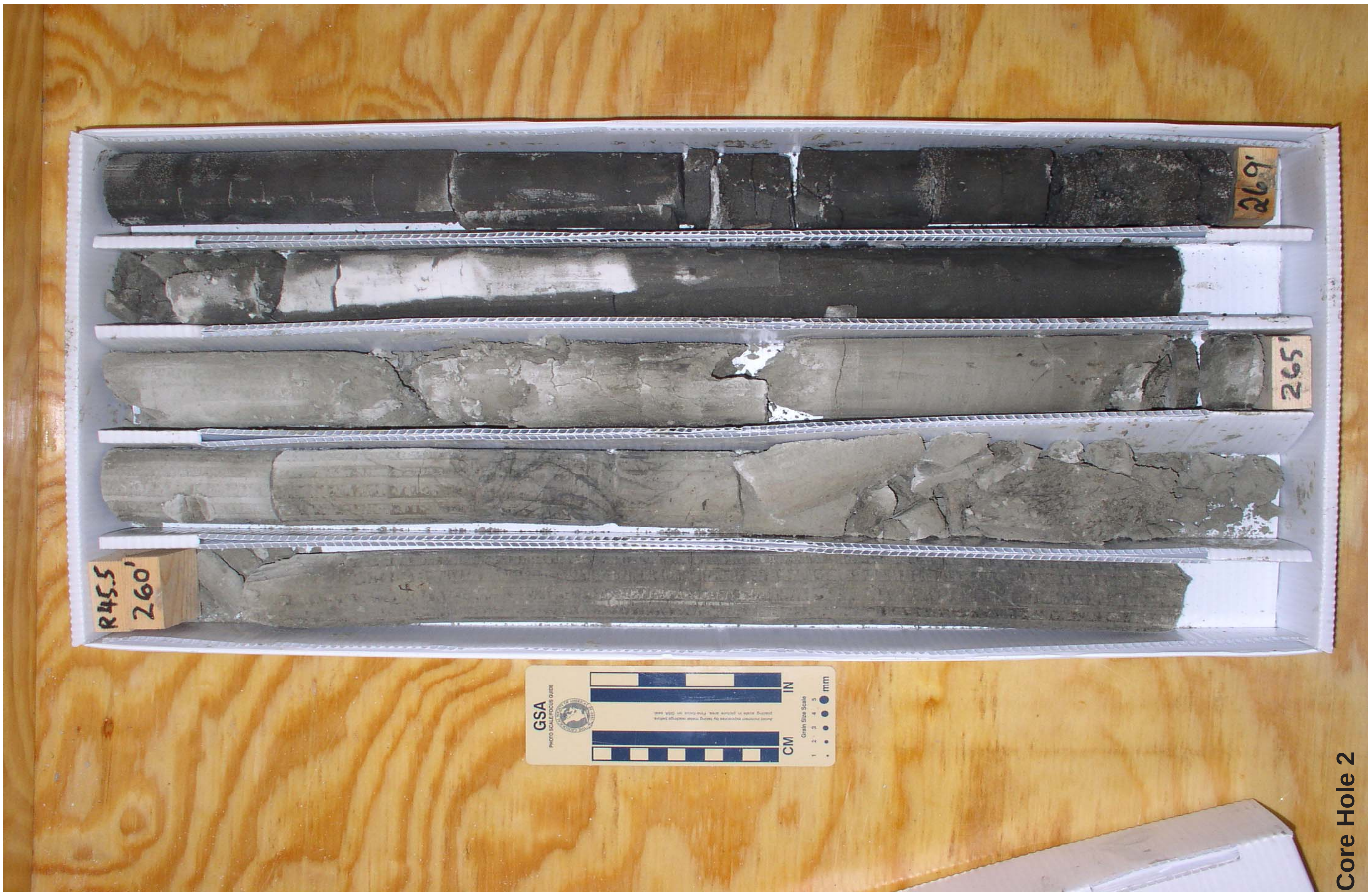

197'
195'
185'
190'
180'
R-45.5
175'
GSA
IN
CM
Core Hole 1


200'
201'
195'
190'
R45.5
185'
GSA
IN
CM
mm
Core Hole 2


185'
180'
195'
R45.5
172'
GSA
IN
CM
mm
Core Hole 2


245'
247'
235'
240'
230'
220'
225'
R45.5
215'
GSA
IN
CM
Core Hole 2


215'
205'
210'
R 45.5
201'
GSA
IN
CM
Core Hole 2


269'
265'
R45.5
260'
GSA
IN
CM
Core Hole 2


260'
255'
R45.5
247'
250'
GSA
IN
CM
Core Hole 2


287.5
285'
R45.5
278.5
280'
GSA
IN
CM
Core Hole 2


278.5'
275'
R45.5
269
270'
GSA
IN
CM
Core Hole 2

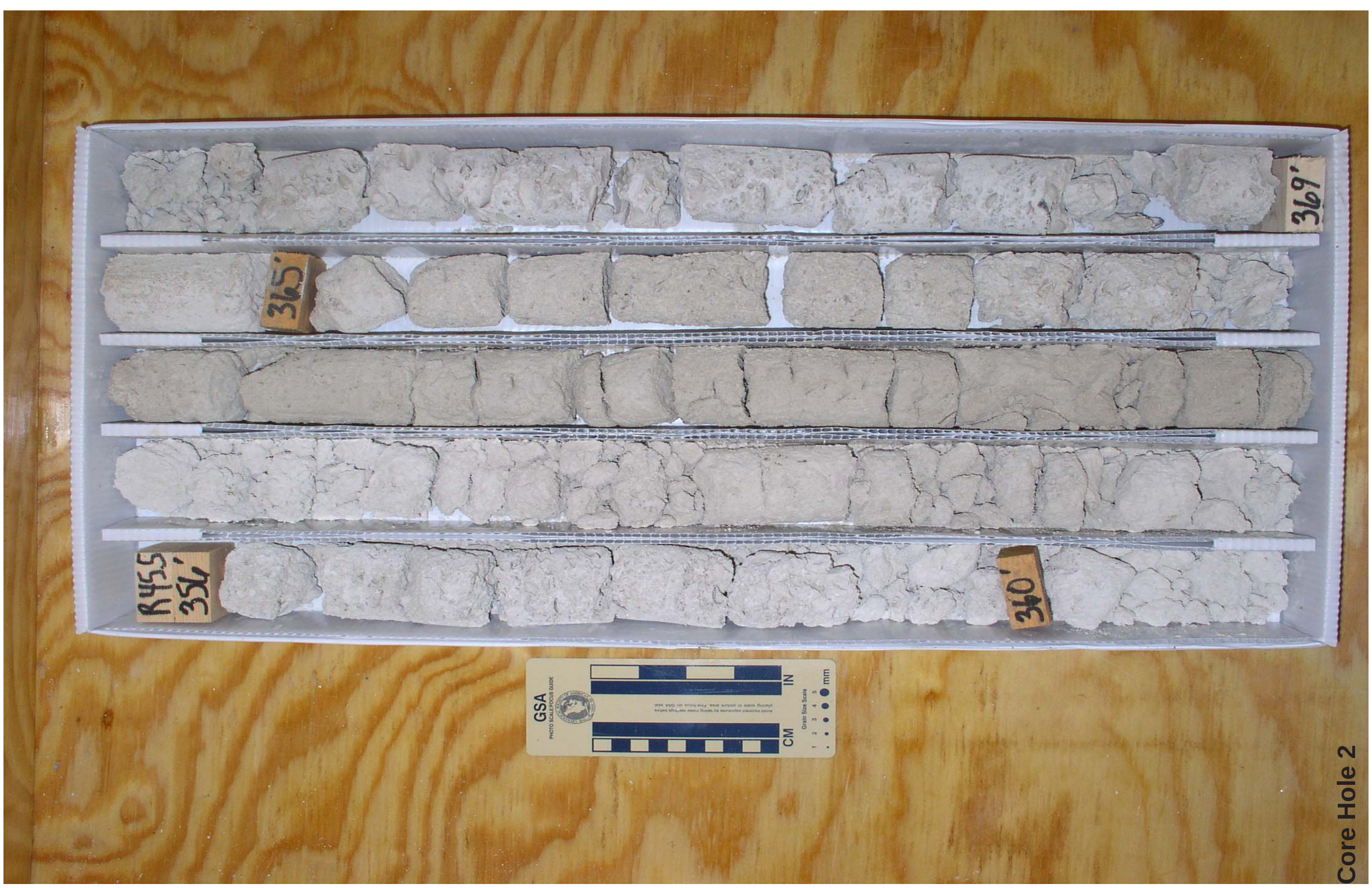
Core Hole 2

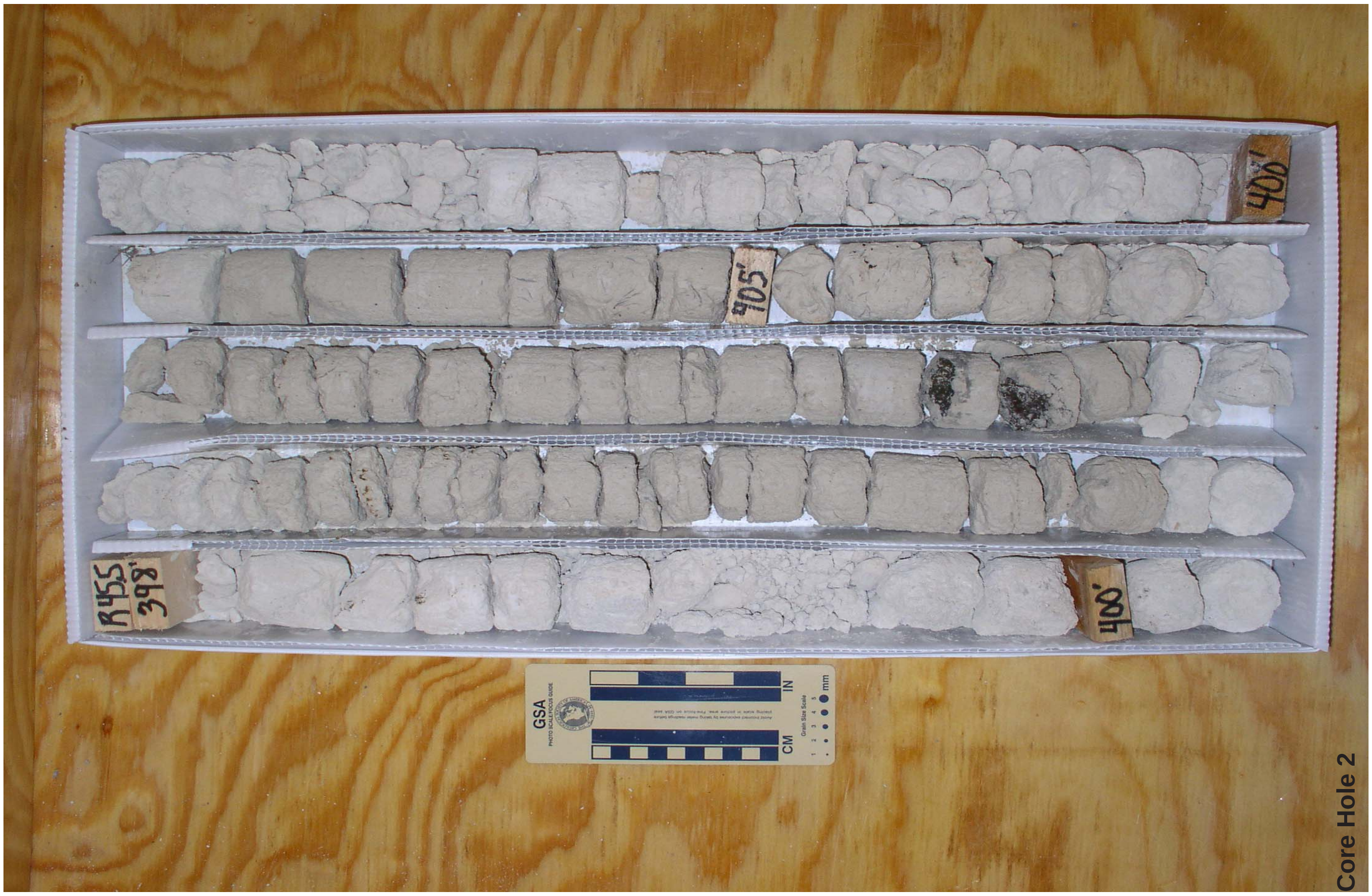
Core Hole 2

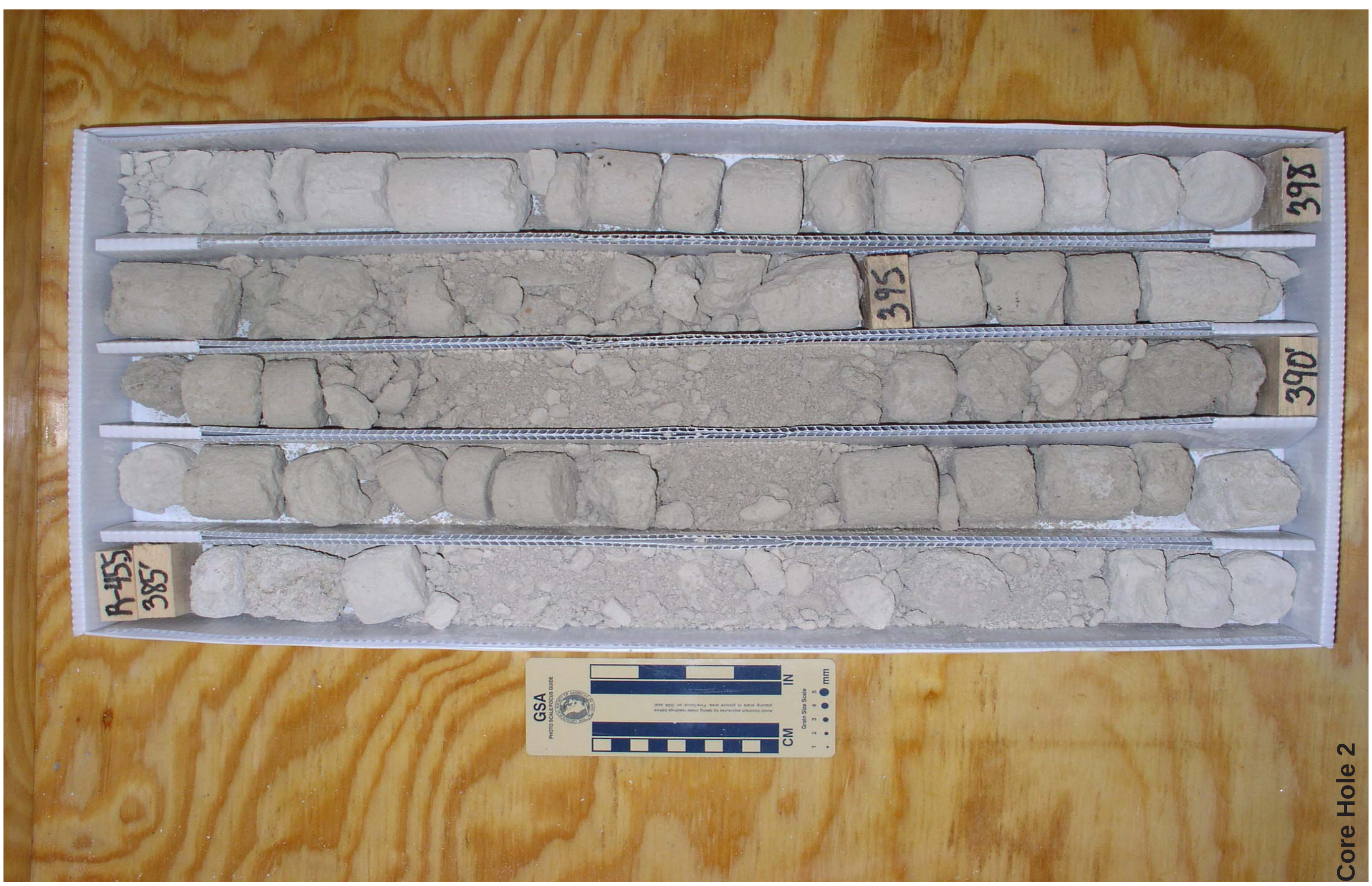

355'
356'
350'
345'
R45.5
343'
GSA
IN
CM
Core Hole 2


343'
340'
335'
R45.5
331
GSA
IN
CM
Core Hole 2


Core Hole 2

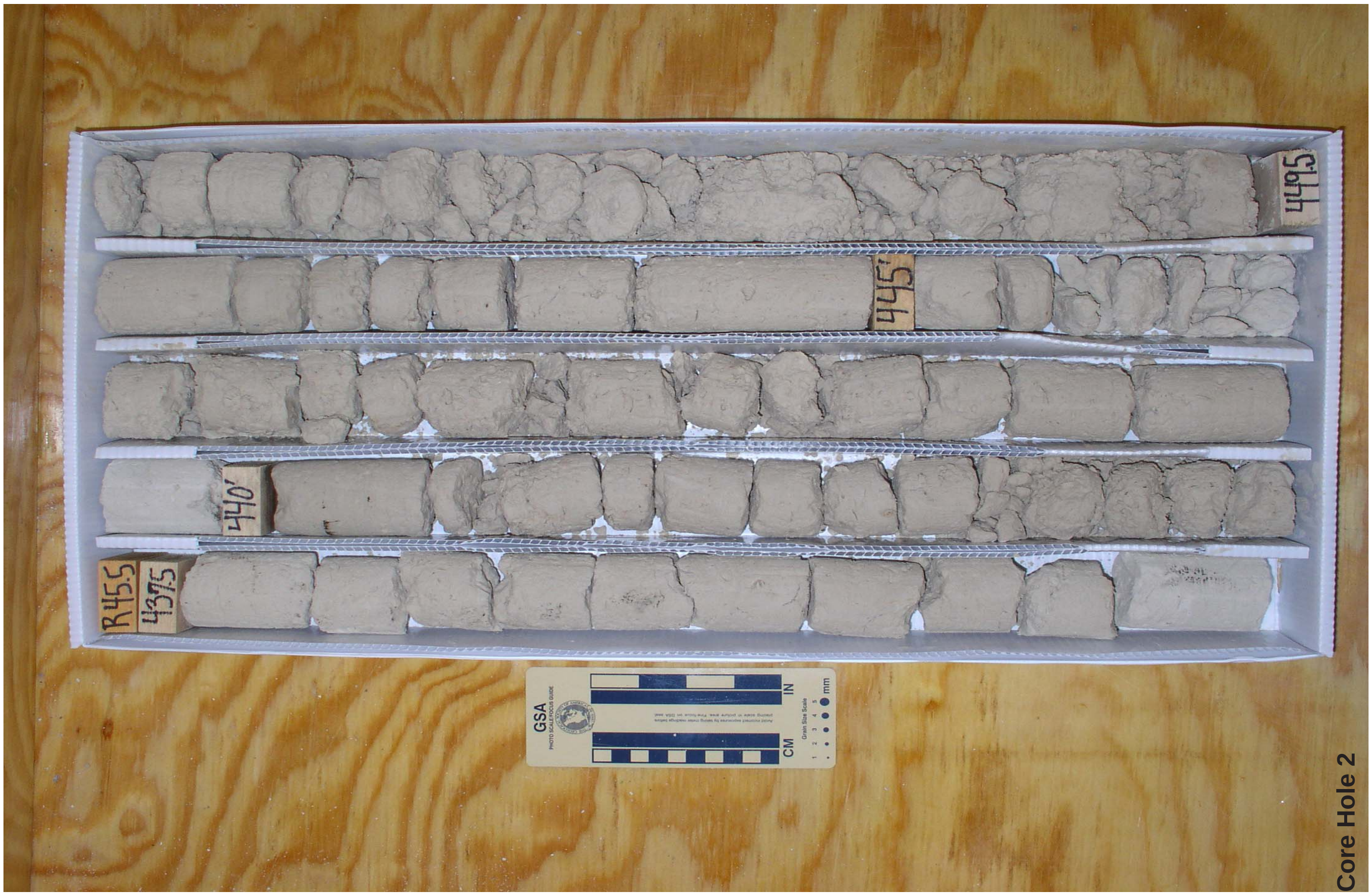

Core Hole 2


406'
405'
R45.5 398'
400'
Core Hole 2


398'
395
390'
R-45.5 385'
Core Hole 2

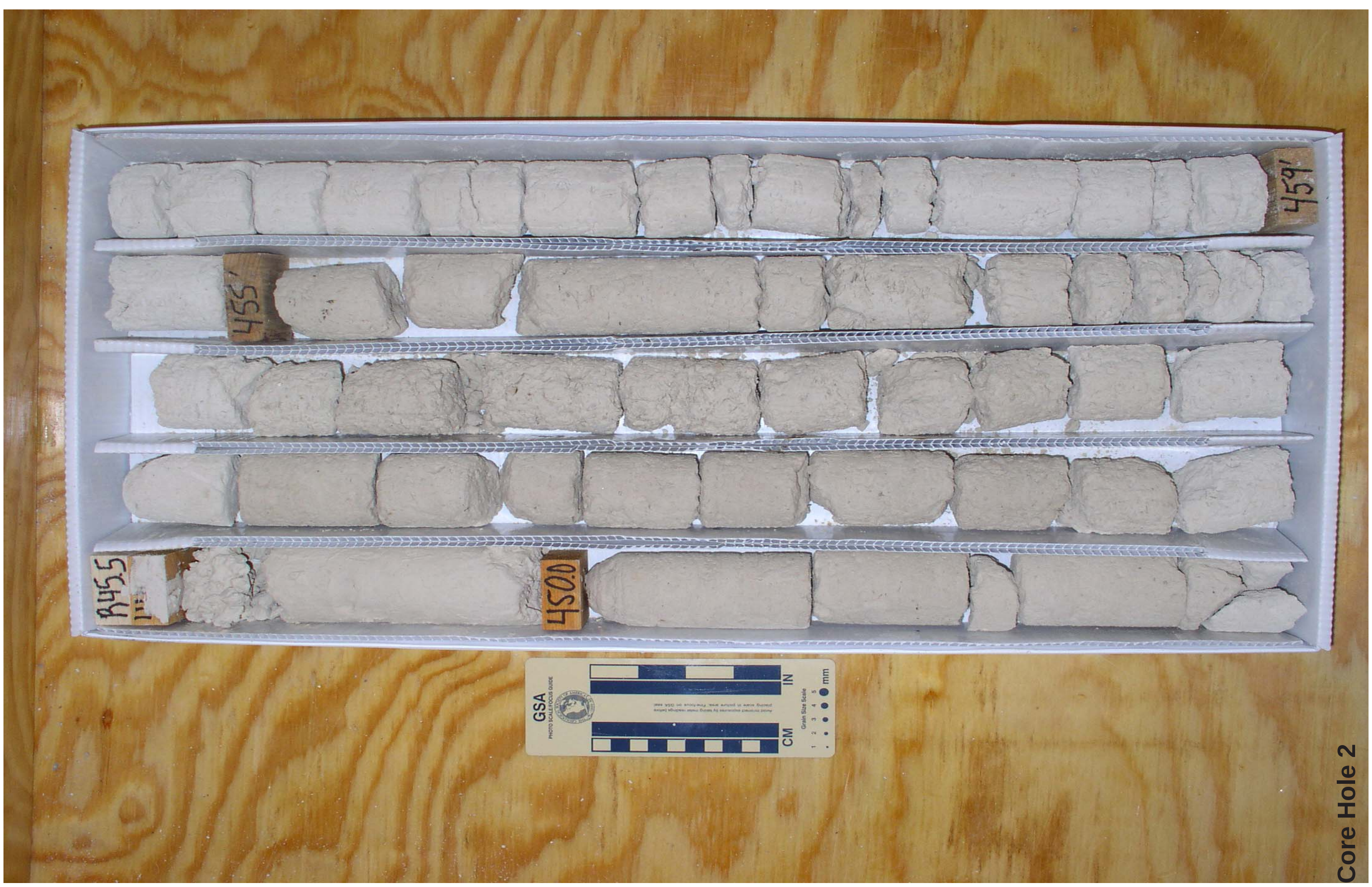

428'
425'
420'
R 45.5
418'
GSA
IN
CM
Core Hole 2


418'
415'
410'
R 45.5
408'
GSA
IN
CM
Core Hole 2

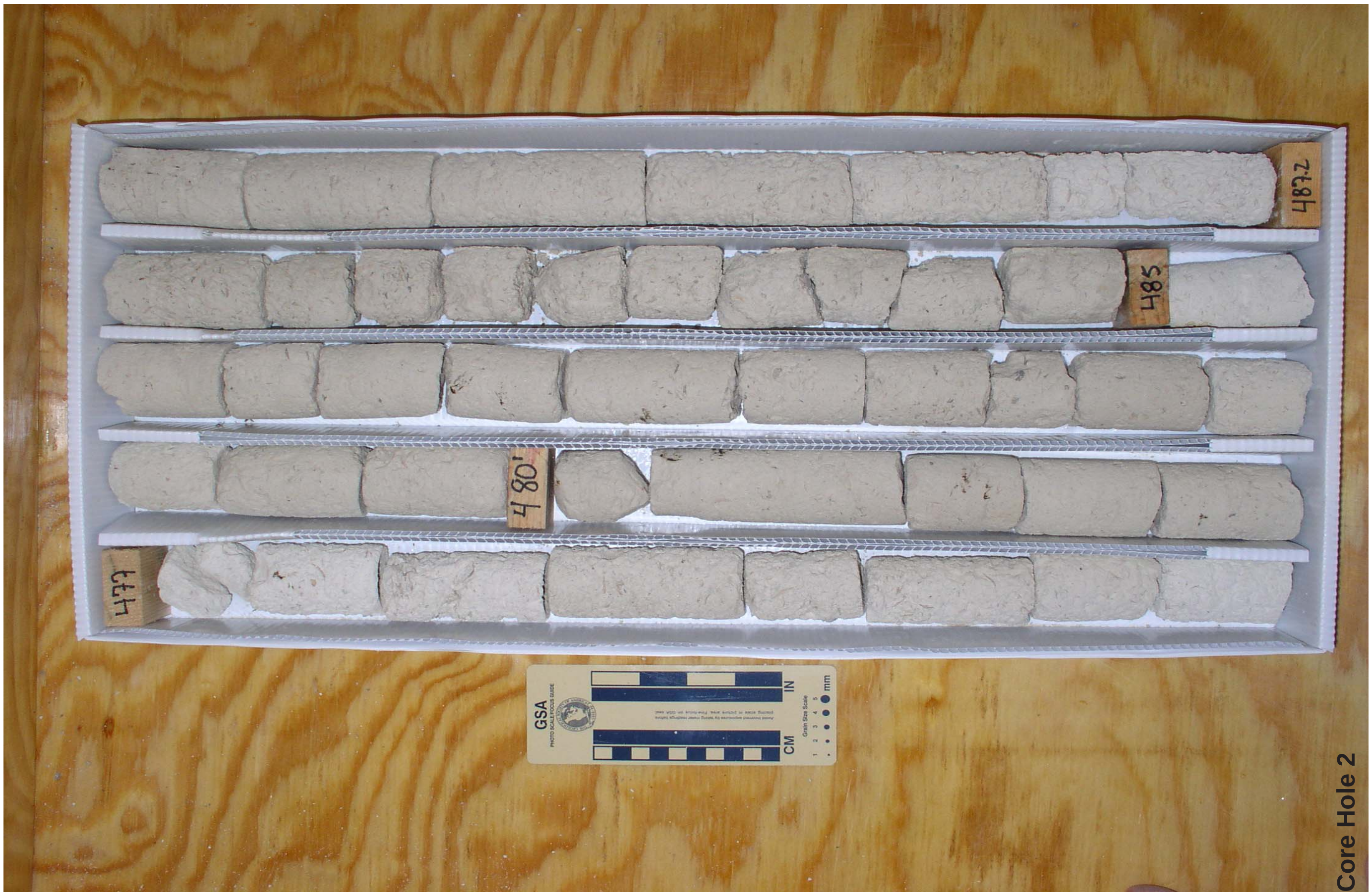

449.5
445'
440'
R45.5
437.5
GSA
IN
CM
mm
Core Hole 2


437.5
435'
430'
R45.5
428'
GSA
IN
CM
mm
Core Hole 2

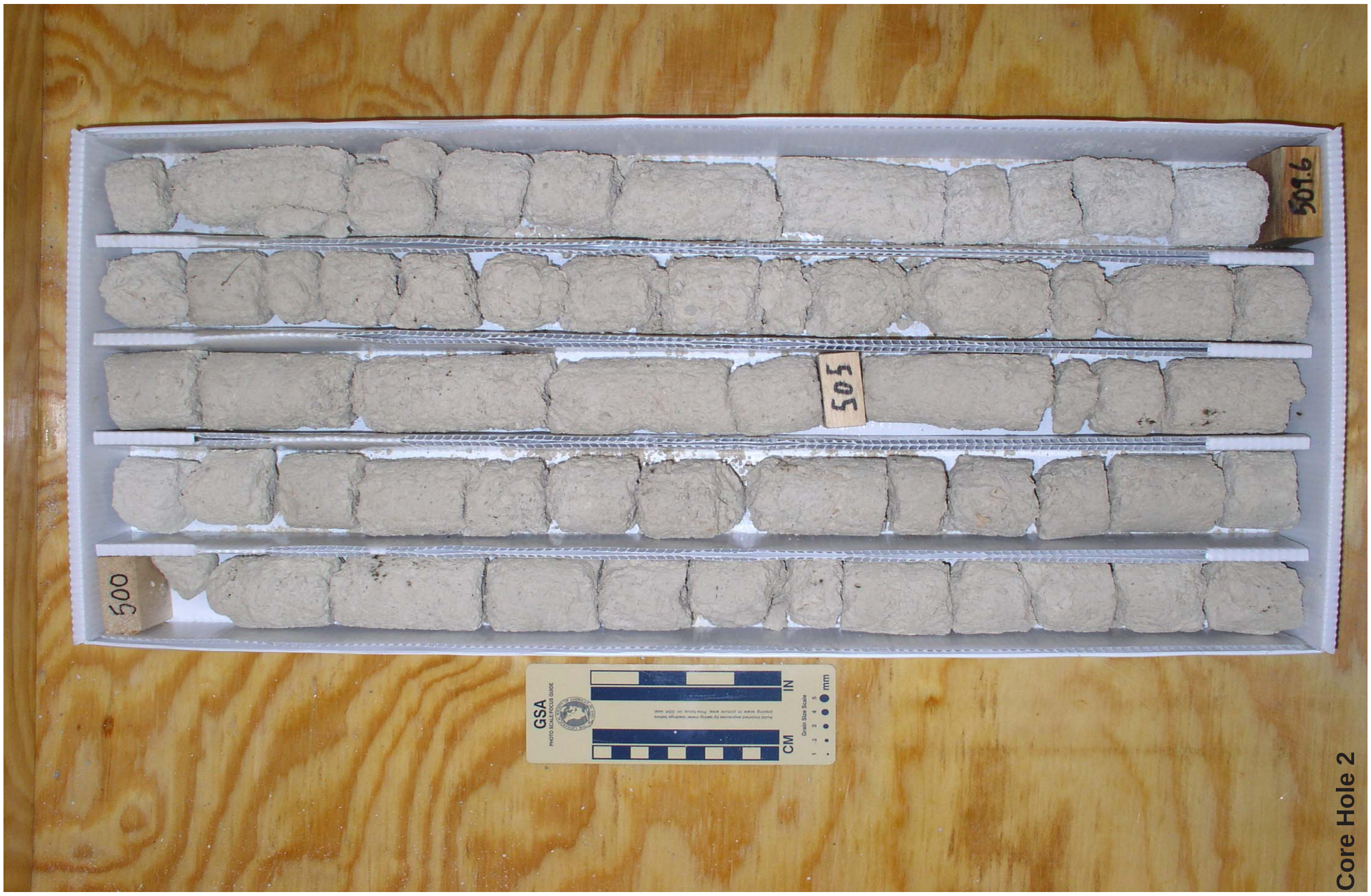
Core Hole 2



Core Hole 2

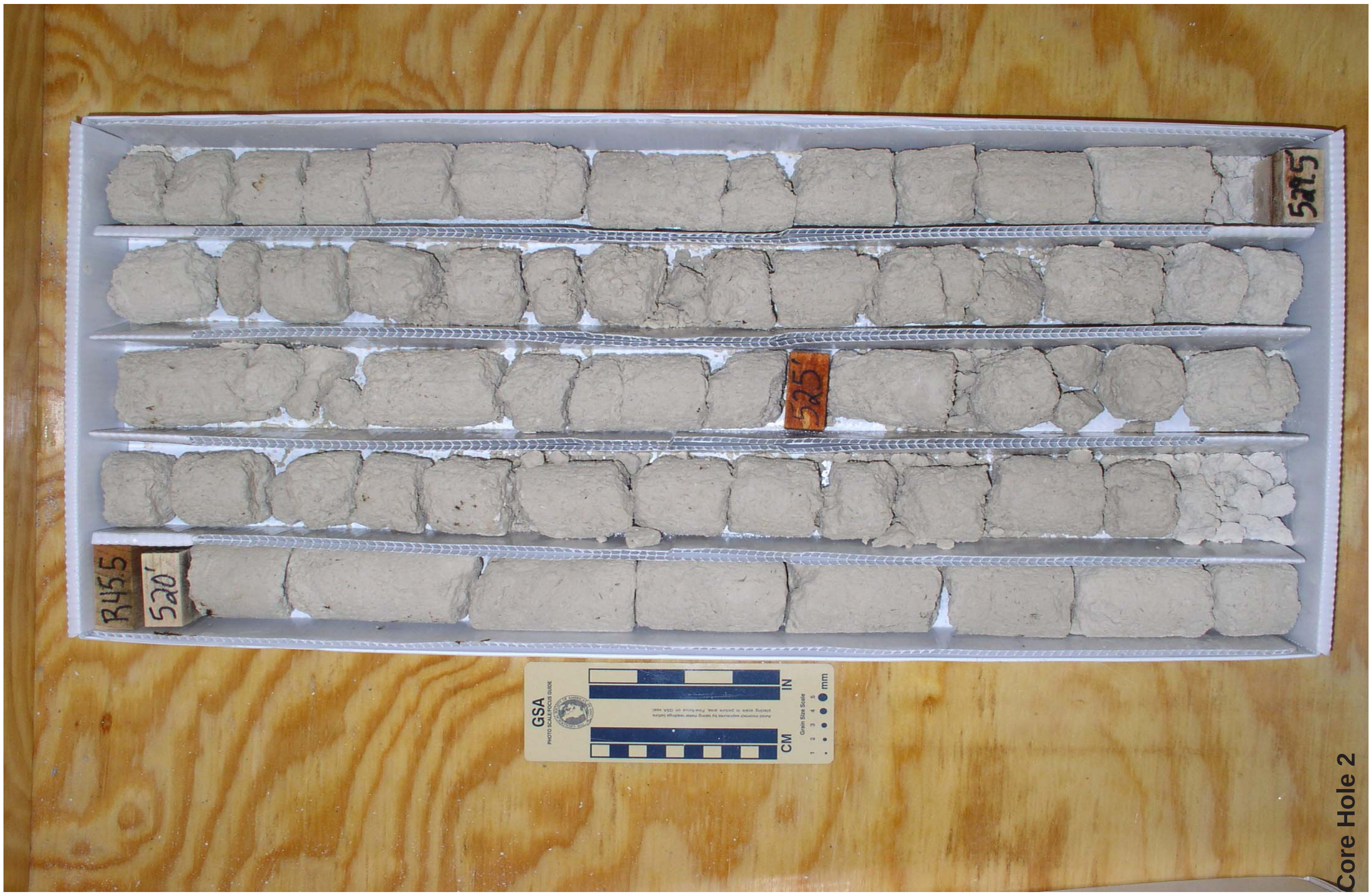

487.2
485
4 80'
477
GSA
IN
CM
mm
Core Hole 2


477
475'
470'
R45.5
467.5
GSA
IN
CM
mm
Core Hole 2



Core Hole 2

Core Hole 2


529.5
525'
R45.5
520'
GSA
IN
CM
Core Hole 2


520'
515
509.6
510
GSA
IN
CM
Core Hole 2

Core Hole 2

Core Hole 2


567.5'
565'
560'
R45.5
557.5
GSA
IN
CM
Core Hole 2


557.5'
555'
R45.5
549'
550'
GSA
IN
CM
Core Hole 2


585'
586.5
580'
R45.5
577'
GSA
IN
CM
Core Hole 2


577'
575'
570'
R45.5
GSA
IN
CM
Core Hole 2


605'
606.5'
600'
R45.5
596.5
Core Hole 2

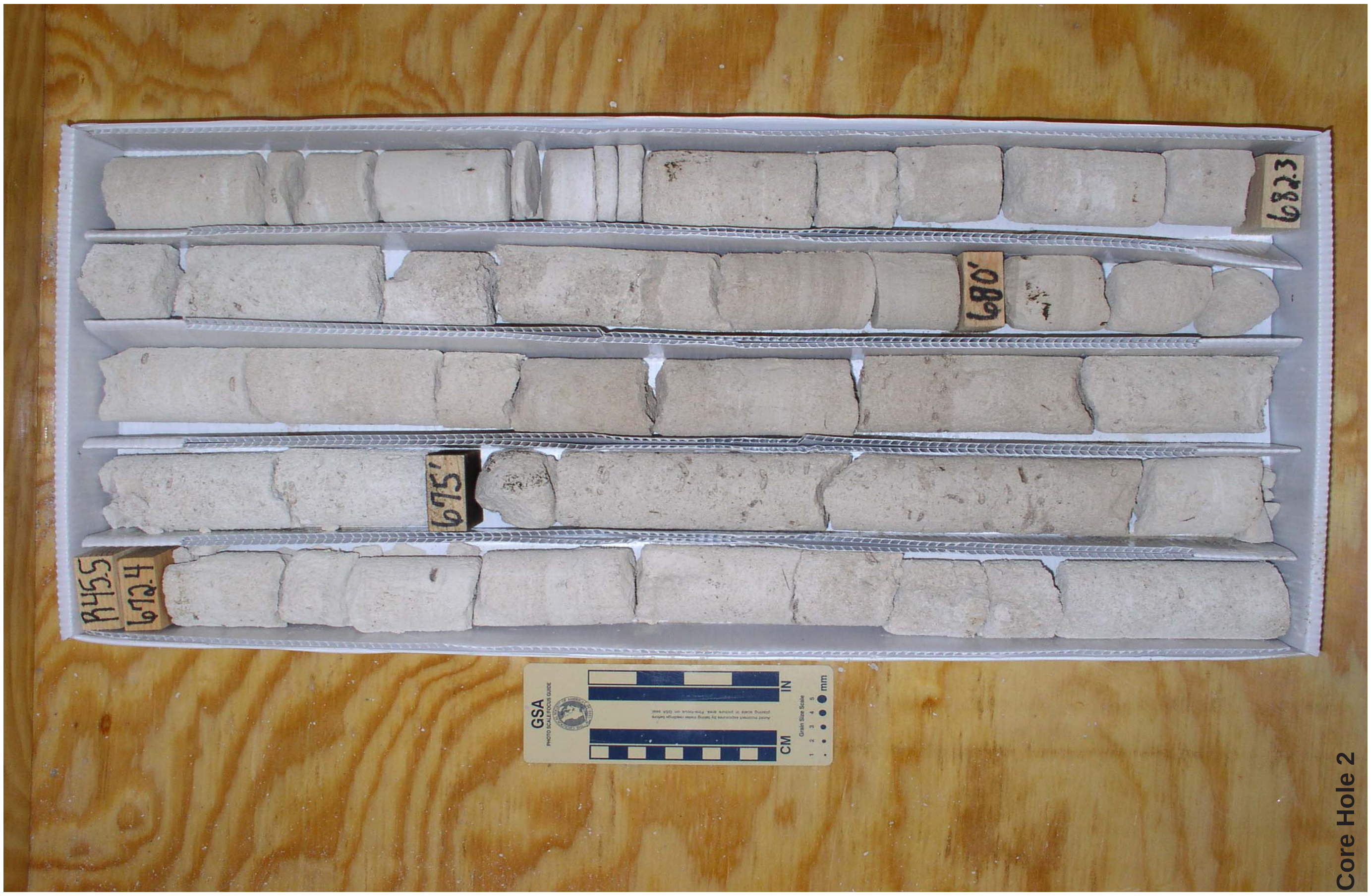

595'
596.5'
590'
R45.5
586.5'
Core Hole 2


633.6
630'
625'
A45.5
617.2
620'
GSA
Core Hole 2


617.2'
615'
610'
A45.5
606.5'
GSA
Core Hole 2

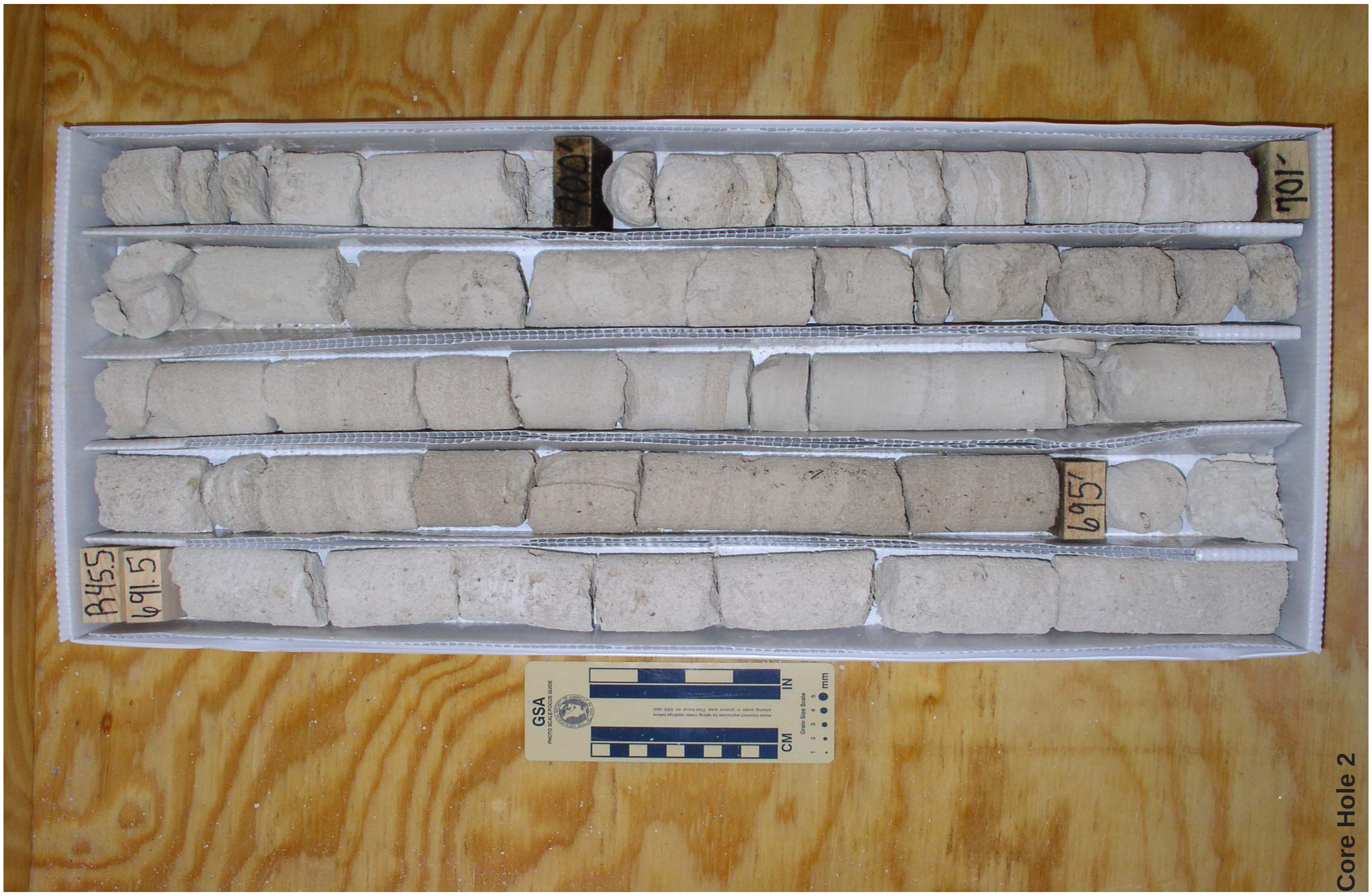

660'
655'
650'
R45.5
645.3'
GSA
IN
CM
Core Hole 2

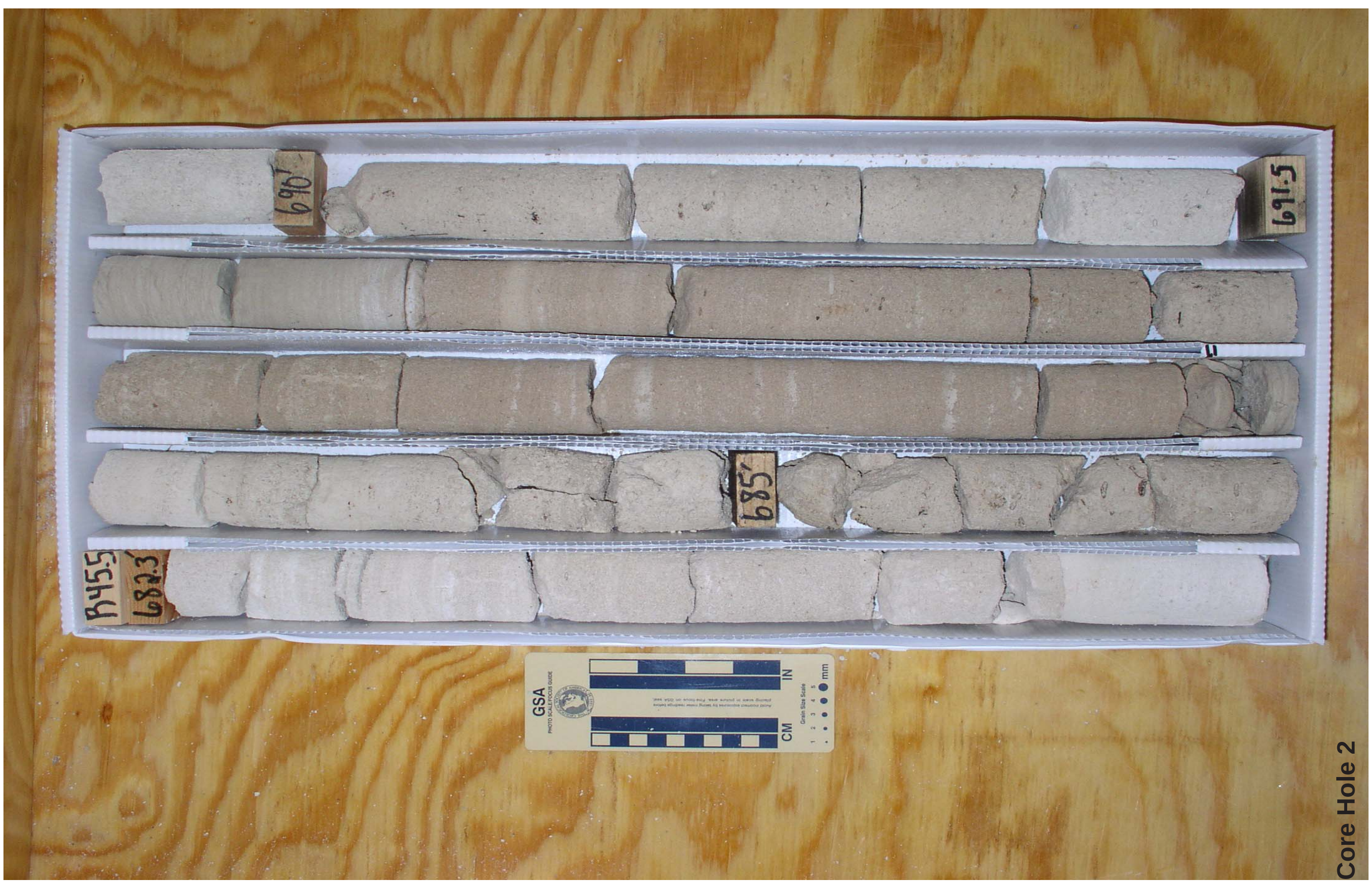

645'
645.3'
640'
R45.5
633.6
GSA
IN
CM
Core Hole 2



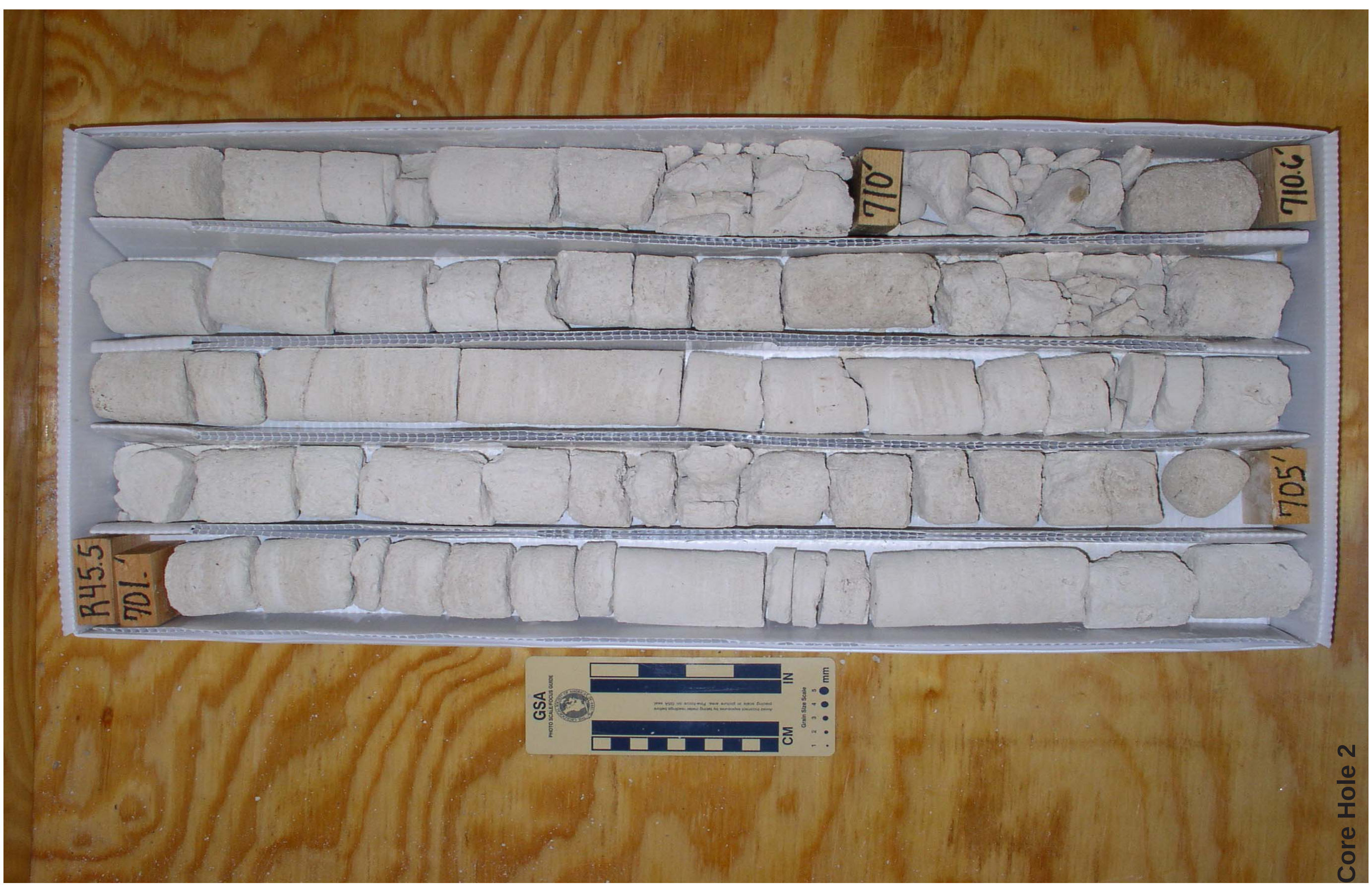
682.3
680'
675'
845.5
672.4
GSA
IN
CM
Core Hole 2

672.4
670'
665'
845.5
660'
GSA
IN
CM
Core Hole 2


700'
701'
695'
R45.5
691.5
GSA
IN
CM
Core Hole 2


690'
691.5
685'
R45.5
682.3
GSA
IN
CM
Core Hole 2

Core Hole 2



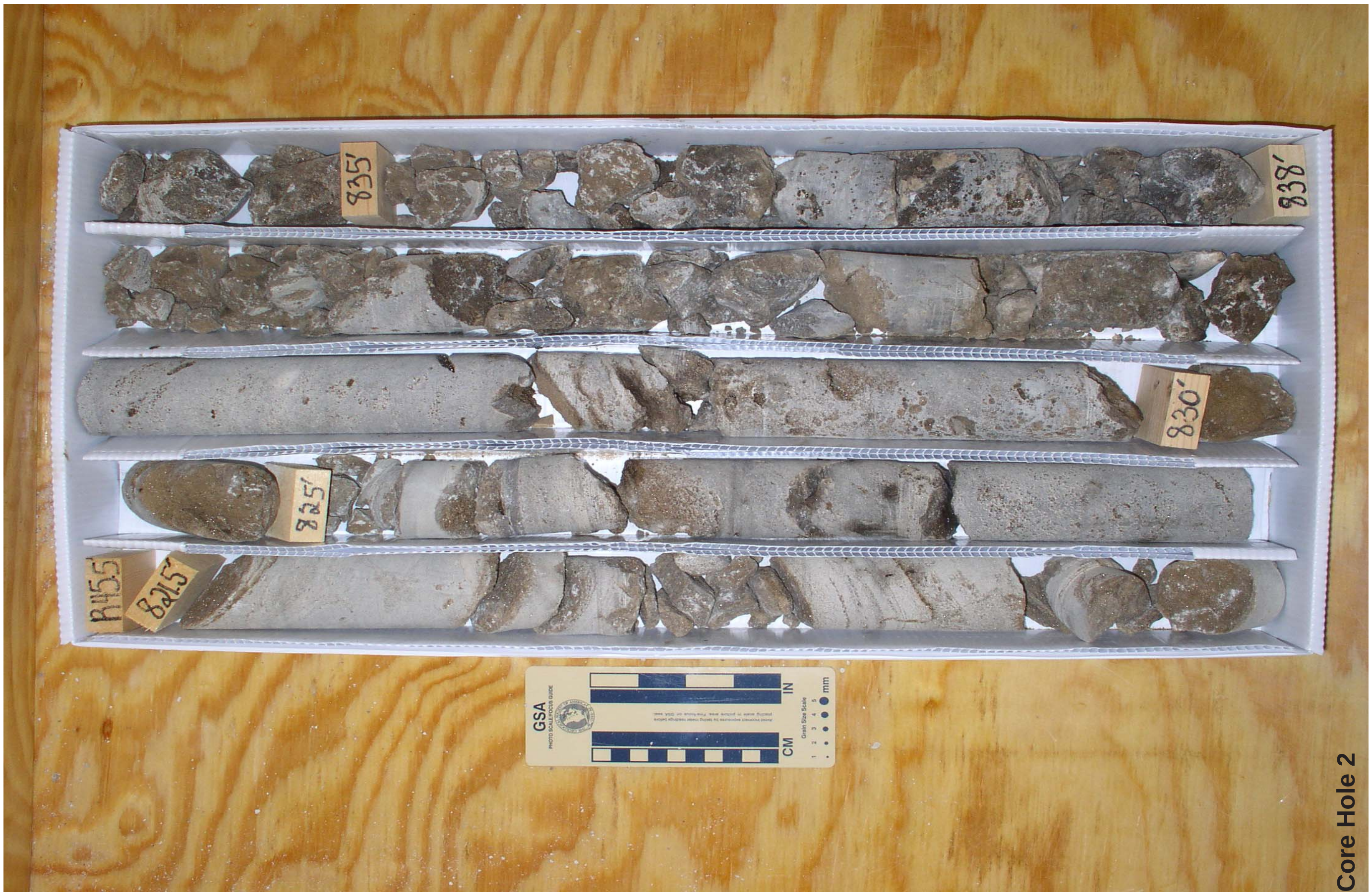
Core Hole 2


768.5'
770'
775'
765'
755'
750'
R45.5
743.1
745'
Core Hole 2


730'
No Recovery
735'
740'
742'
743.1
725'
R45.5
720.5'
Core Hole 2

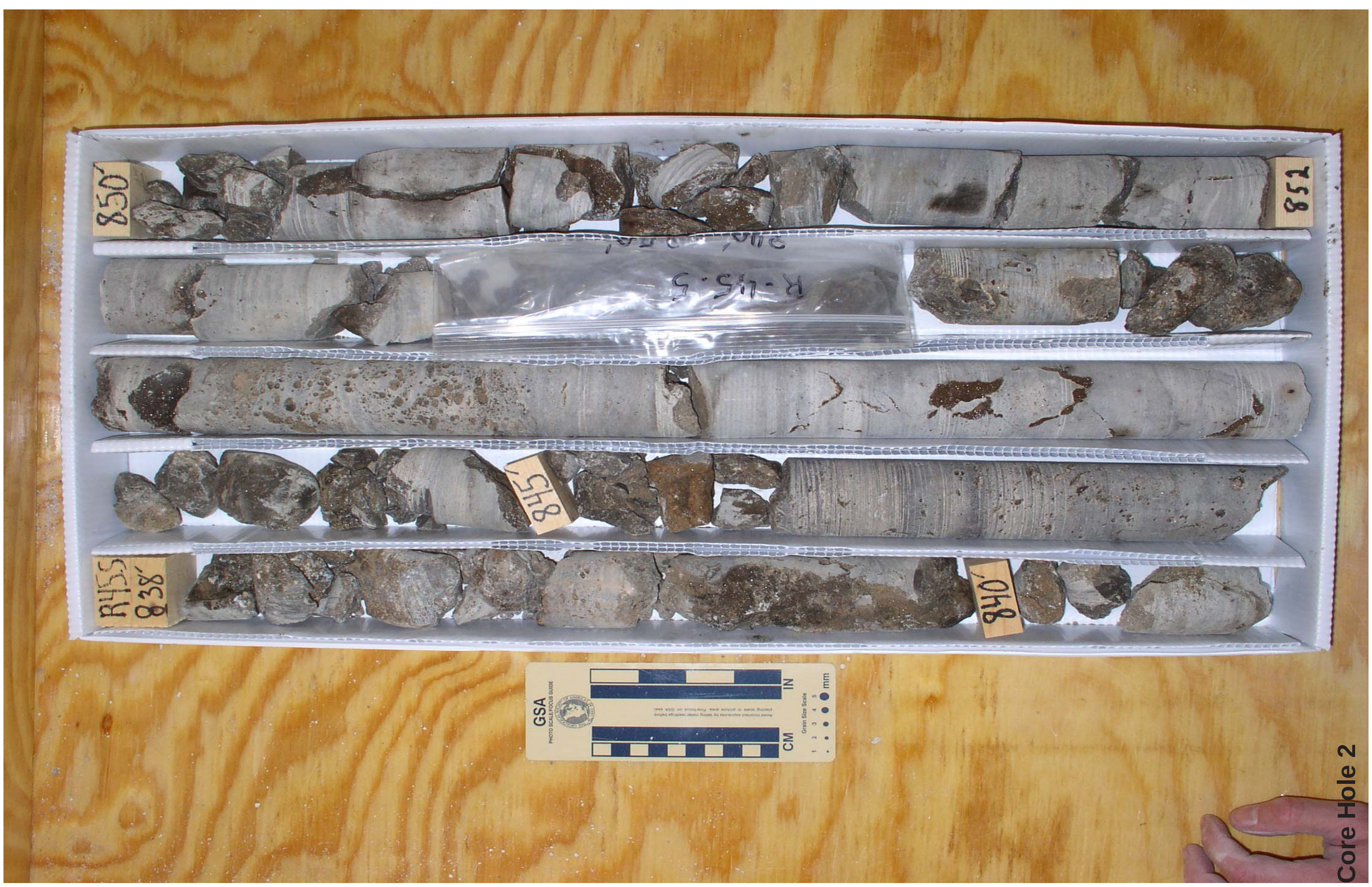
Core Hole 2

Core Hole 2

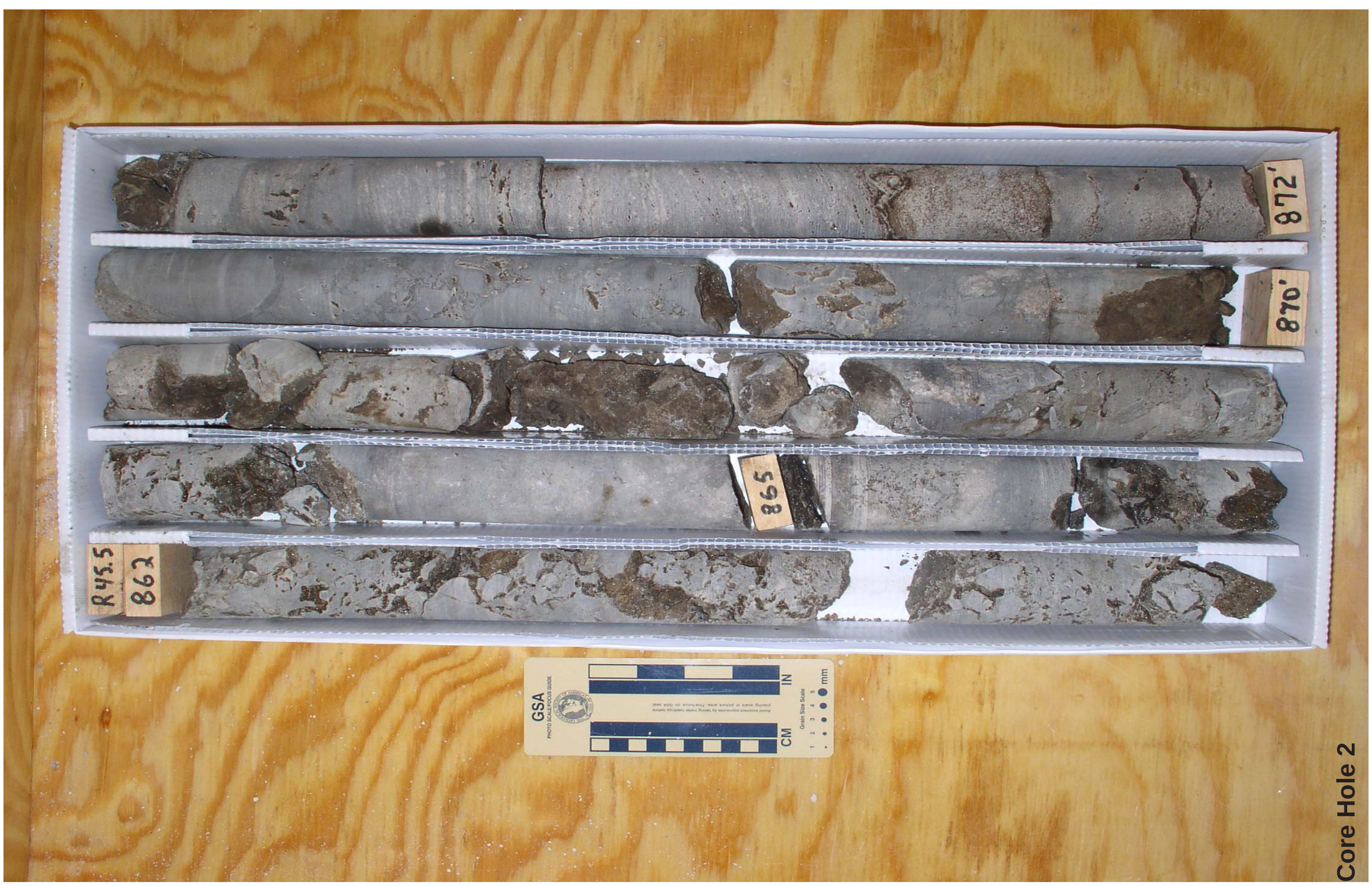

835'
838'
830'
825'
R45.5
821.5'
GSA
IN
CM
mm
Grain Size Scale
Core Hole 2


820'
821.5'
815'
R45.5
810'
GSA
IN
CM
mm
Grain Size Scale
Core Hole 2


Core Hole 2


Core Hole 2


880'
881.5'
875'
A-45.5
872'
GSA
IN
CM
Core Hole 2

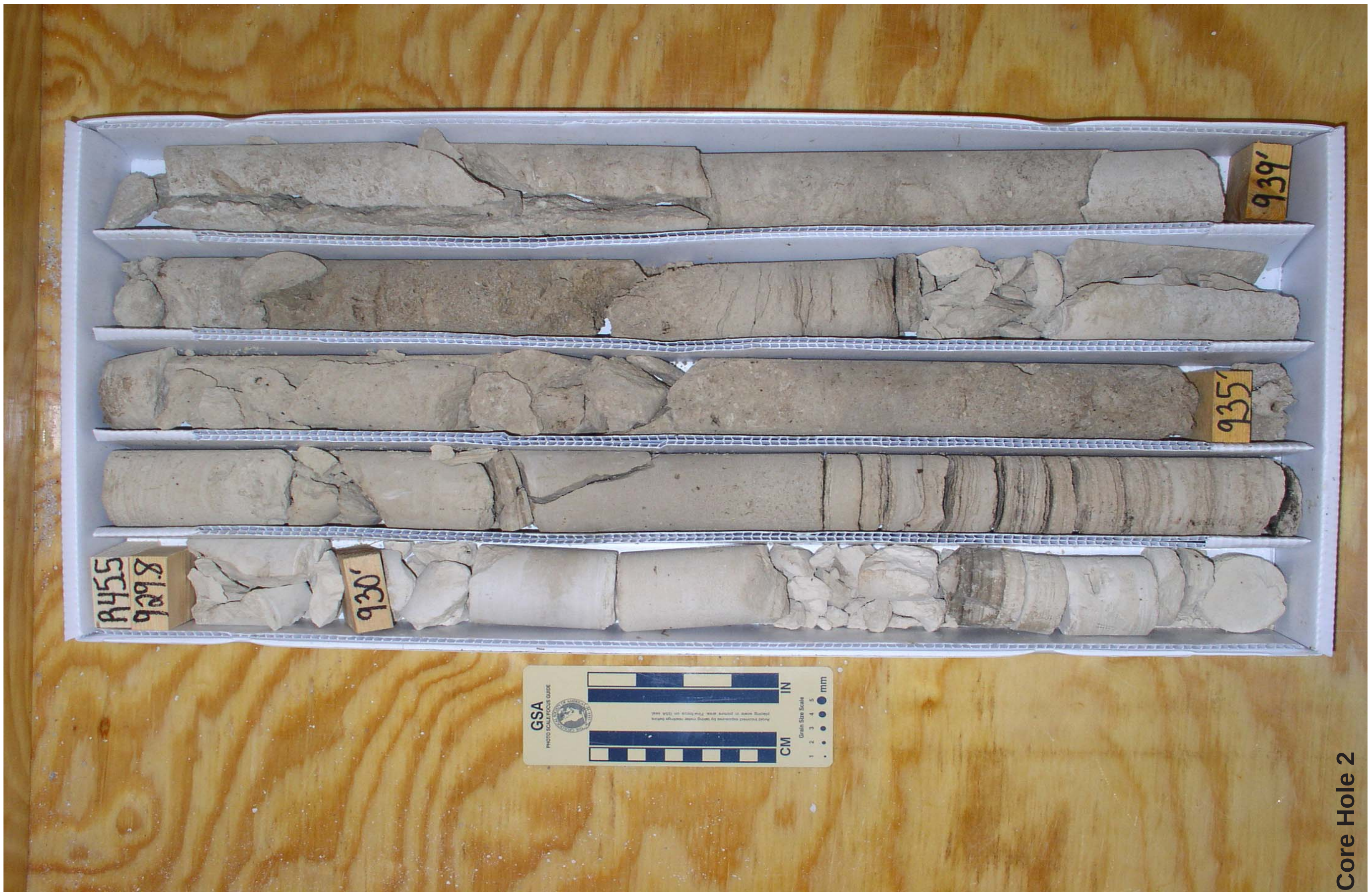

872'
870'
865
R45.5
862
GSA
IN
CM
Core Hole 2

Core Hole 2

Core Hole 2


918.2'
915'
R45.5
909'
910'
GSA
IN
CM
mm
Core Hole 2


909'
905'
R45.5
900'
GSA
IN
CM
mm
Core Hole 2



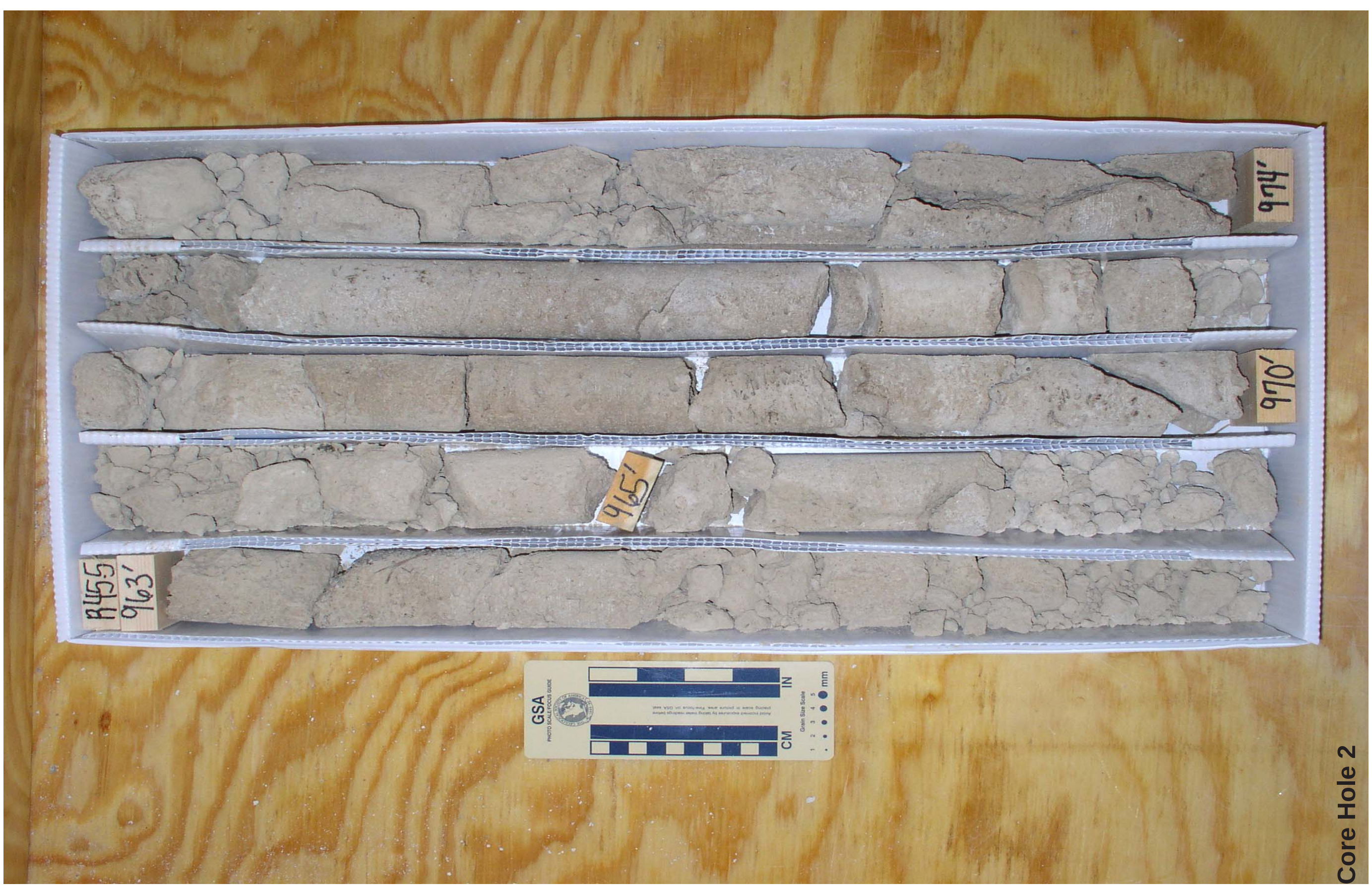
Core Hole 2

Core Hole 2


963'
960'
955'
R45.5
949'
950'
GSA
IN
CM
Core Hole 2


949'
945'
R45.5
939'
940'
GSA
IN
CM
Core Hole 2


985'
980'
R45.5
974'
975'
Core Hole 2


974'
970'
965'
R45.5
963'
Core Hole 2


1007'
1005'
1000'
R45.5
996.5
GSA
IN
CM
Core Hole 2

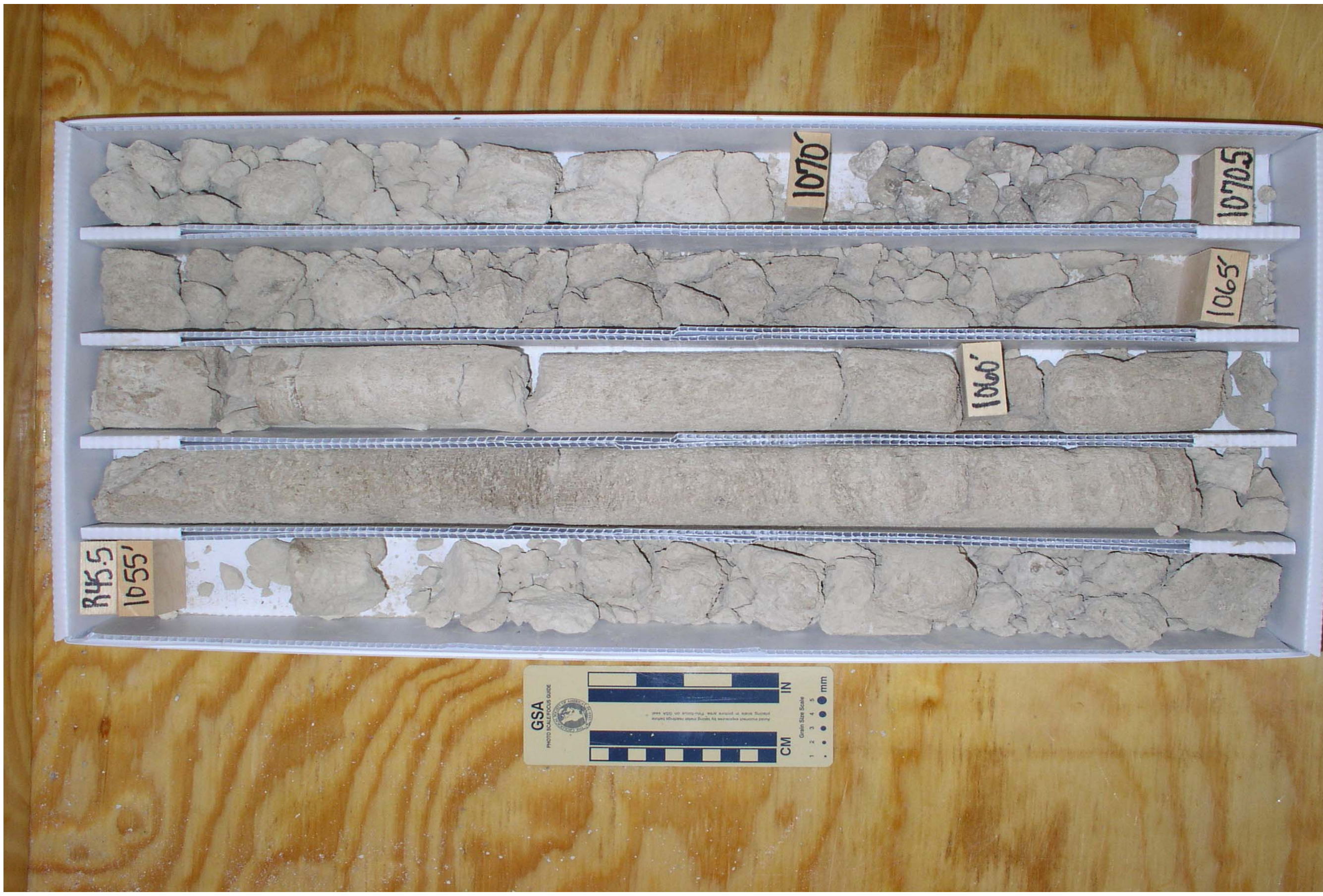

995'
996.5
990'
R45.5
985'
GSA
IN
CM
Core Hole 2

Core Hole 2

Core Hole 2


1045'
1045.4'
1040'
R45.5
1035.6'
Core Hole 2


1035'
1035.6'
1030'
R45.5
1026'
Core Hole 2



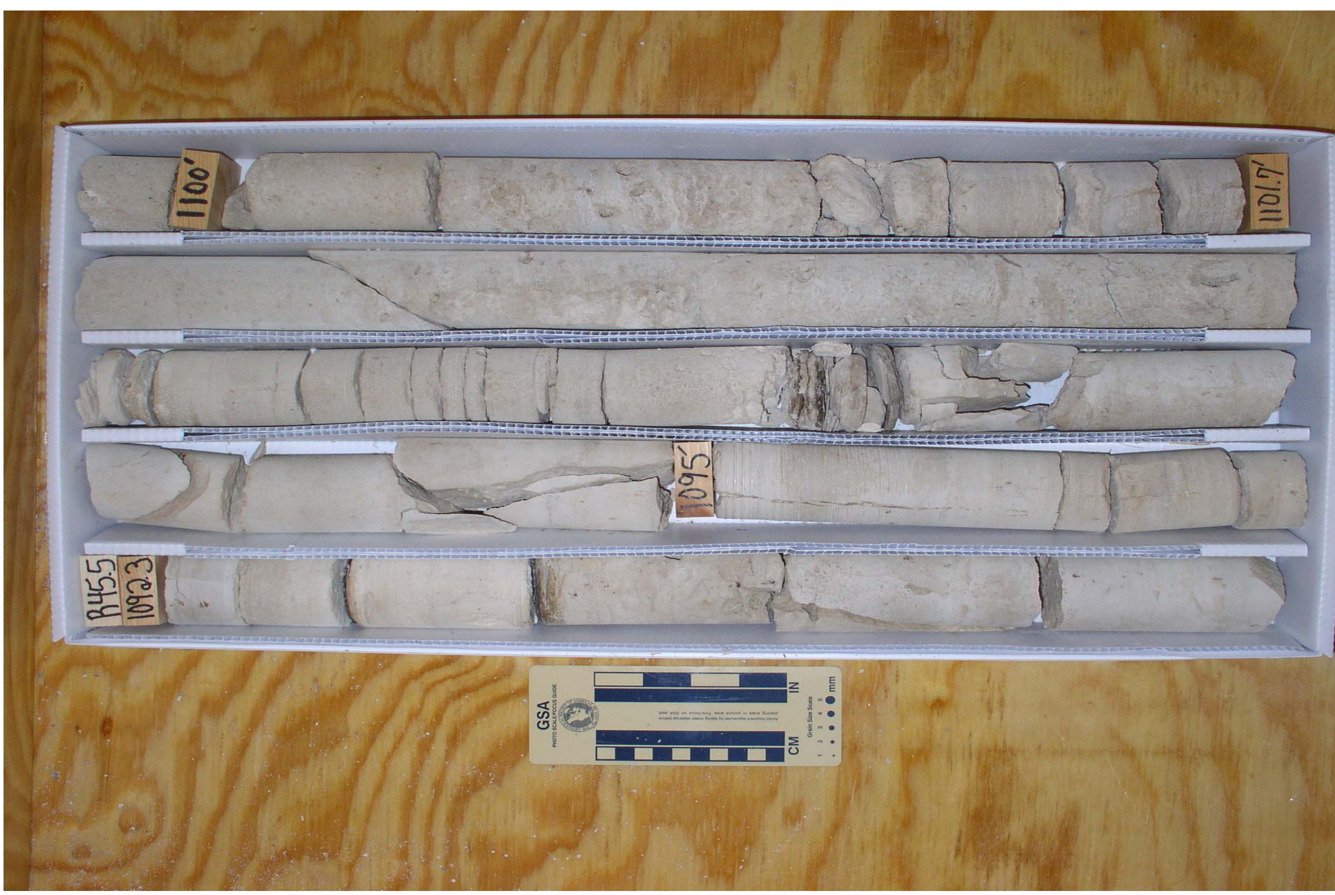
Core Hole 2

Core Hole 2

Core Hole 2

Core Hole 2

Core Hole 2



Core Hole 2

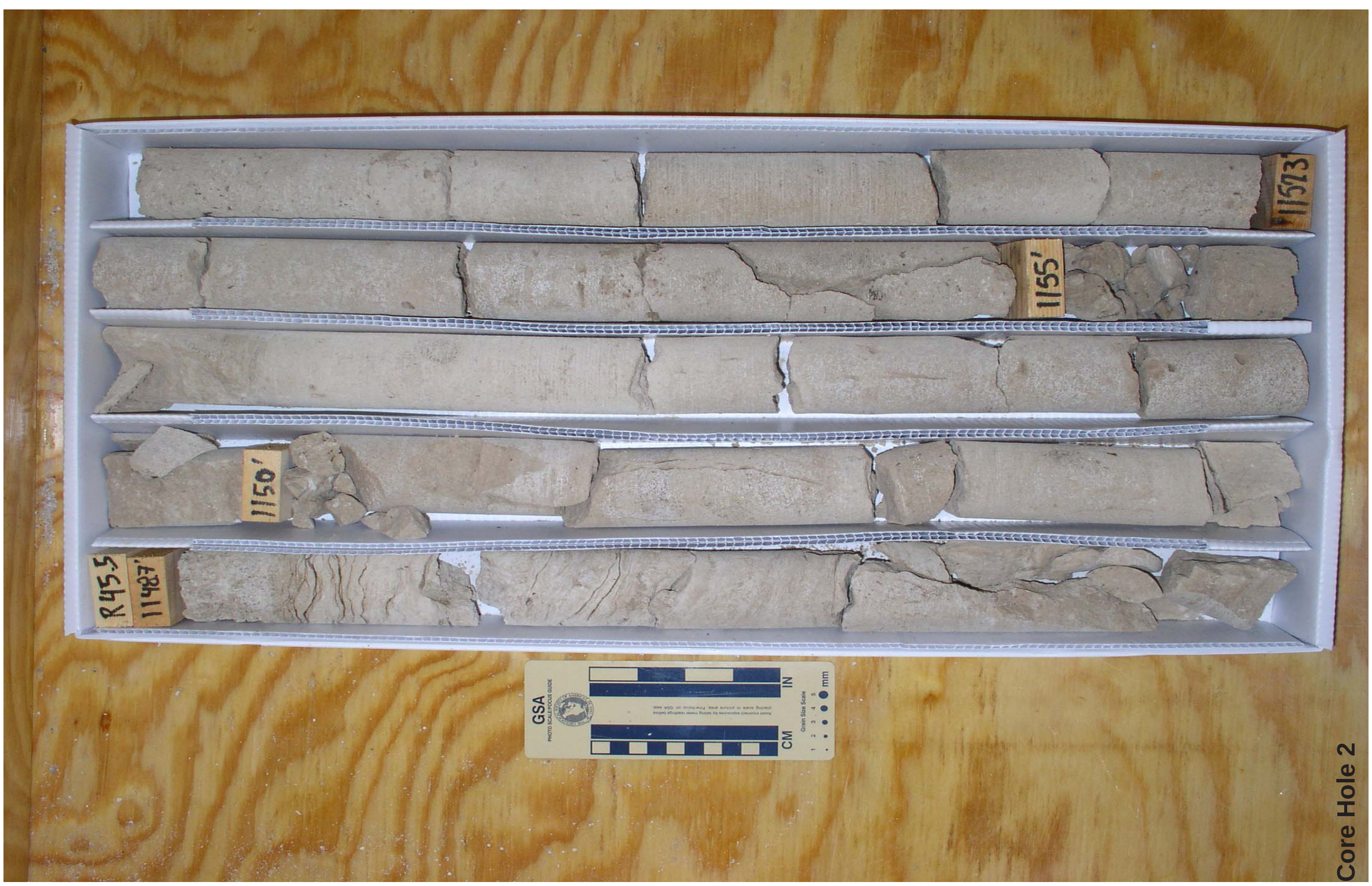

1129.5
1125'
R45.5
1120'
GSA
IN
CM
mm
Core Hole 2

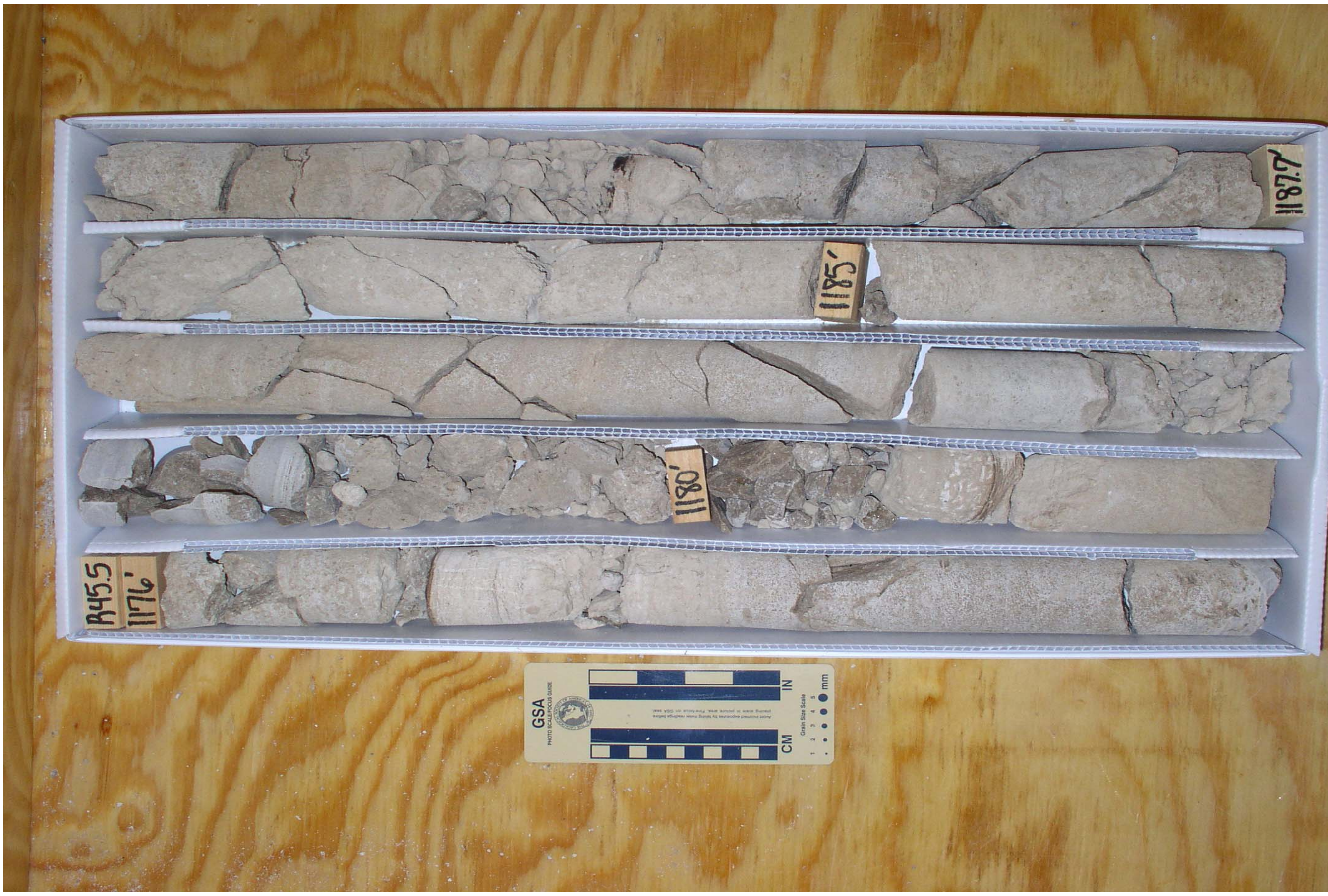

1120'
1115'
R45.5
1111'
GSA
IN
CM
mm
Core Hole 2


1148.7
1145'
R45.5
1138.5'
1140'
GSA
CM
IN
Core Hole 2


1138.5
1135'
R45.5
1129.5
1130'
GSA
CM
IN
Core Hole 2


1165'
1166.3'
1160'
R45.5
1157.3
GSA
IN
CM
mm
Core Hole 2

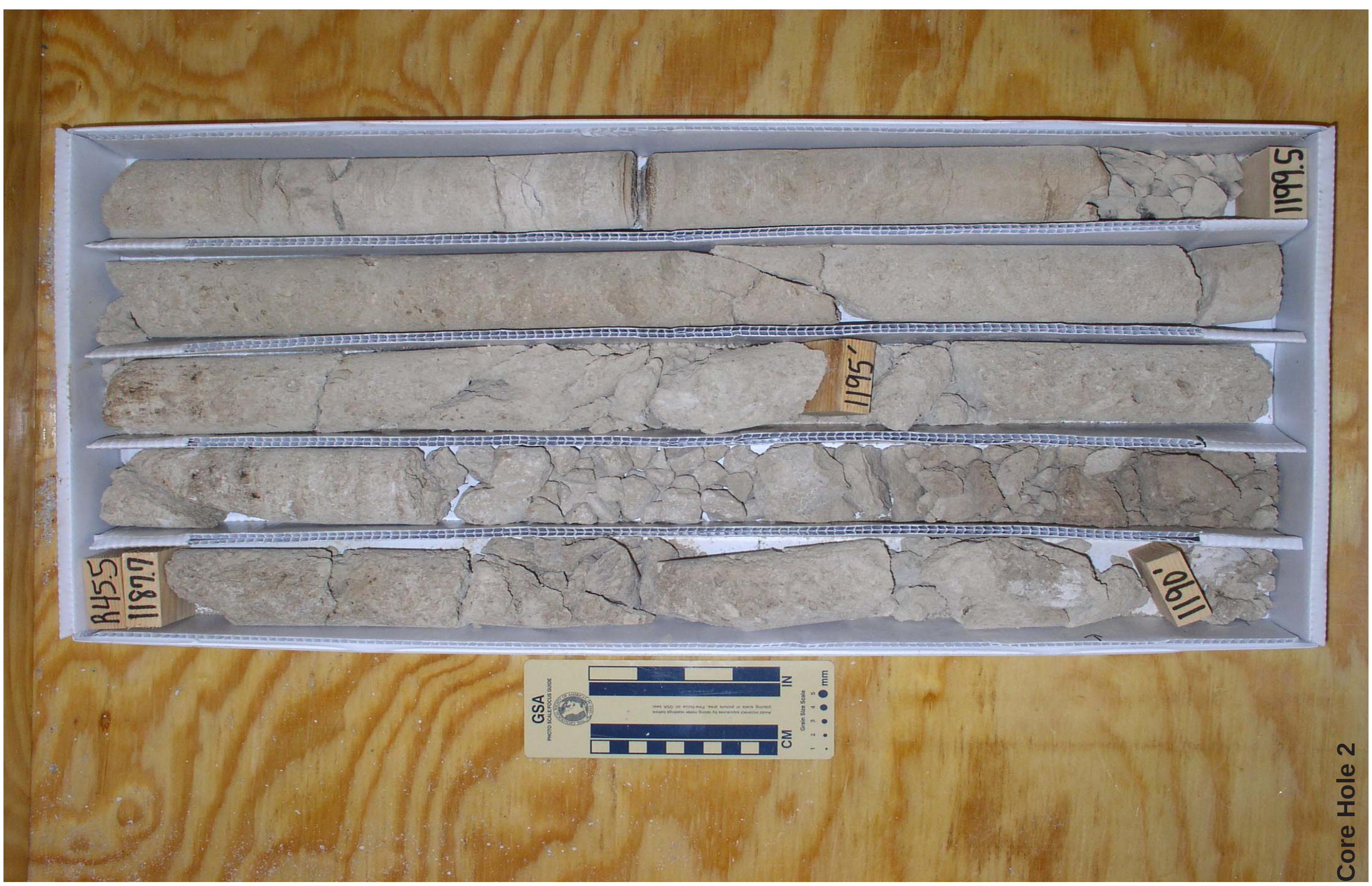

1157.3'
1155'
1150'
R45.5
1148.7'
GSA
IN
CM
mm
Core Hole 2

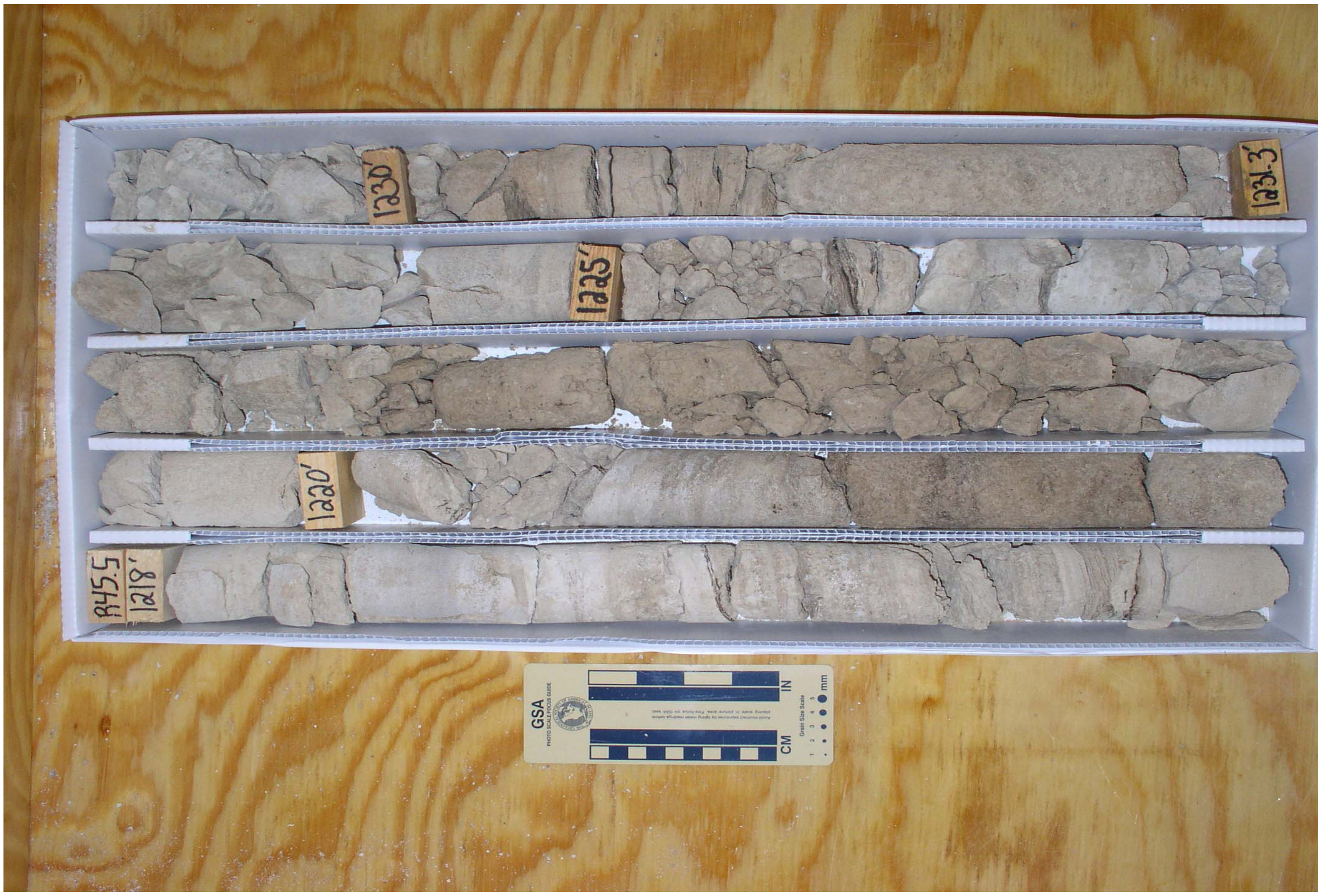


Core Hole 2

Core Hole 2

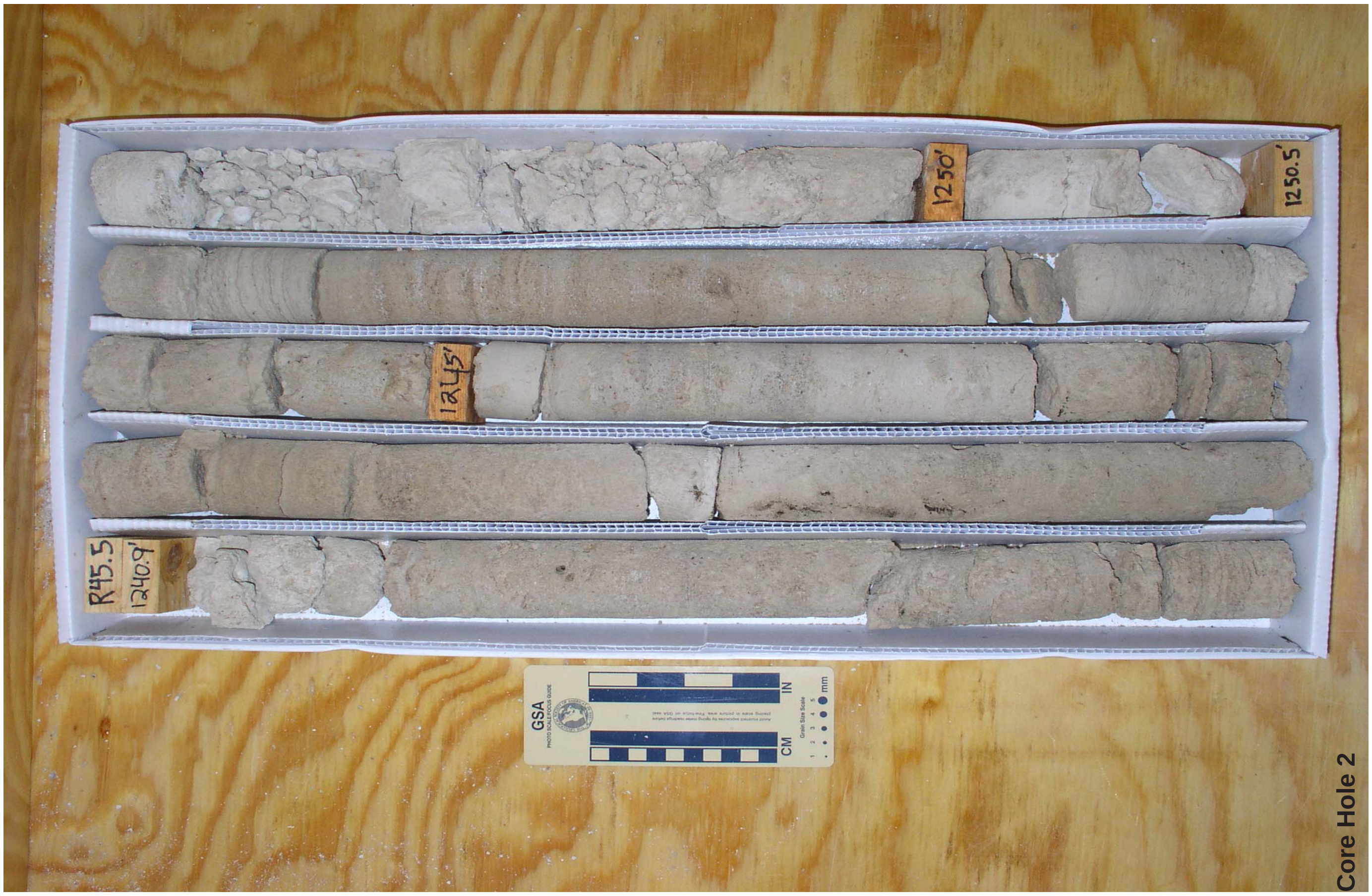

1208.4
1205
1200'
R45.5
1199.5
GSA
IN
CM
Core Hole 2


1199.5
1195'
1190'
R45.5
1187.7
GSA
IN
CM
Core Hole 2



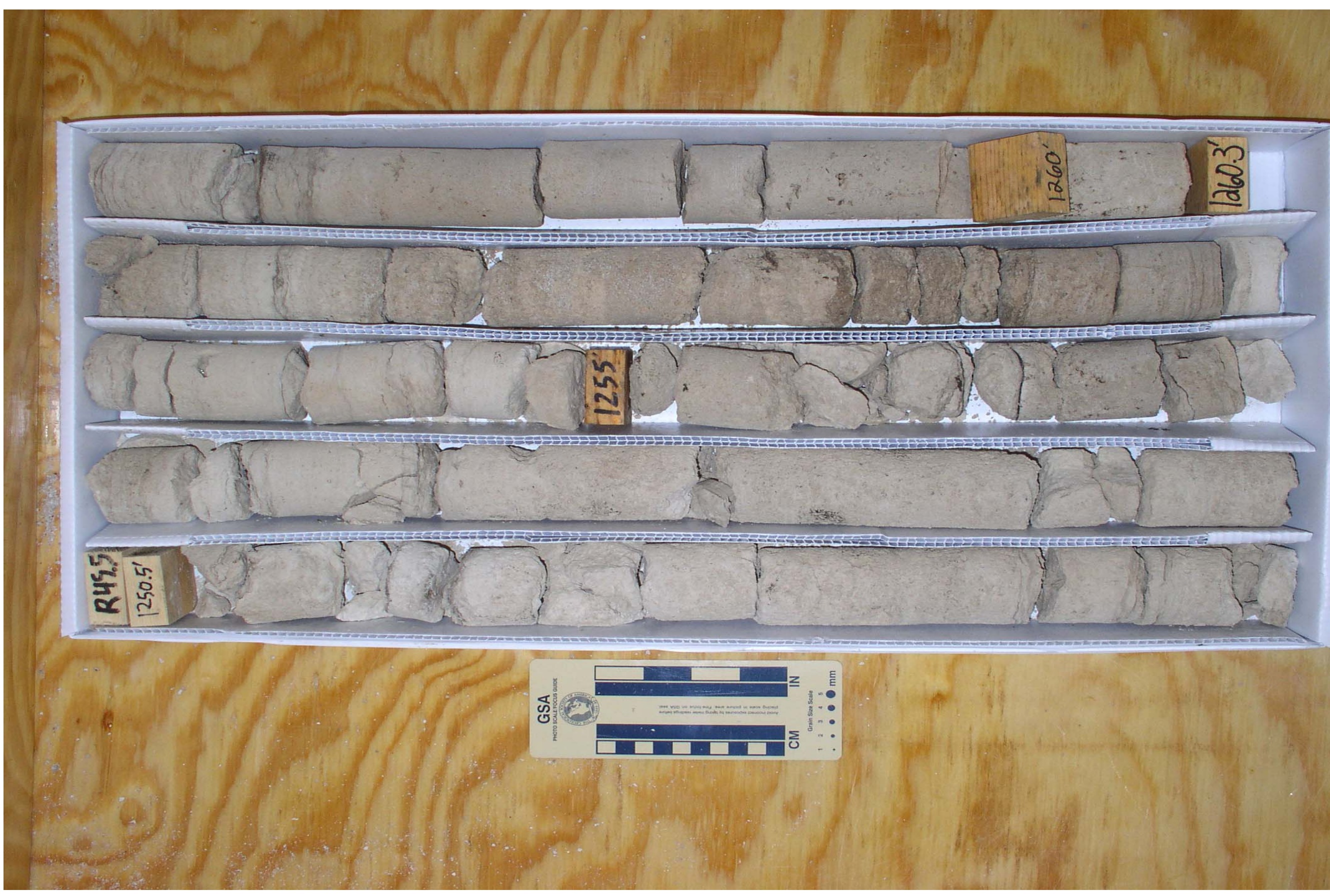
Core Hole 2

Core Hole 2


1250'
1250.5'
1245'
R45.5
1240.9'
Core Hole 2


1240'
1240.9'
1235'
R45.5
1231.3
Core Hole 2

Core Hole 2



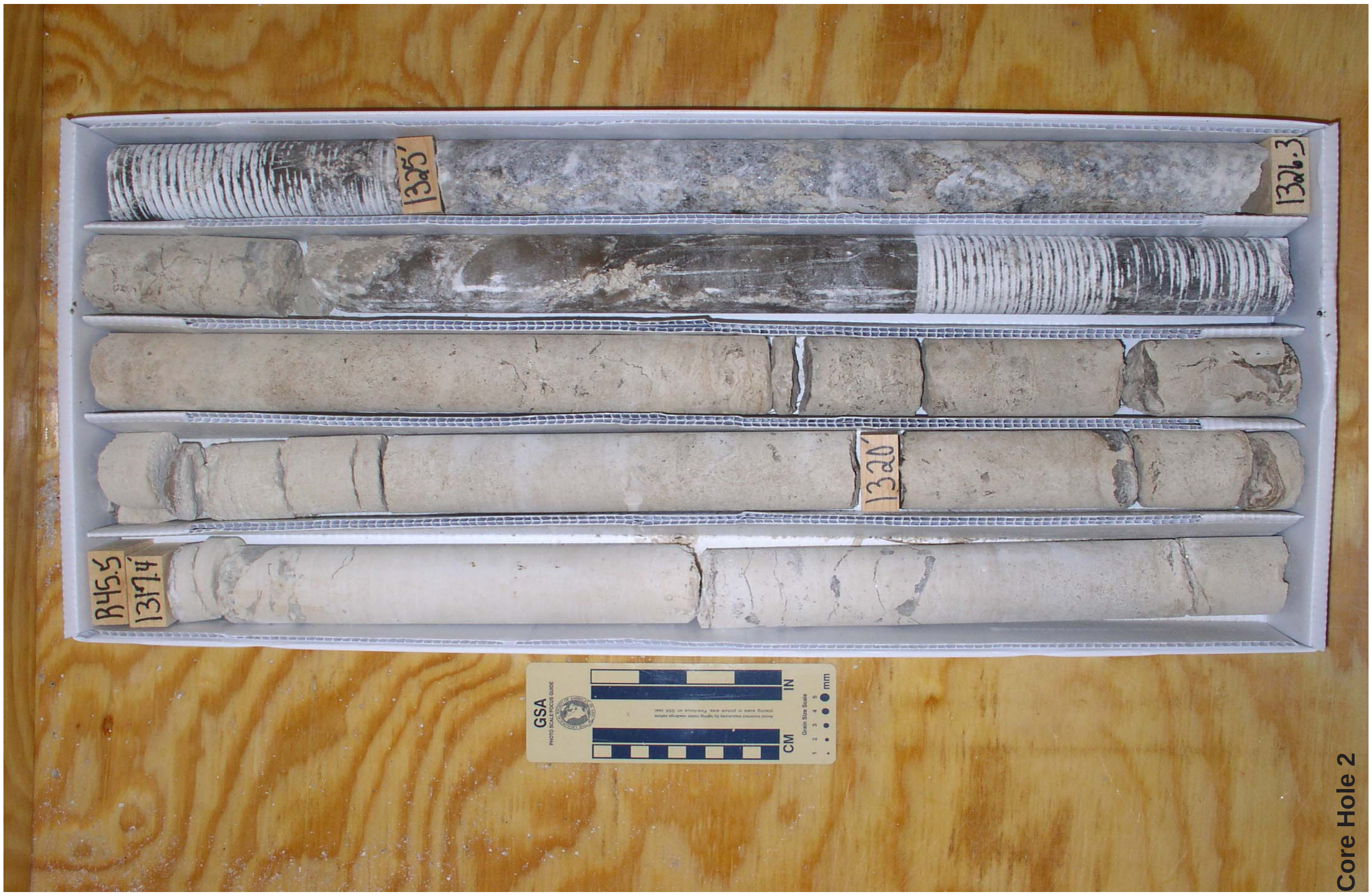
Core Hole 2

Core Hole 2

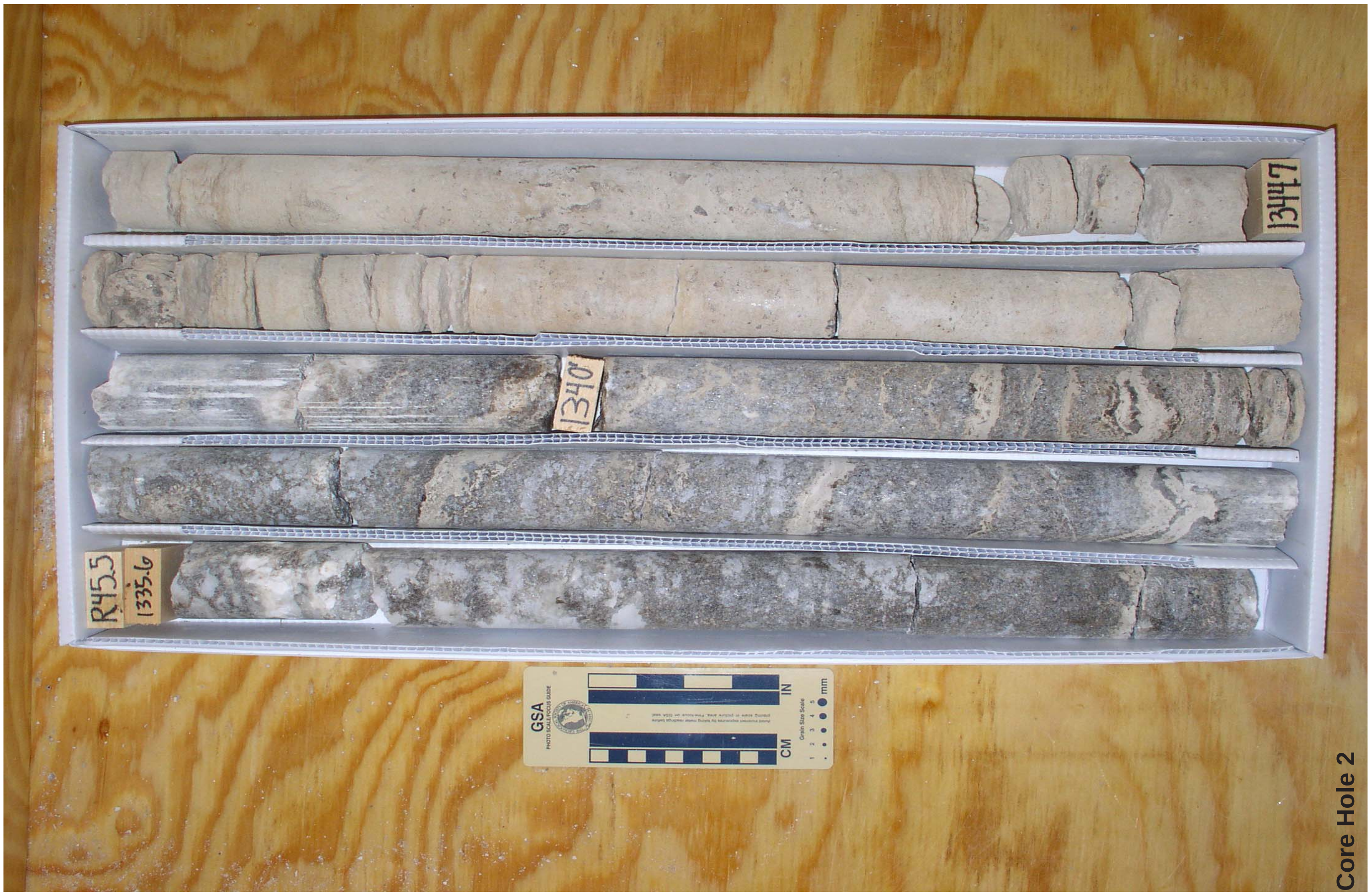
Core Hole 2

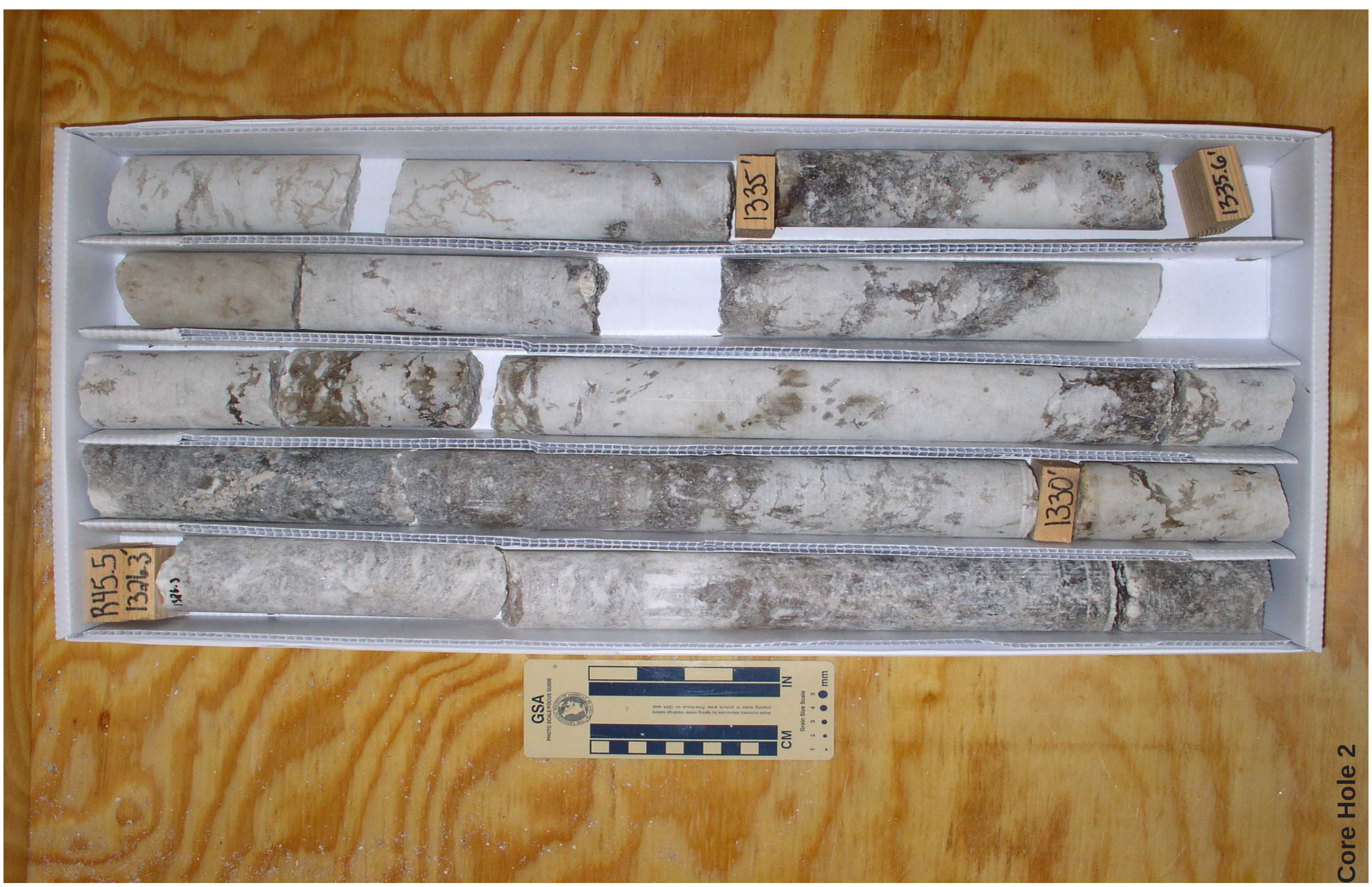

1307.7
1305'
R45.5
1298.8
1300'
GSA
IN
CM
Core Hole 2


1298.8
1295'
R45.5
1290'
GSA
IN
CM
Core Hole 2

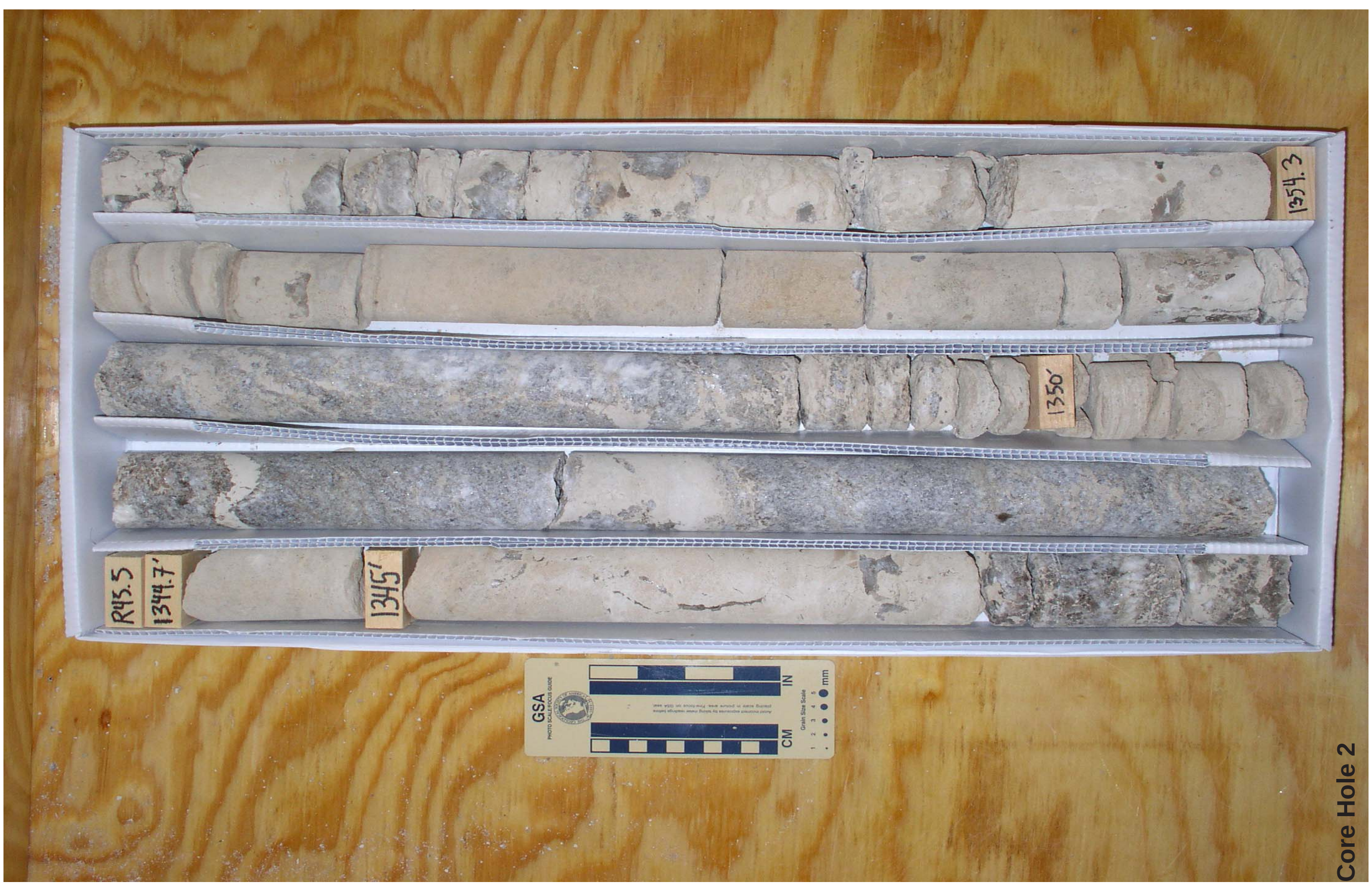

1325'
1326.3
1320'
R45.5
1317.4'
GSA
IN
CM
Core Hole 2


1317.4'
1315'
1310'
R45.5
1307.7'
GSA
IN
CM
Core Hole 2

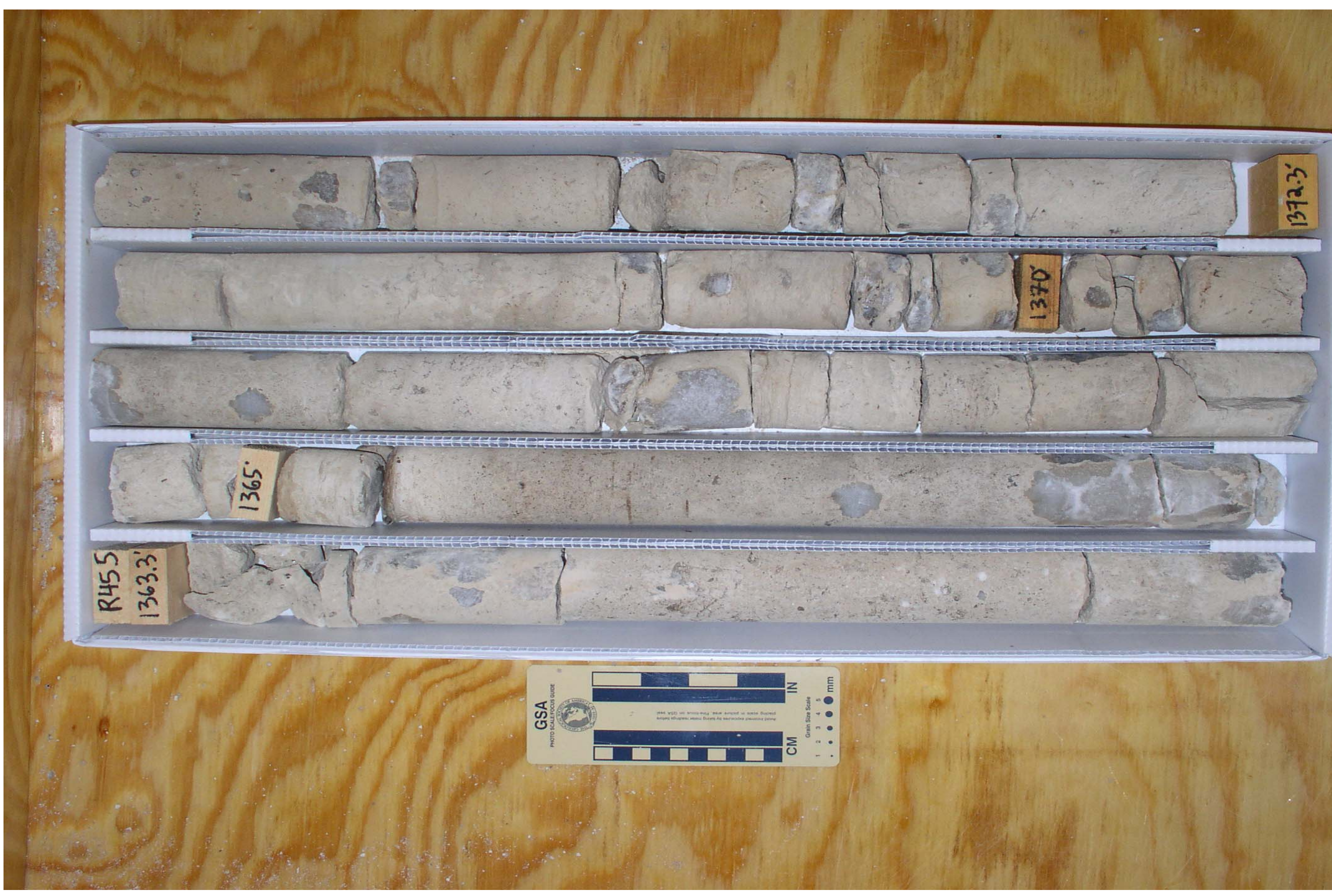

1344.7
1340'
R45.5
1335.6
GSA
IN
CM
Core Hole 2


1335'
1335.6'
1330'
R45.5
1326.3
GSA
IN
CM
Core Hole 2


1363.3
1360'
R45.5
1354.3
1355
GSA
IN
CM
mm
Core Hole 2

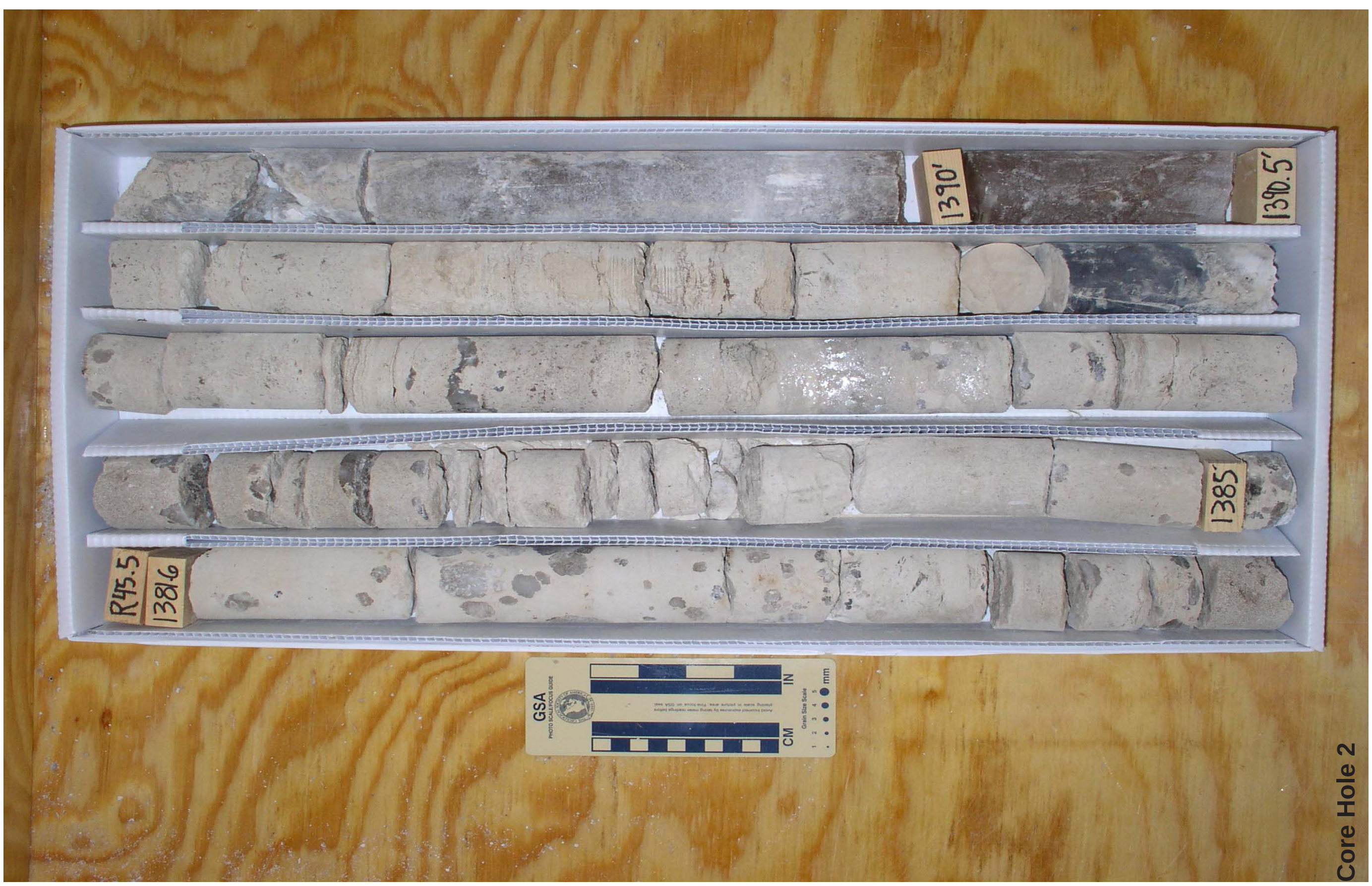

1354.3
1350'
R45.5
1349.7'
1345'
GSA
IN
CM
mm
Core Hole 2

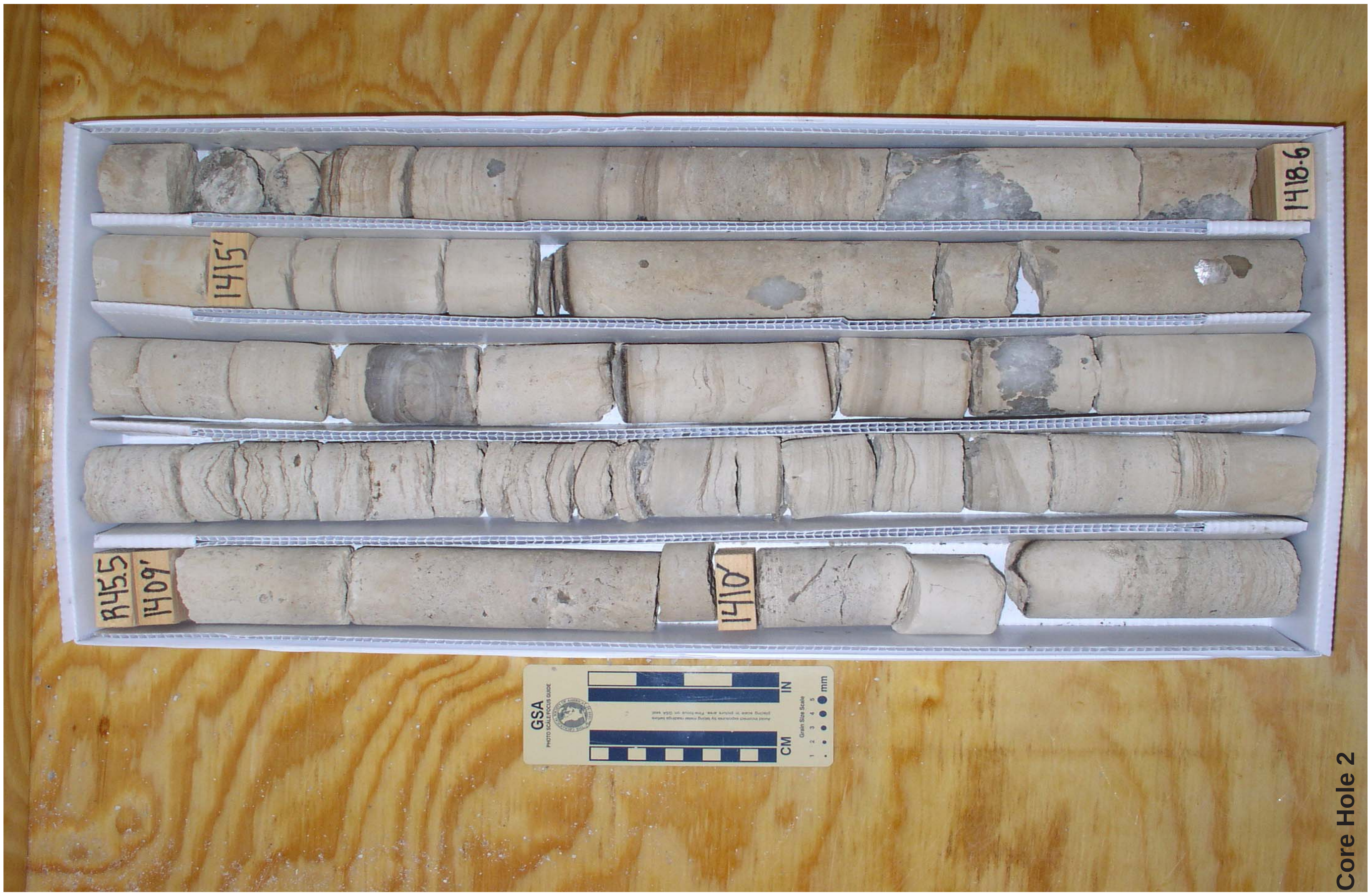
Core Hole 2



Core Hole 2


1400'
1400.3'
1395'
R45.5
1390.5
GSA
IN
CM
Core Hole 2


1390'
1390.5'
1385'
R45.5
1381.6
GSA
IN
CM
Core Hole 2

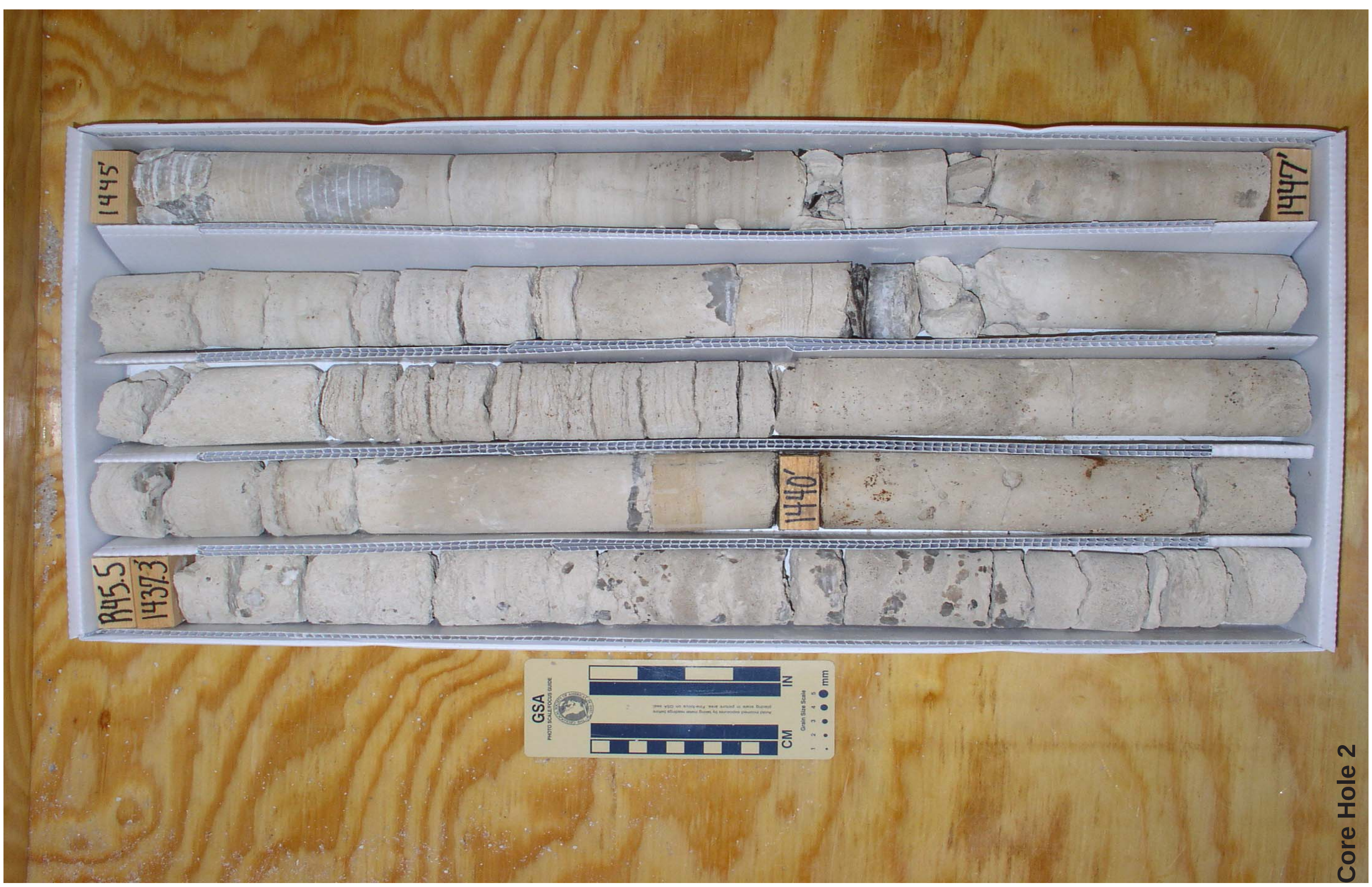

1418.6
1415'
R45.5
1409'
1410'
GSA
IN
CM
Core Hole 2


1409'
1405'
1400.3'
GSA
IN
CM
Core Hole 2


1437.3'
1435'
1430'
R45.5
1428.2'
Core Hole 2

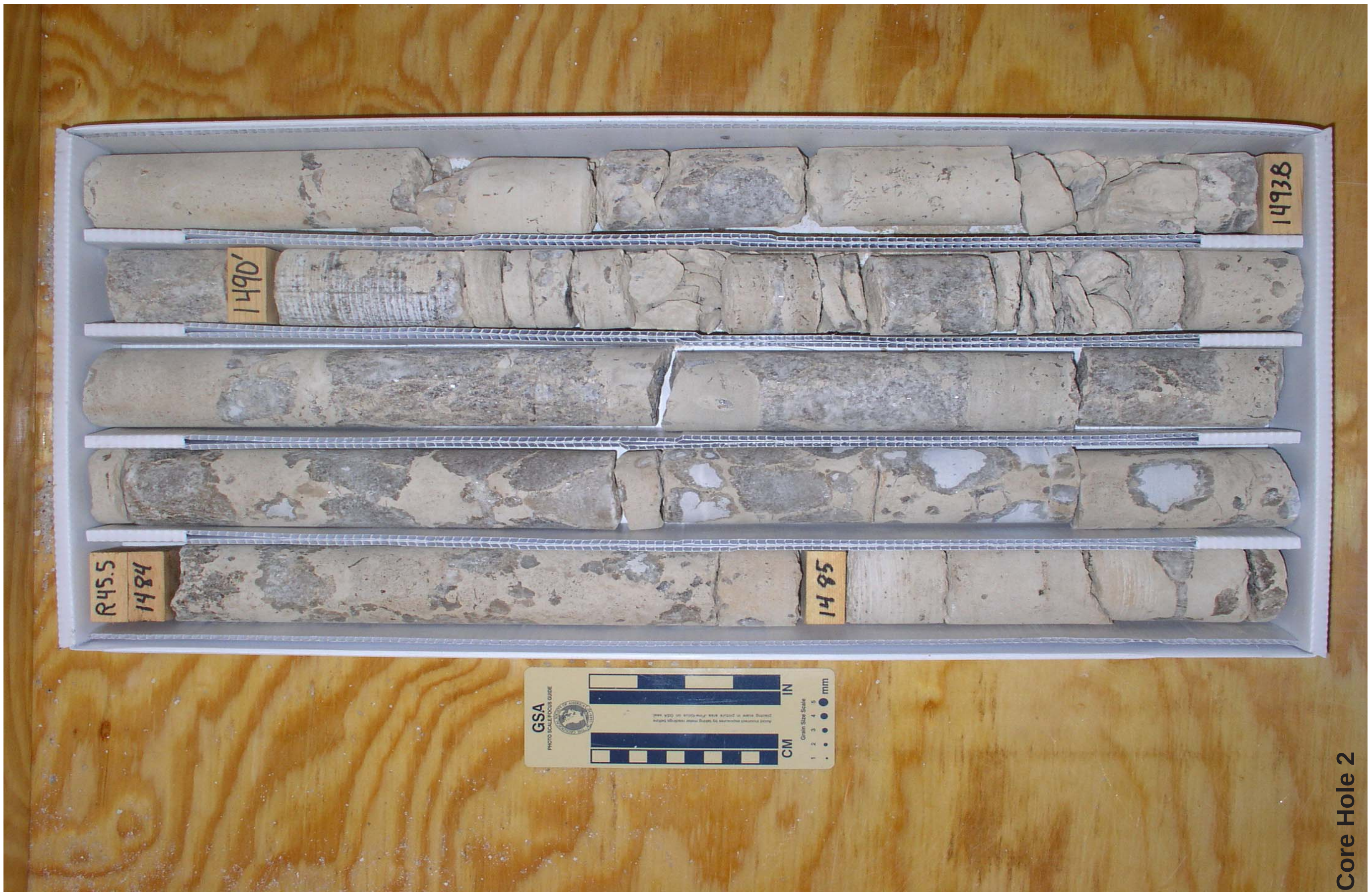

1428.2'
1425'
R45.5
1418.6
1420'
Core Hole 2


1455'
1455.8
1450'
R45.5
1447'
Core Hole 2


1445
1447'
1440'
R45.5
1437.3
Core Hole 2

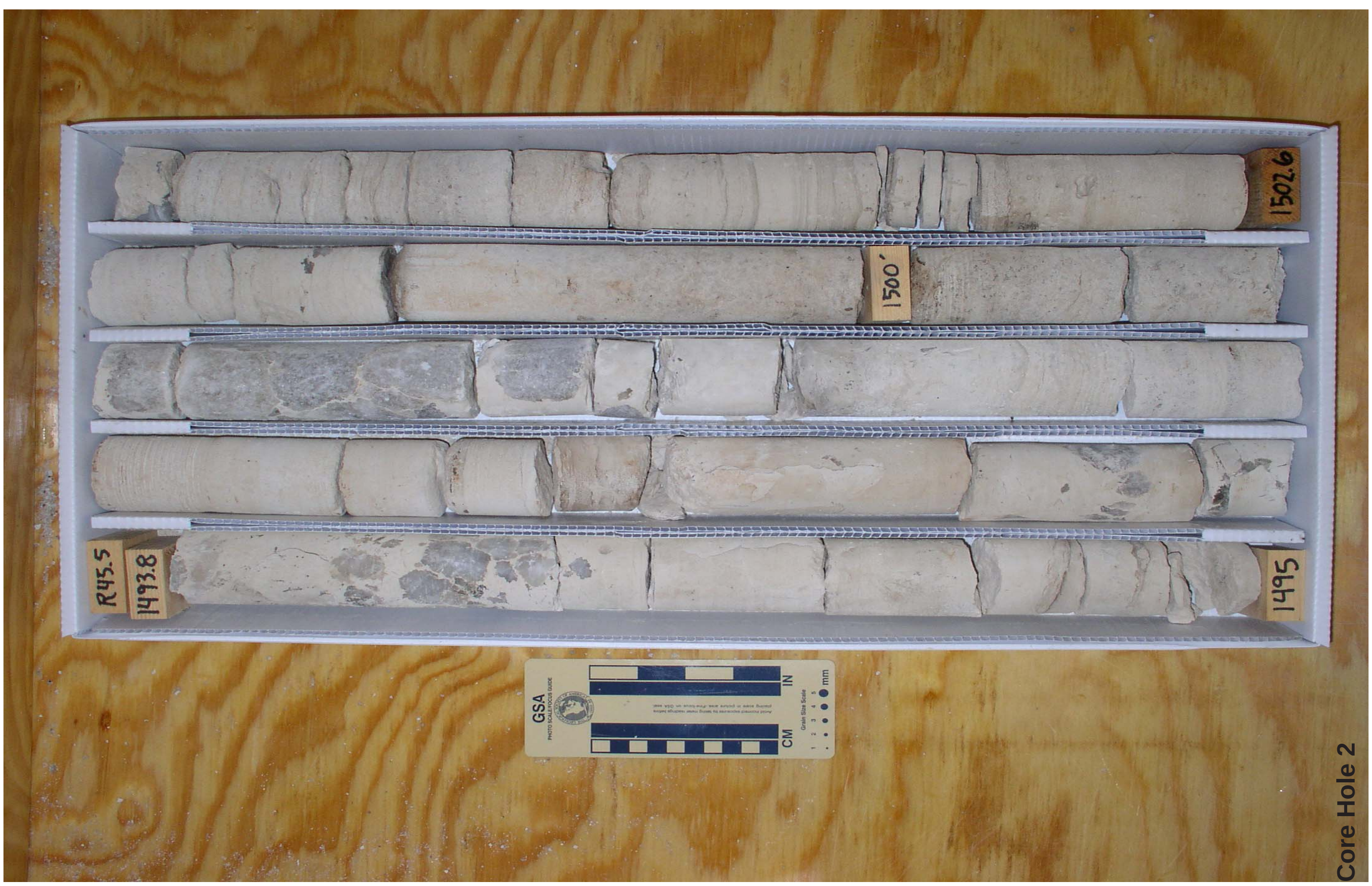

1474.6'
1470'
R45.5
1465.9
GSA
IN
CM
Core Hole 2


1465'
1465.9
1460'
R45.5
1453.8
GSA
IN
CM
Core Hole 2


1493.8
1490'
R45.5
1484
1485
GSA
IN
CM
Core Hole 2


1484
1480'
R45.5
1474.6'
1475'
GSA
IN
CM
Core Hole 2


1310'
1512'
1505'
R45.5
1502.6
GSA
IN
CM
Core Hole 2


1502.6
1500'
R45.5
1493.8
1495
GSA
IN
CM
Core Hole 2

Core Hole 2

Core Hole 2


1549.6
1545
R45.5
1539.5
1540'
GSA
Core Hole 2

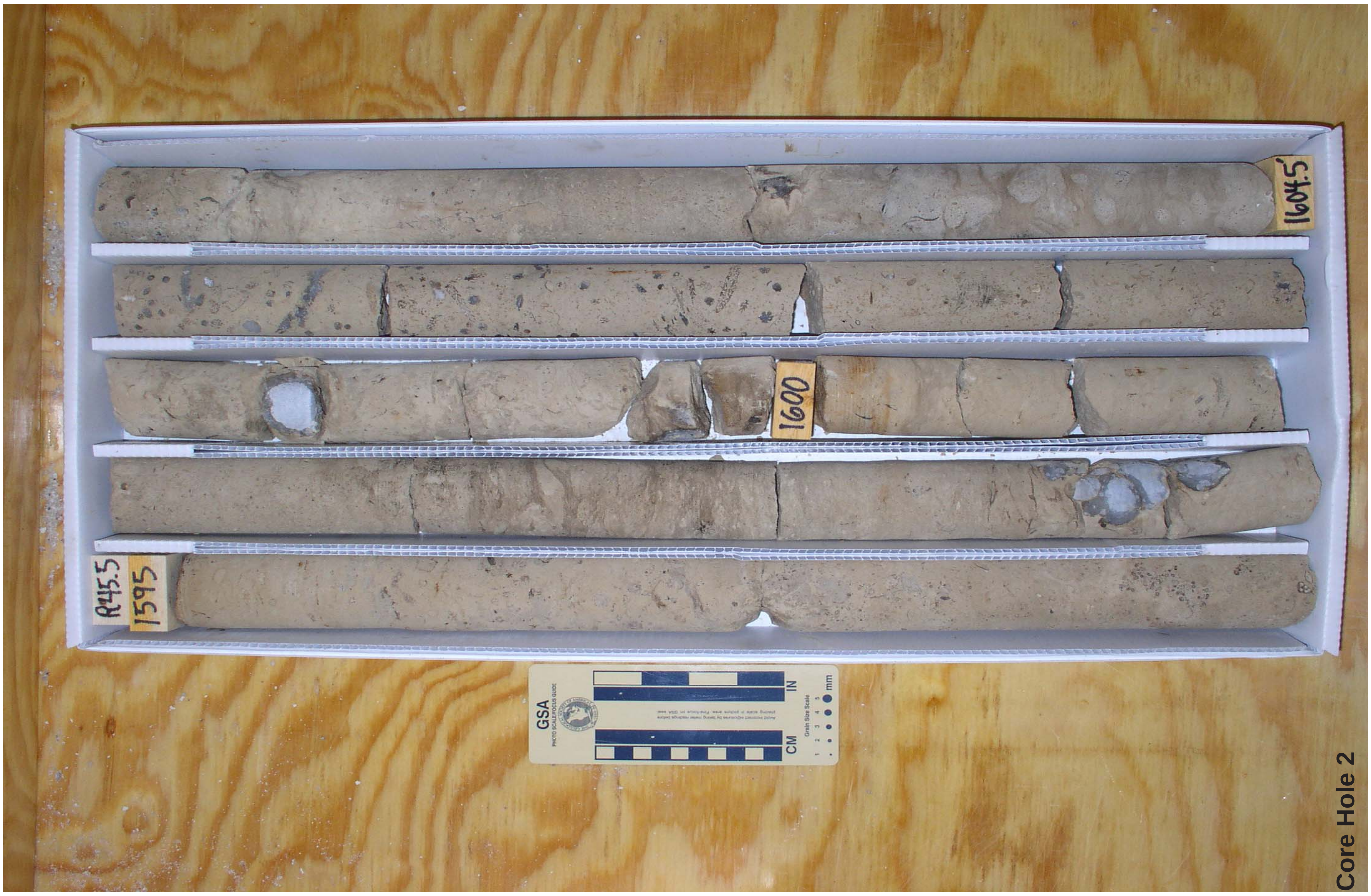

1537.5
1535'
R45.5
1530.5'
GSA
Core Hole 2


1568.4'
1565'
R45.5
1559.4'
1560'
GSA
IN
CM
Core Hole 2


1559.4'
1555
R45.5
1549.6
1550
GSA
IN
CM
Core Hole 2

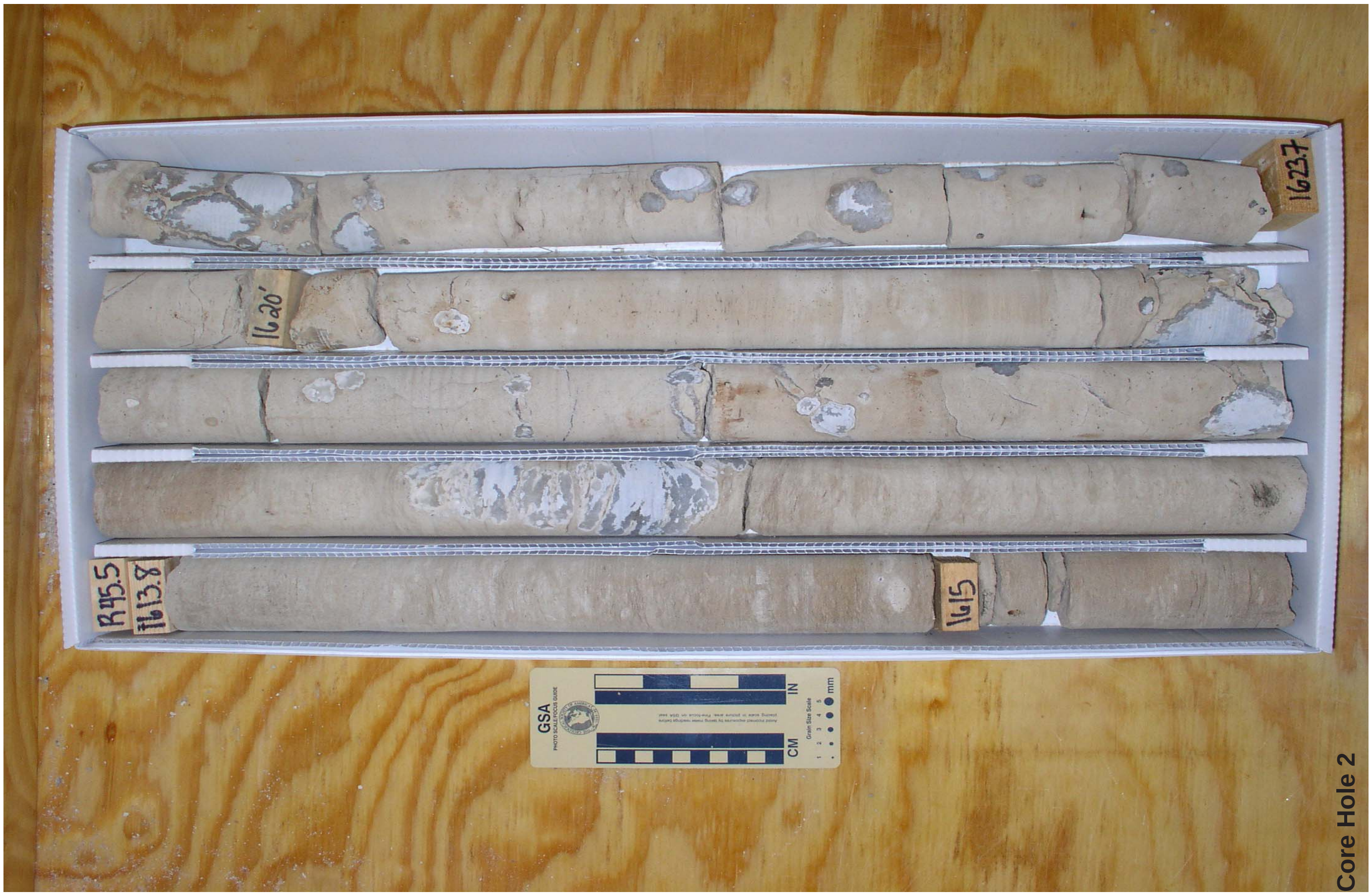

1585'
1585.9
1580'
R45.5
1577'
GSA
Core Hole 2

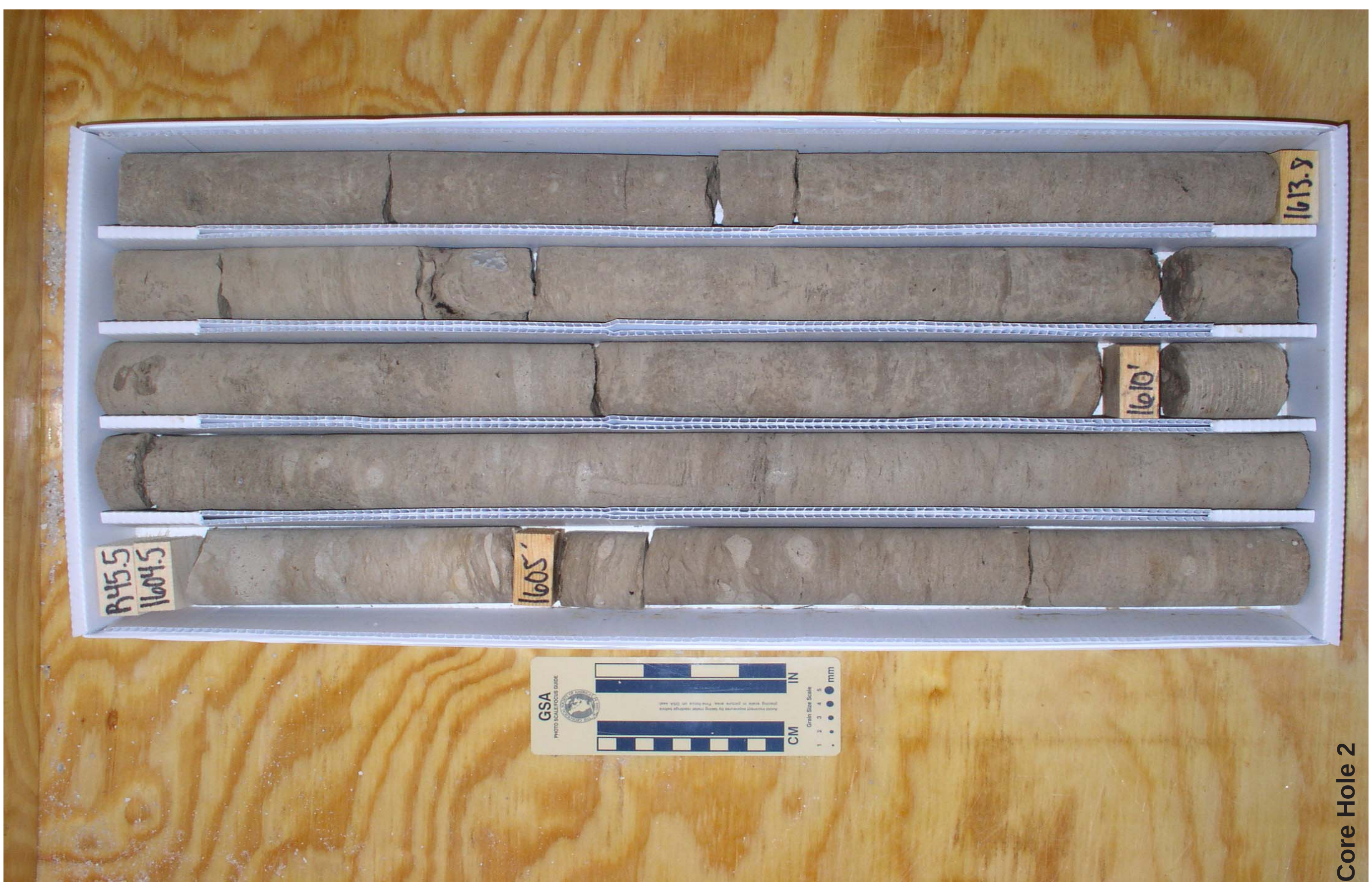

1577'
1575'
R45.5
1568.4
1570'
GSA
Core Hole 2



Core Hole 2

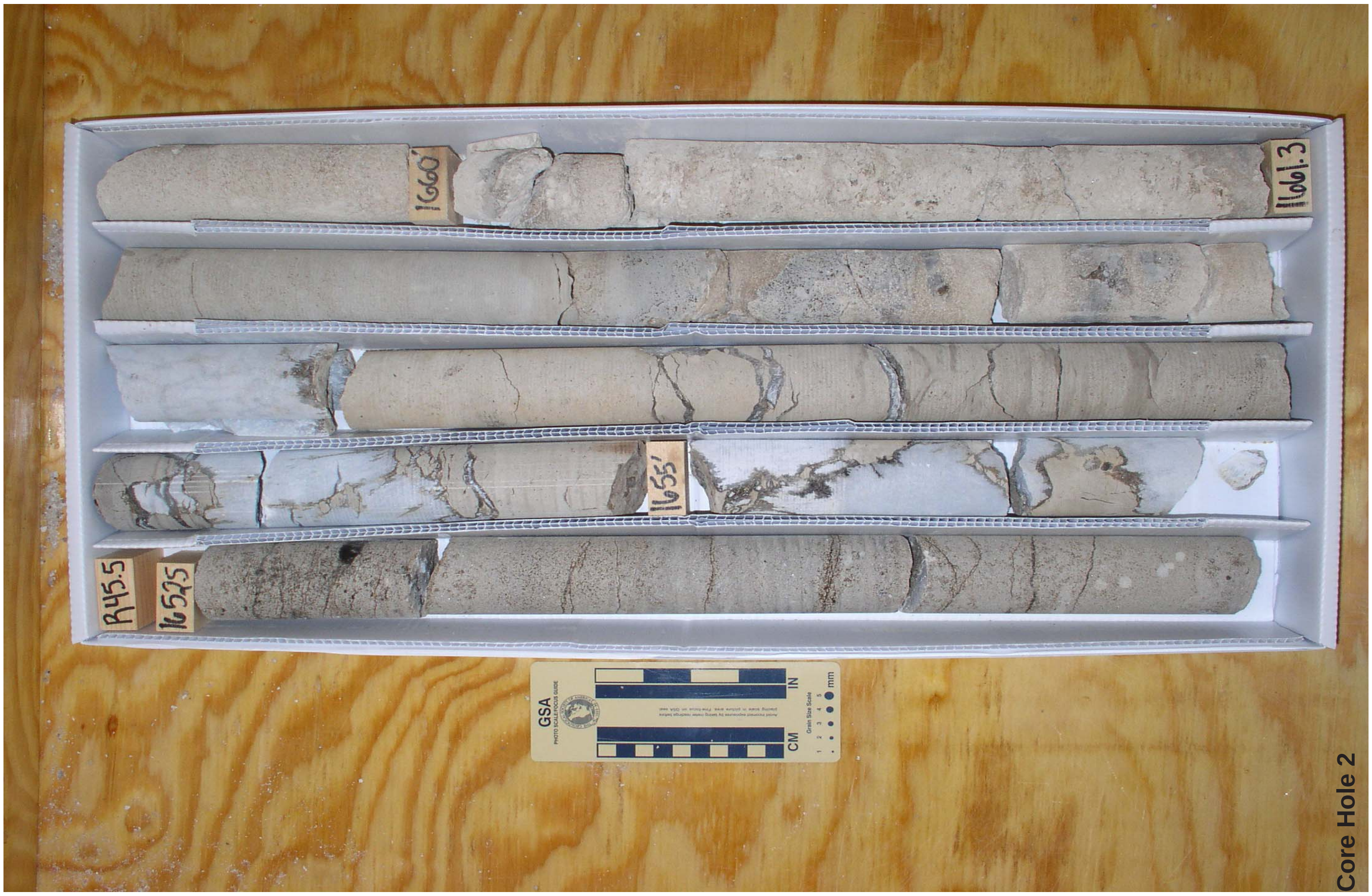
Core Hole 2


1623.7
1620'
R45.5
1613.8
1615
GSA
IN
CM
Core Hole 2

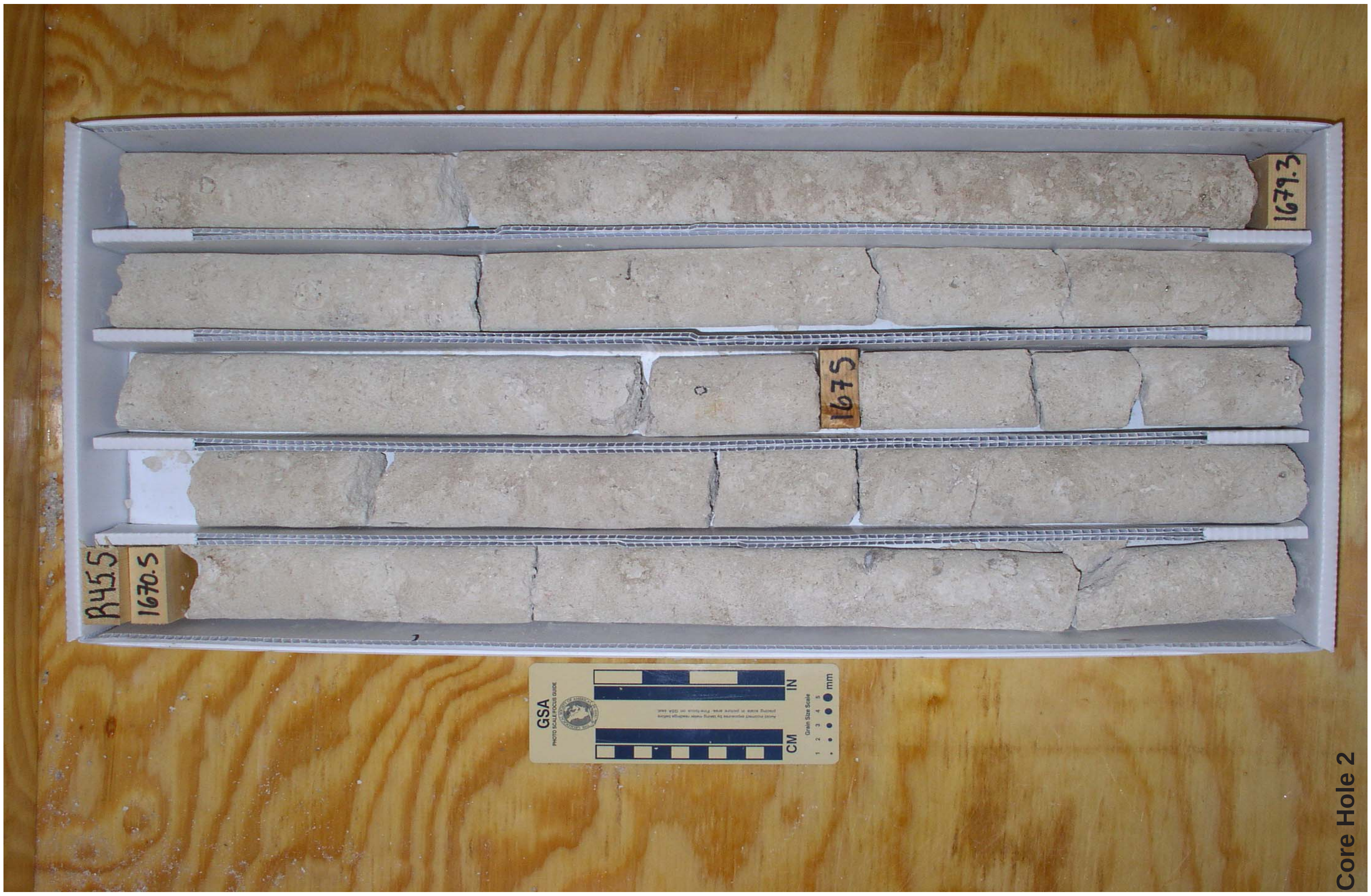

1613.5
1610'
R45.5
1604.5
1605'
GSA
IN
CM
Core Hole 2


1640'
1635'
R45.5
1633'
GSA
IN
CM
mm
Core Hole 2

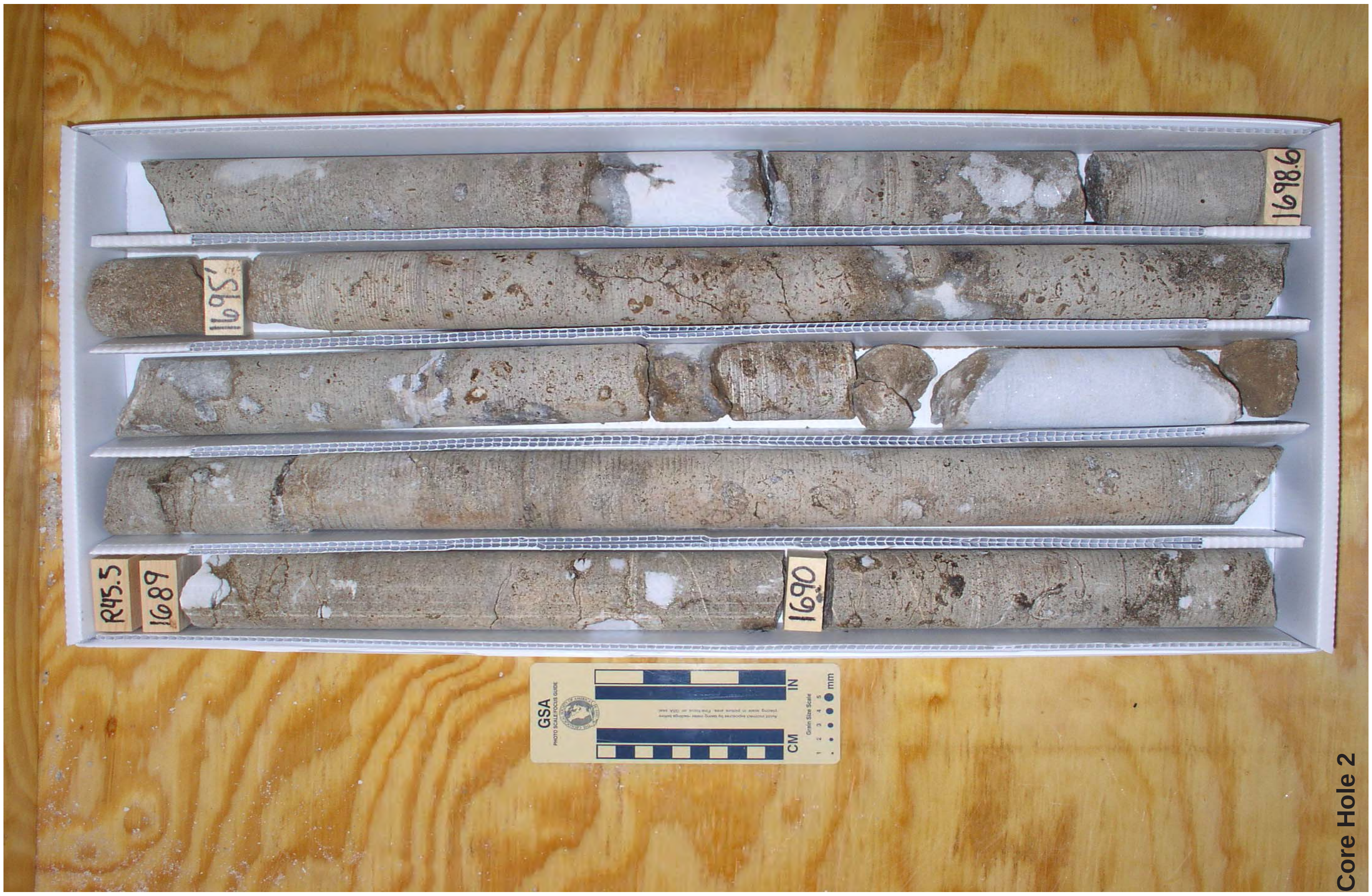

1633'
1630
R45.5
1623.7
1625
GSA
IN
CM
mm
Core Hole 2


1660'
1661.3
1655'
R45.5
1652.5
GSA
IN
CM
Core Hole 2


1652.5
1650'
1645'
R45.5
1642.6'
GSA
IN
CM
Core Hole 2


1679.3
1675
R45.5
1670.5
GSA
IN
CM
Core Hole 2


1670
1670.5
1665
R45.5
1661.3
GSA
IN
CM
Core Hole 2



Core Hole 2

Core Hole 2

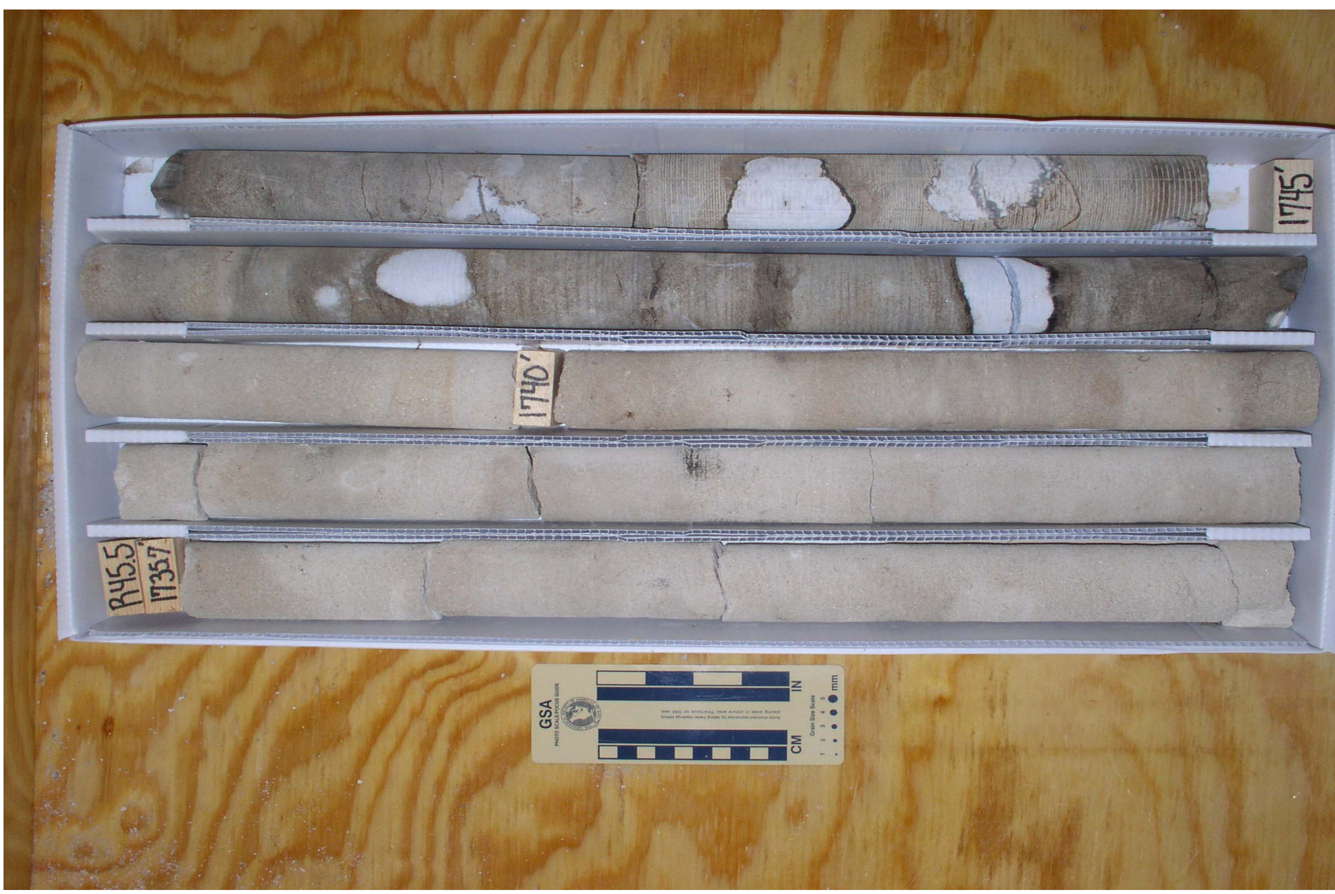
Core Hole 2

Core Hole 2


1735
1735.9
1730
R45.5
1726.15
GSA
IN
CM
Core Hole 2

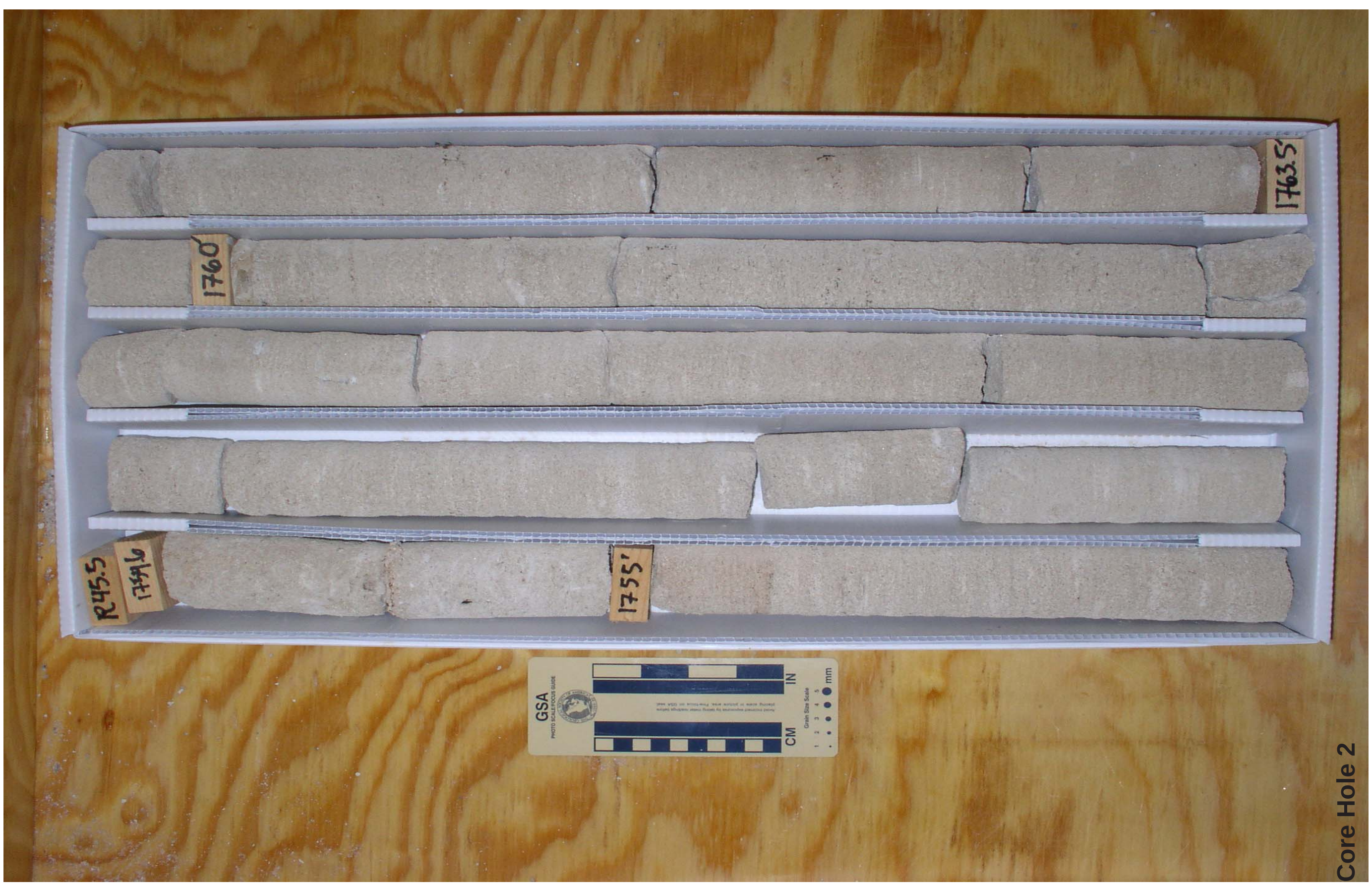

1725
1726.15
1720
R45.5
1716.8
GSA
IN
CM
Core Hole 2

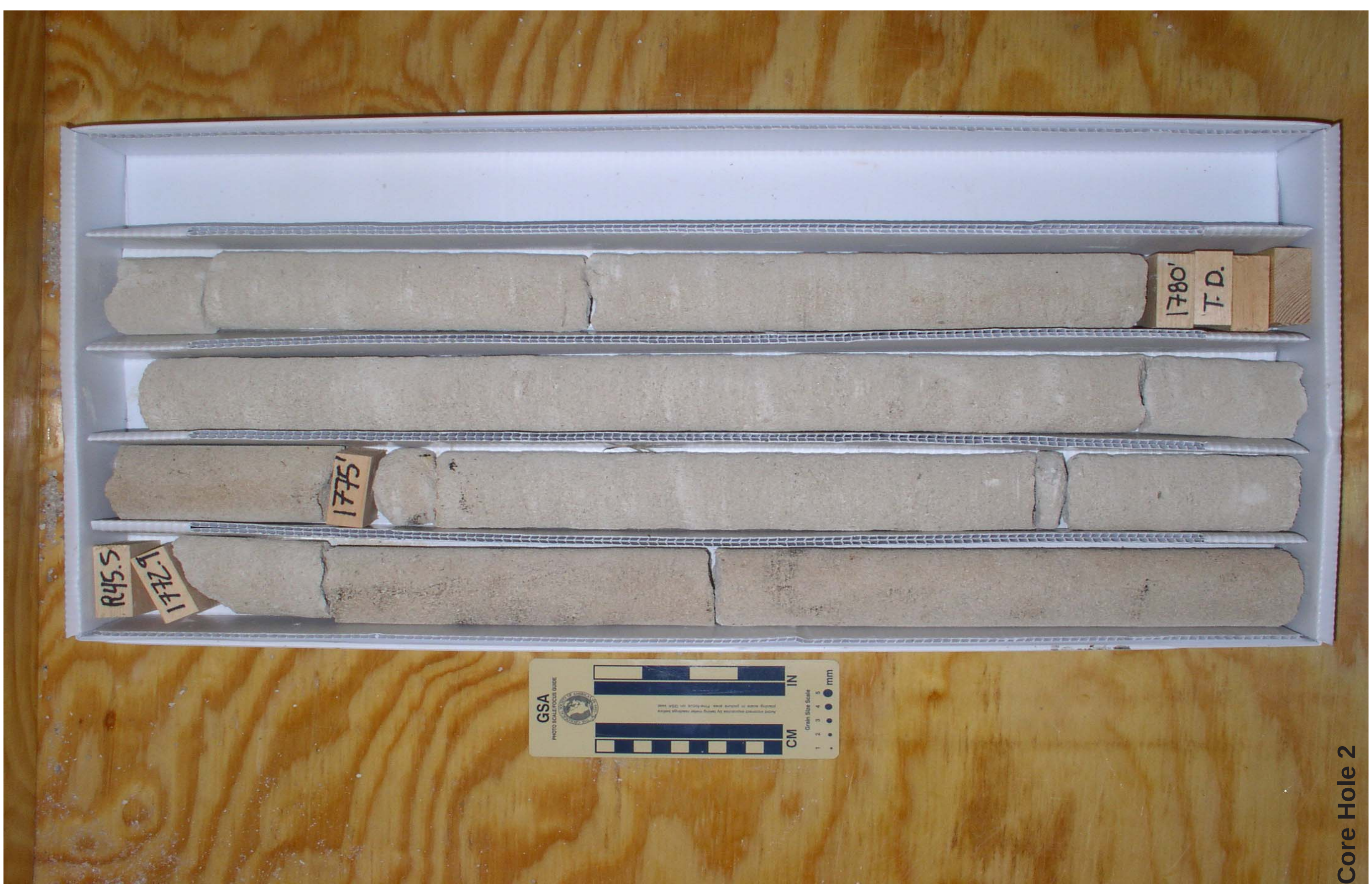
Core Hole 2



Core Hole 2


1772.9
1770'
R45.5
1763.5'
1765'
GSA
IN
CM
Core Hole 2


1763.5'
1760'
R45.5
1755'
GSA
IN
CM
Core Hole 2



Core Hole 2


1726.4'
1716.5'
1717'
Core Hole 3


plant fossils
1716.5'
ROMP 45.5
1707'
Core Hole 3

Core Hole 3

Core Hole 3


1763'
1757'
R45.5
1754'
Core Hole 3


1754
1747'
ROMP 45.5
1745'
Core Hole 3


1782'
1777
R-45.5
1772.5
Core Hole 3


1772.5
1767'
R-45.5
1763'
Core Hole 3


1801'
1797'
R-45.5
1791.5'
Core Hole 3


1787'
R-45.5
1782'
Core Hole 3


1819.5'
1817'
ROMP 45.5 1810.3'
Core Hole 3


1810.3'
1807'
R-45.5 1801'
Core Hole 3


1840.7'
1837'
Romp 45.5
1829.4'
Core Hole 3


1829.4'
1827'
45.5
1819.5
Core Hole 3

Core Hole 3

Core Hole 3


1879.1'
1877'
ROMP 45.5
1869.6'
GSA
IN
CM
Core Hole 3


1869.6'
Plant fossils
1867'
ROMP 45.5
1860.3
GSA
IN
CM
Core Hole 3

Core Hole 3

Core Hole 3


1919'
45.5
1907.8'
Core Hole 3


1907'
1907.8'
ROMP
45.5
1898'
Core Hole 3


1936.3'
ROMP
45.5
1927'
GSA
IN
CM
Core Hole 3


1927'
ROMP
45.5
1917'
GSA
IN
CM
Core Hole 3


1955.7'
ROMP 45.5 1946'
1947'
GSA
IN
CM
mm
Core Hole 3


1946'
ROMP 45.5 1936.3'
1937'
GSA
IN
CM
mm
Core Hole 3


1974'
1967'
ROMP 45.5 1964.5
GSA
IN
CM
Core Hole 3


19645'
ROMP 45.5 1955.7'
1957'
GSA
IN
CM
Core Hole 3


1992'
1987'
ROMP 45.5
1983.5'
GSA
IN
CM
mm
Core Hole 3


1983.5
1977'
ROMP 45.5
1974'
GSA
IN
CM
mm
Core Hole 3

Core Hole 3

Core Hole 3


2030.5
2027'
ROMP 45.5
2021'
Core Hole 3


2021'
2017'
ROMP 45.5
2011.5'
Core Hole 3

Core Hole 3

Core Hole 3


2067'
2068'
ROMP 45.5
2058.5
Core Hole 3


2057'
2058.5
ROMP 45.5
2049.2
Core Hole 3

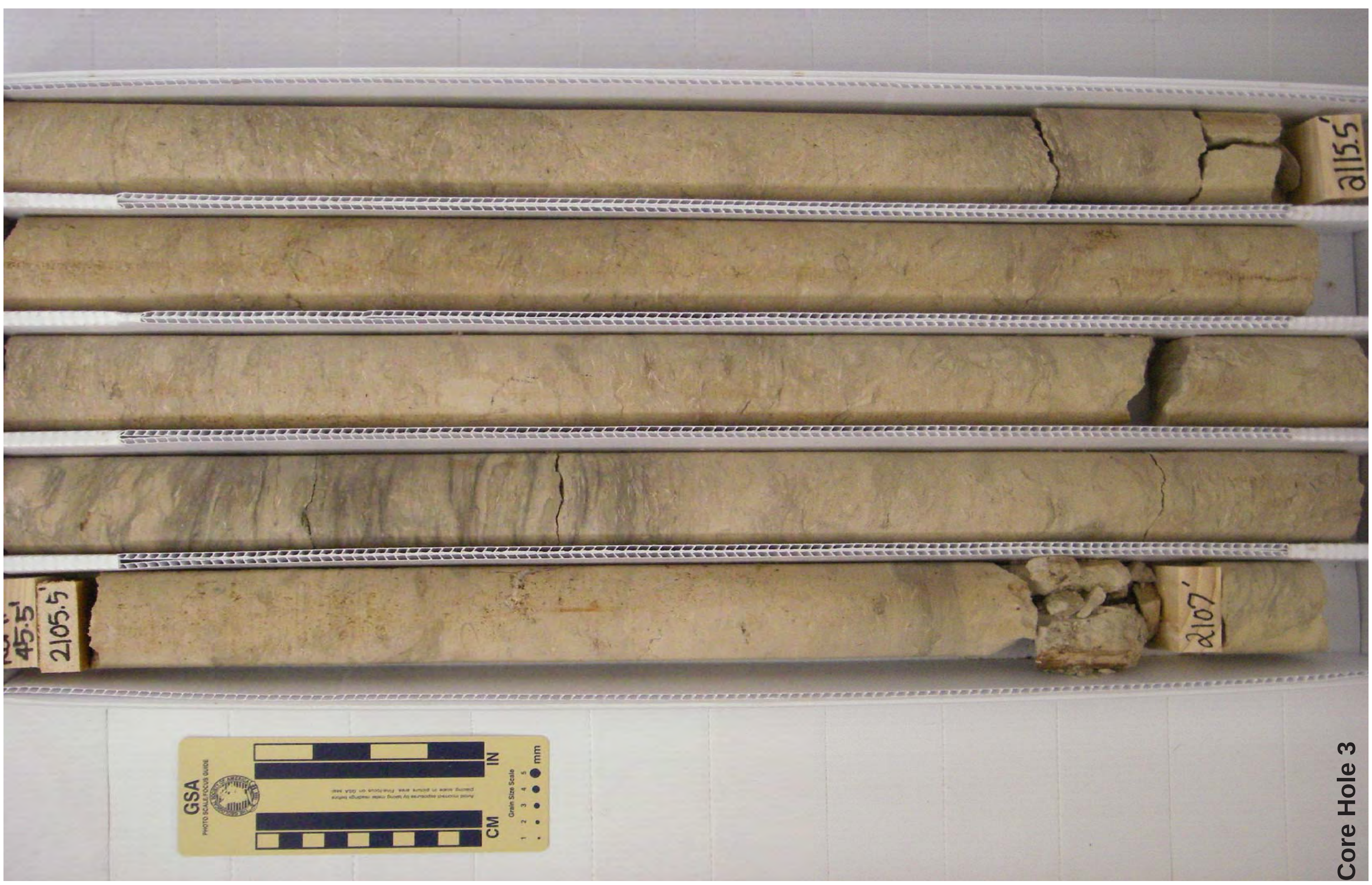
Core Hole 3

Core Hole 3

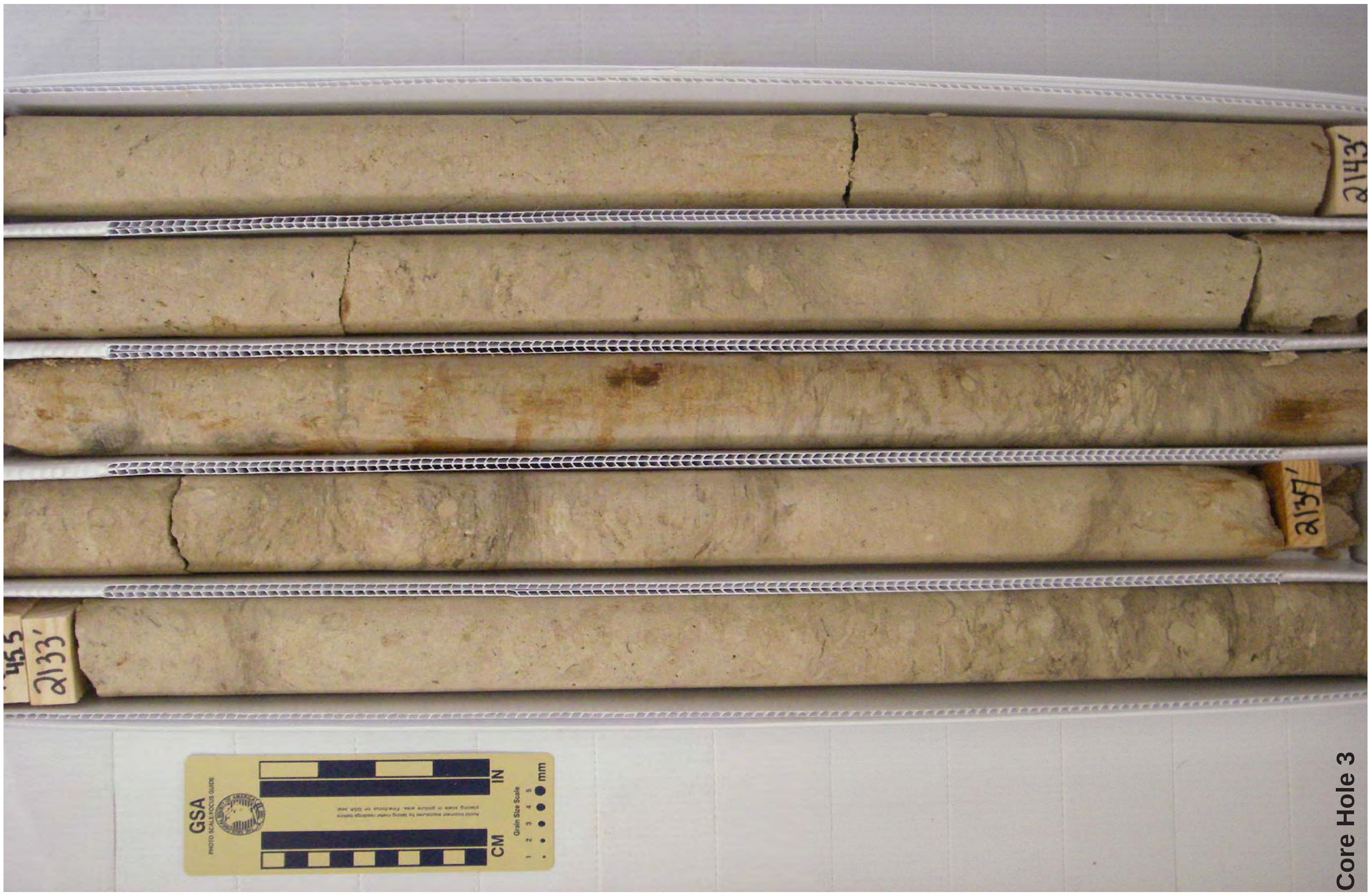

2096'
2097'
GSA
IN
CM
Core Hole 3


2096'
ROMP 45.5
2086.5'
2087'
GSA
IN
CM
Core Hole 3

Core Hole 3



Core Hole 3


2143'
2137'
45.5
2133'
GSA
IN
CM
mm
Core Hole 3

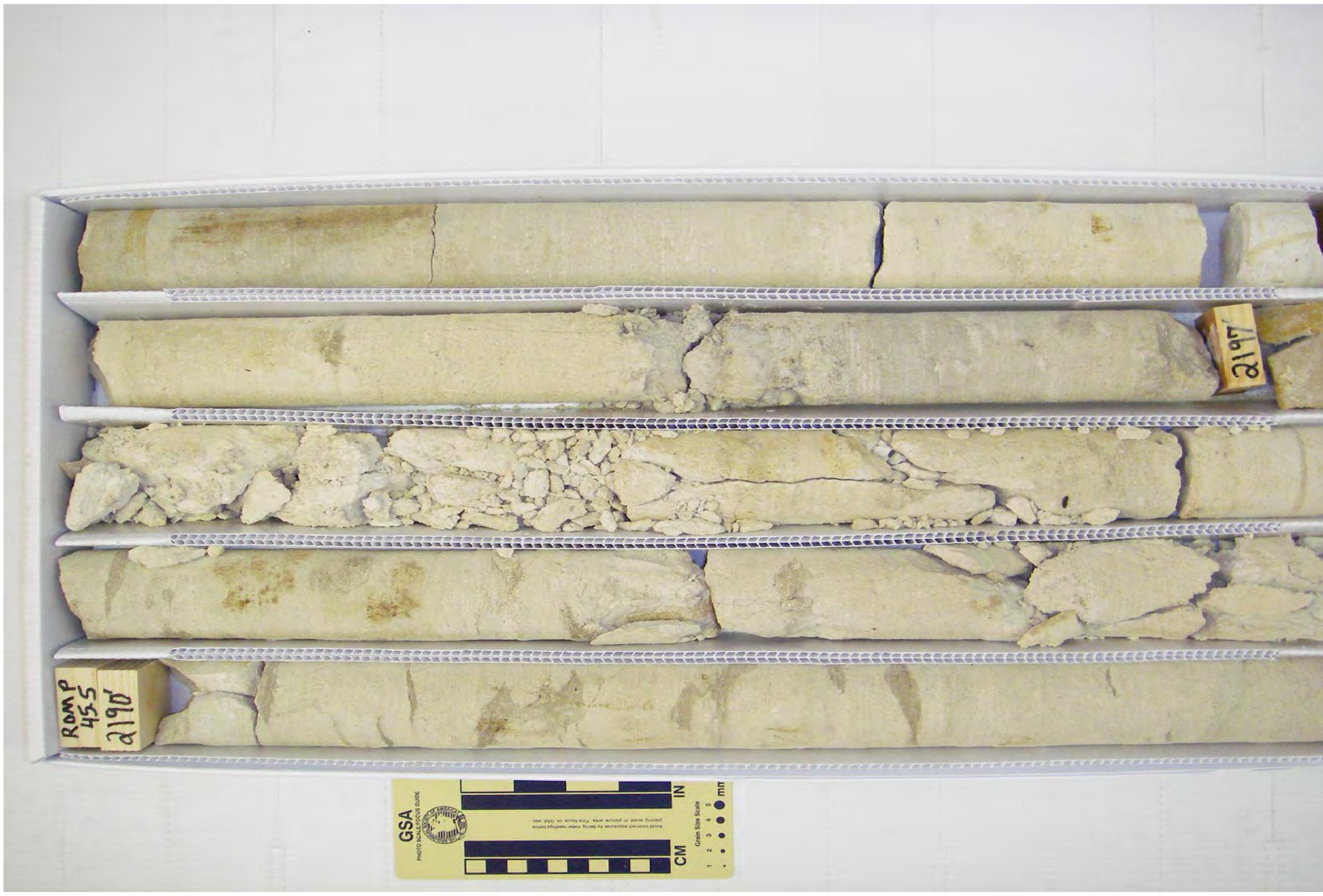

2133'
2127
45.5
2124'
GSA
IN
CM
mm
Core Hole 3


2157'
45.5
2152'
GSA
IN
CM
Core Hole 3


2147'
45.5
2143'
GSA
IN
CM
Core Hole 3


Core Hole 3


Core Hole 3



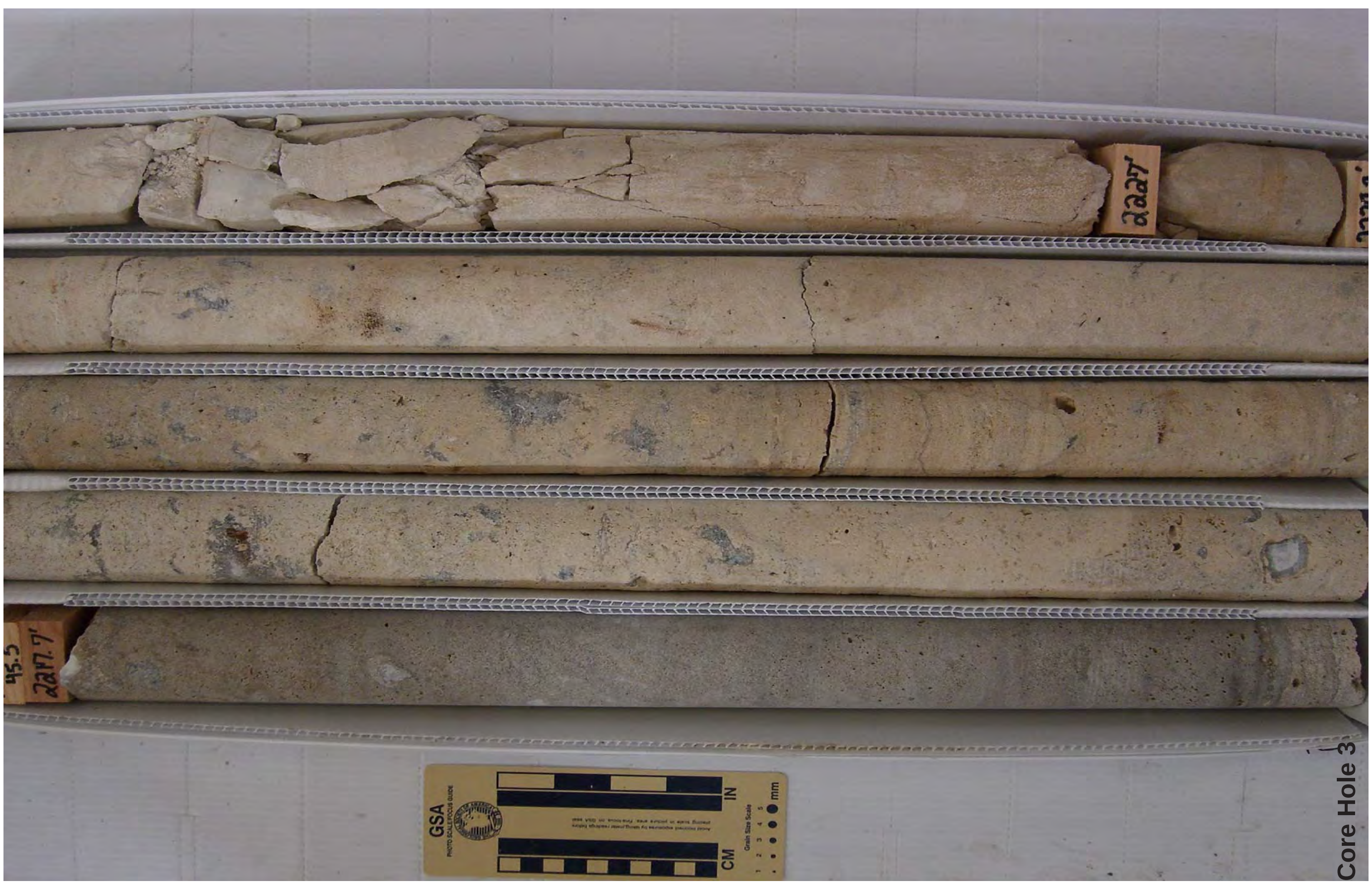
Core Hole 3

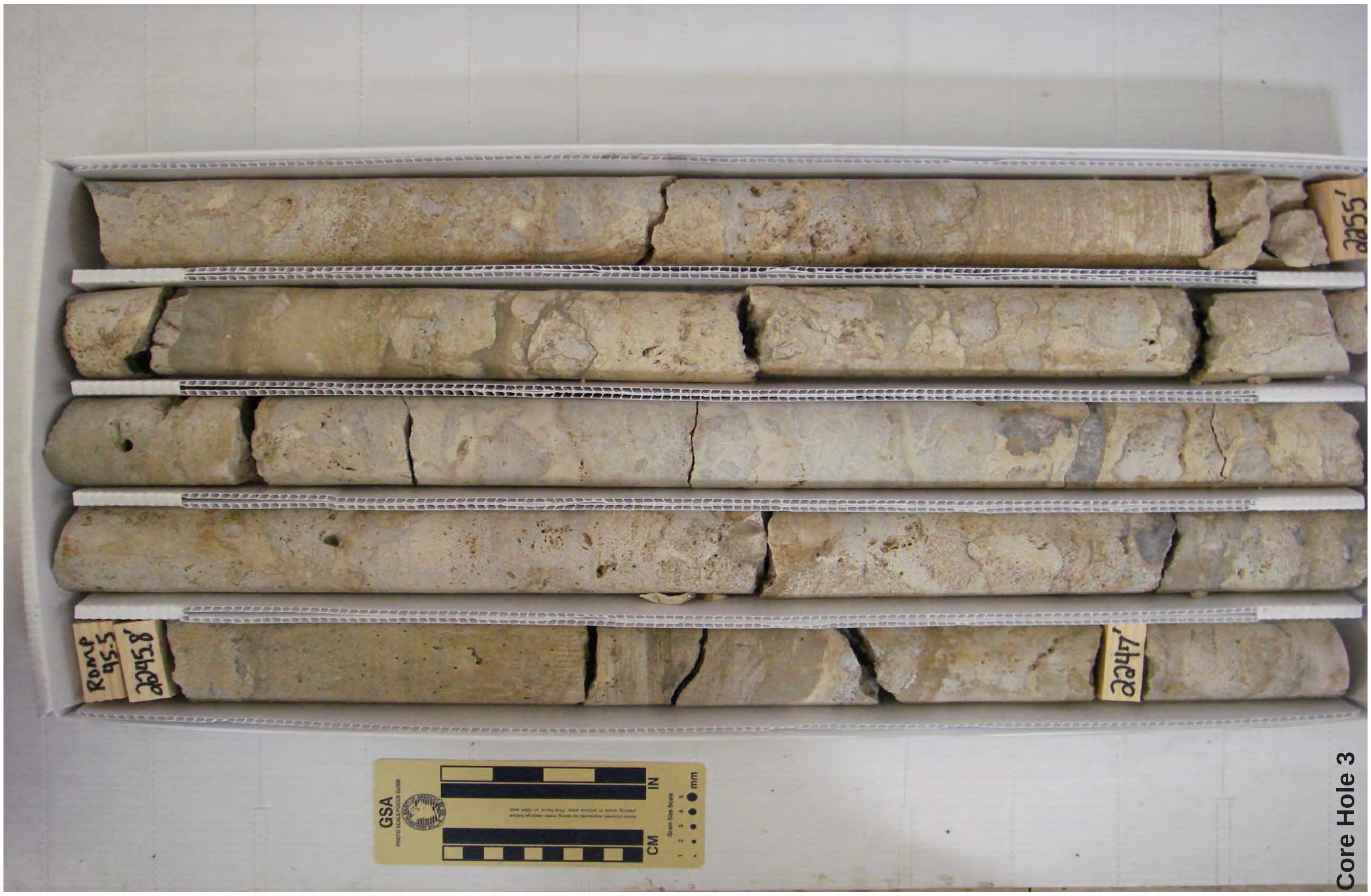
Core Hole 3


2217'
ROMP 45.5
2208'
GSA
IN
CM
mm
Core Hole 3


2207'
45.5
2199'
GSA
IN
CM
Core Hole 3

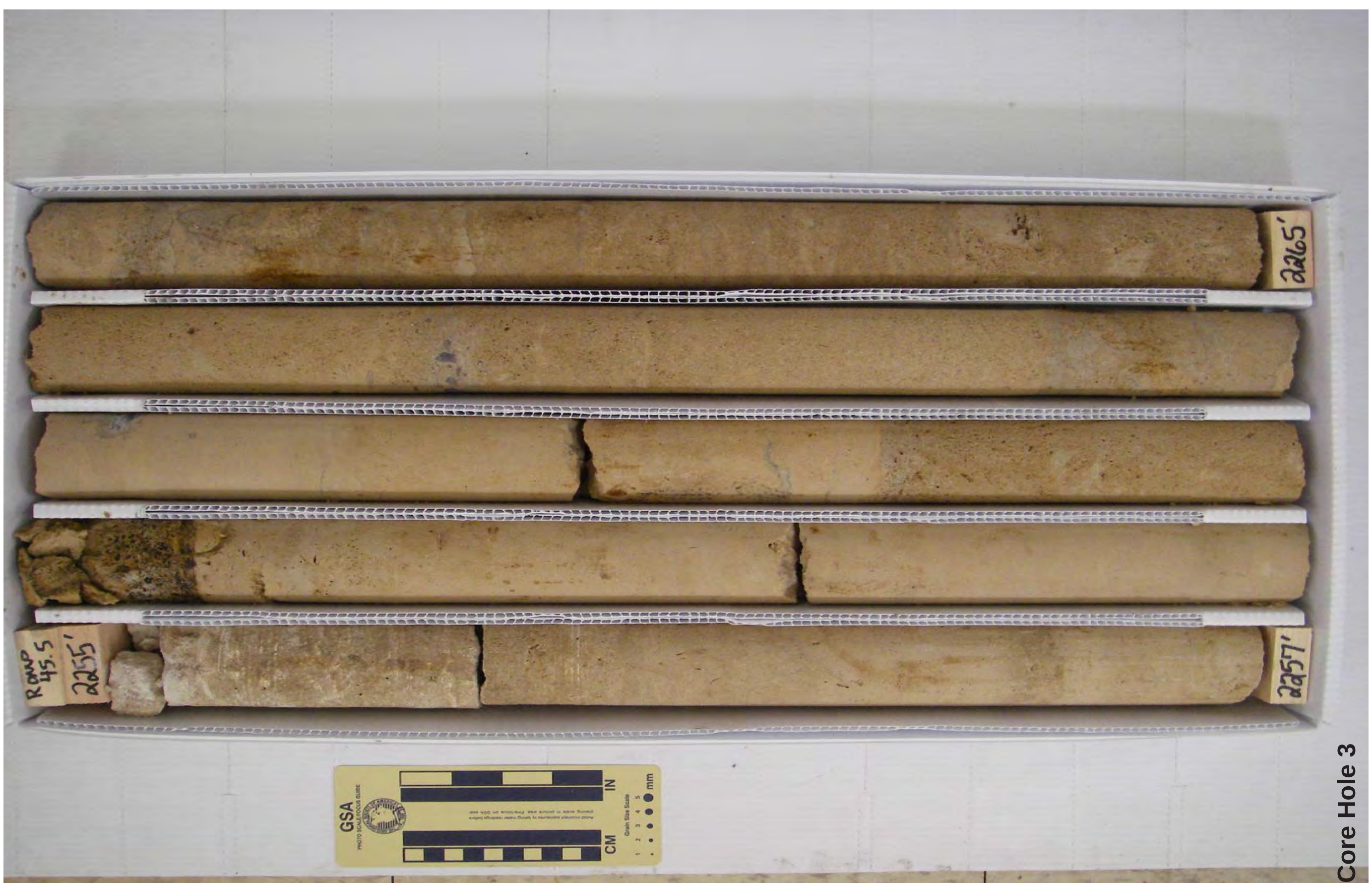

Core Hole 3


Core Hole 3


2255'
ROMP 45.5
2245.8'
2247'
GSA
IN
CM
Core Hole 3

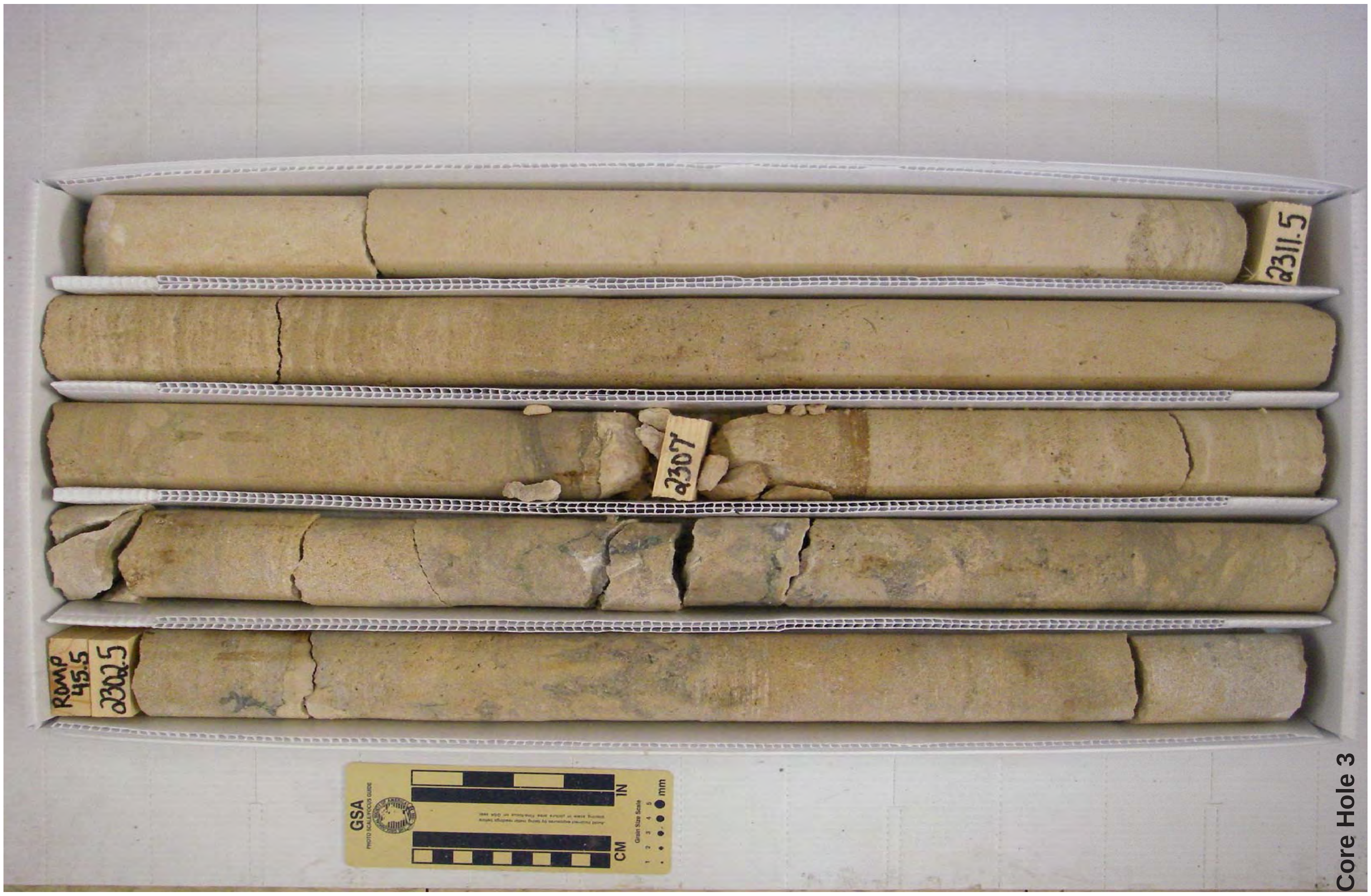

2245.8
ROMP 45.5
2237'
GSA
IN
CM
Core Hole 3


2274'
2265'
ROMP
45.5
2265'
GSA
IN
CM
Core Hole 3


2265'
ROMP
45.5
2255'
2257'
GSA
IN
CM
Core Hole 3

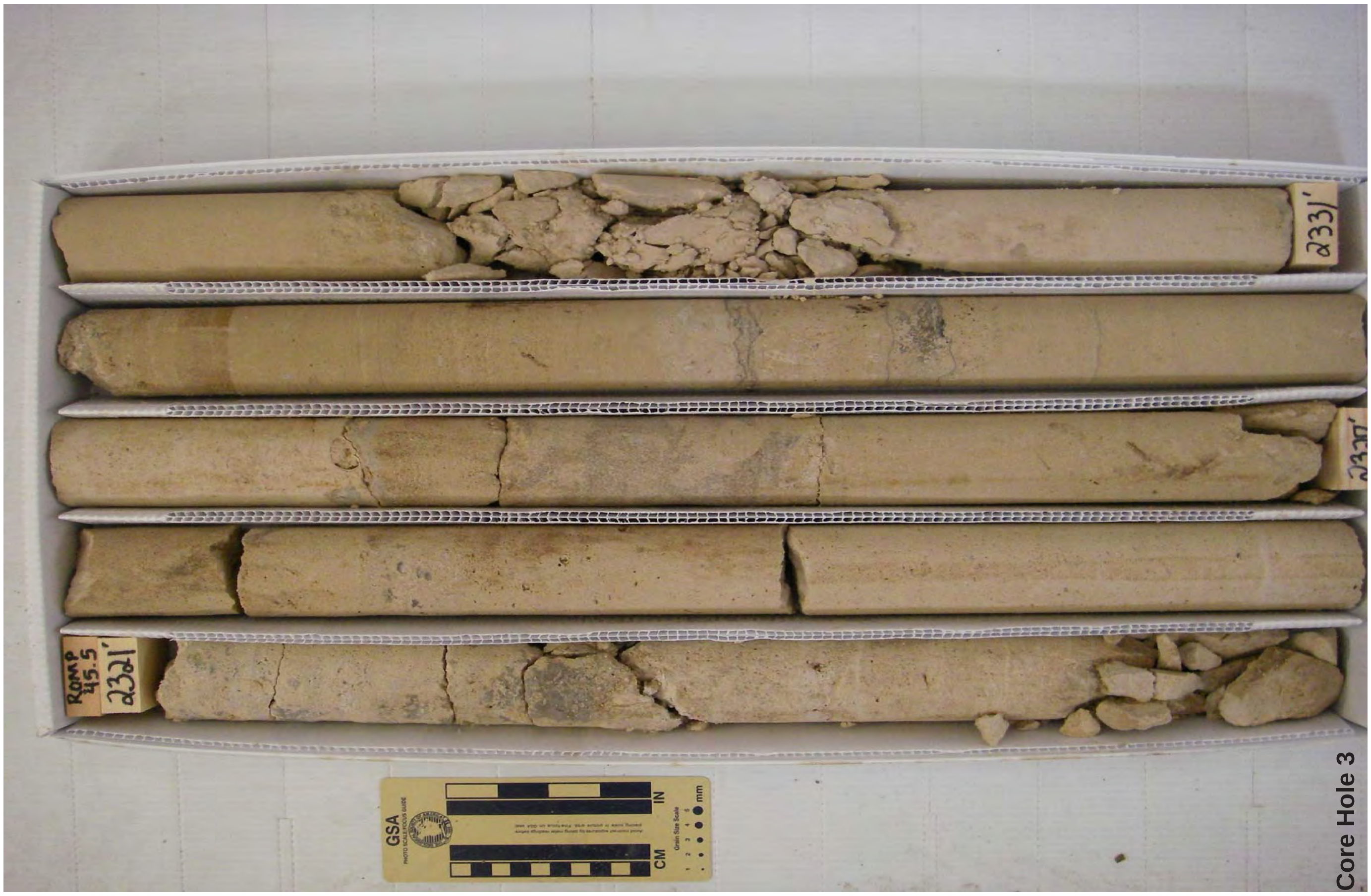

2293'
2287'
ROMP
45.5
2283.5
GSA
IN
CM
Core Hole 3

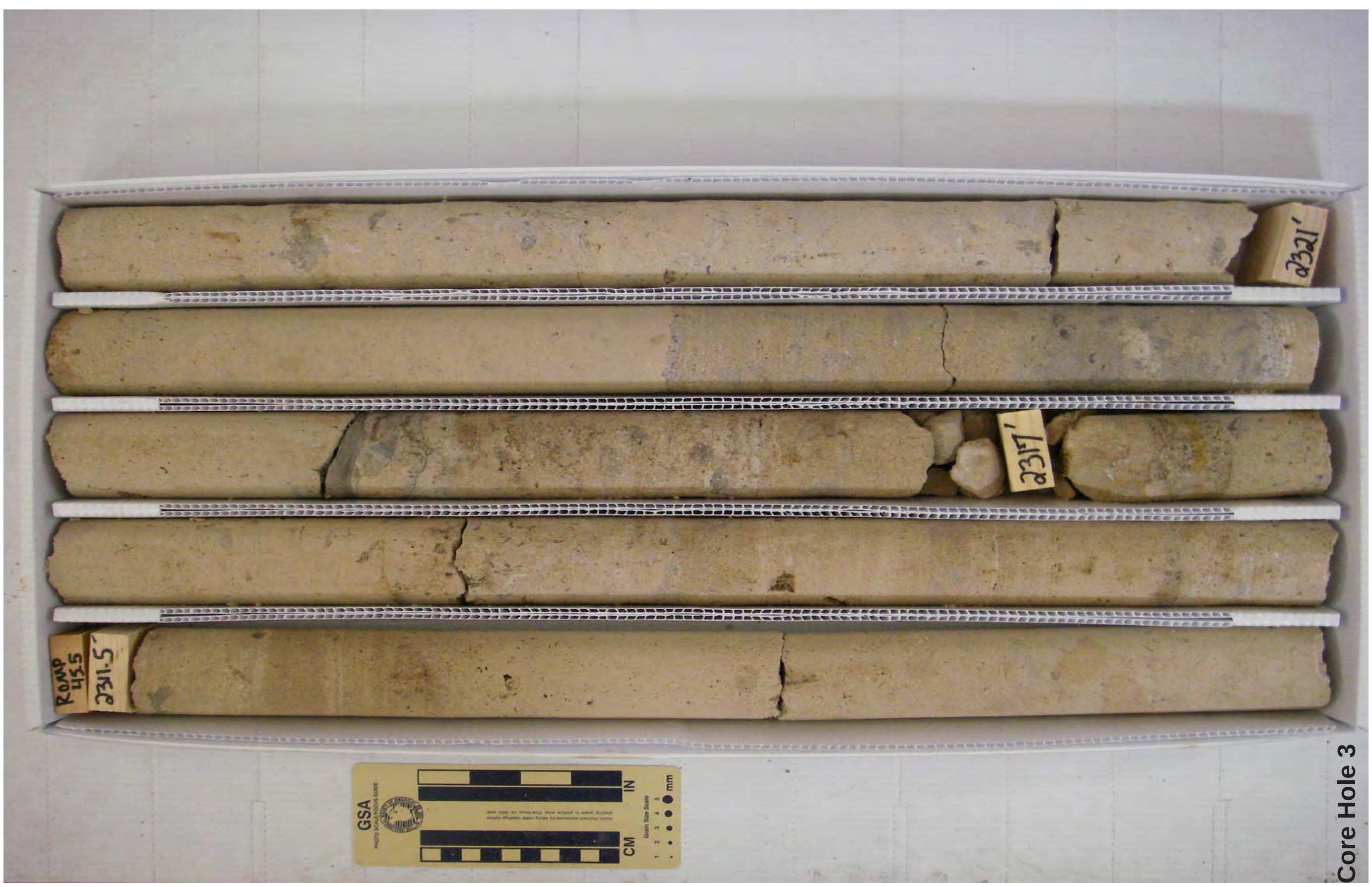

2283.5
2277'
ROMP
45.5
2274'
GSA
IN
CM
Core Hole 3

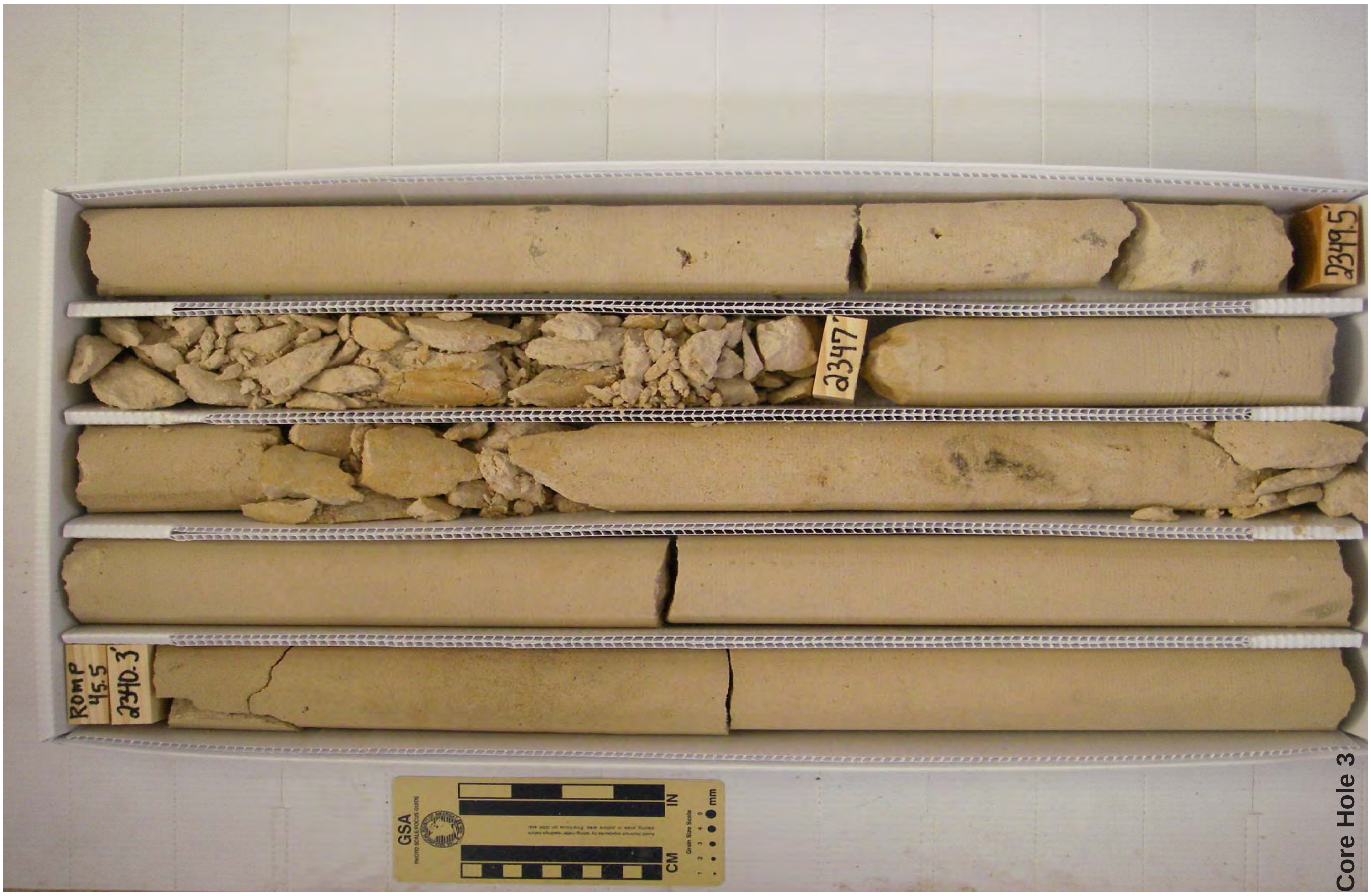


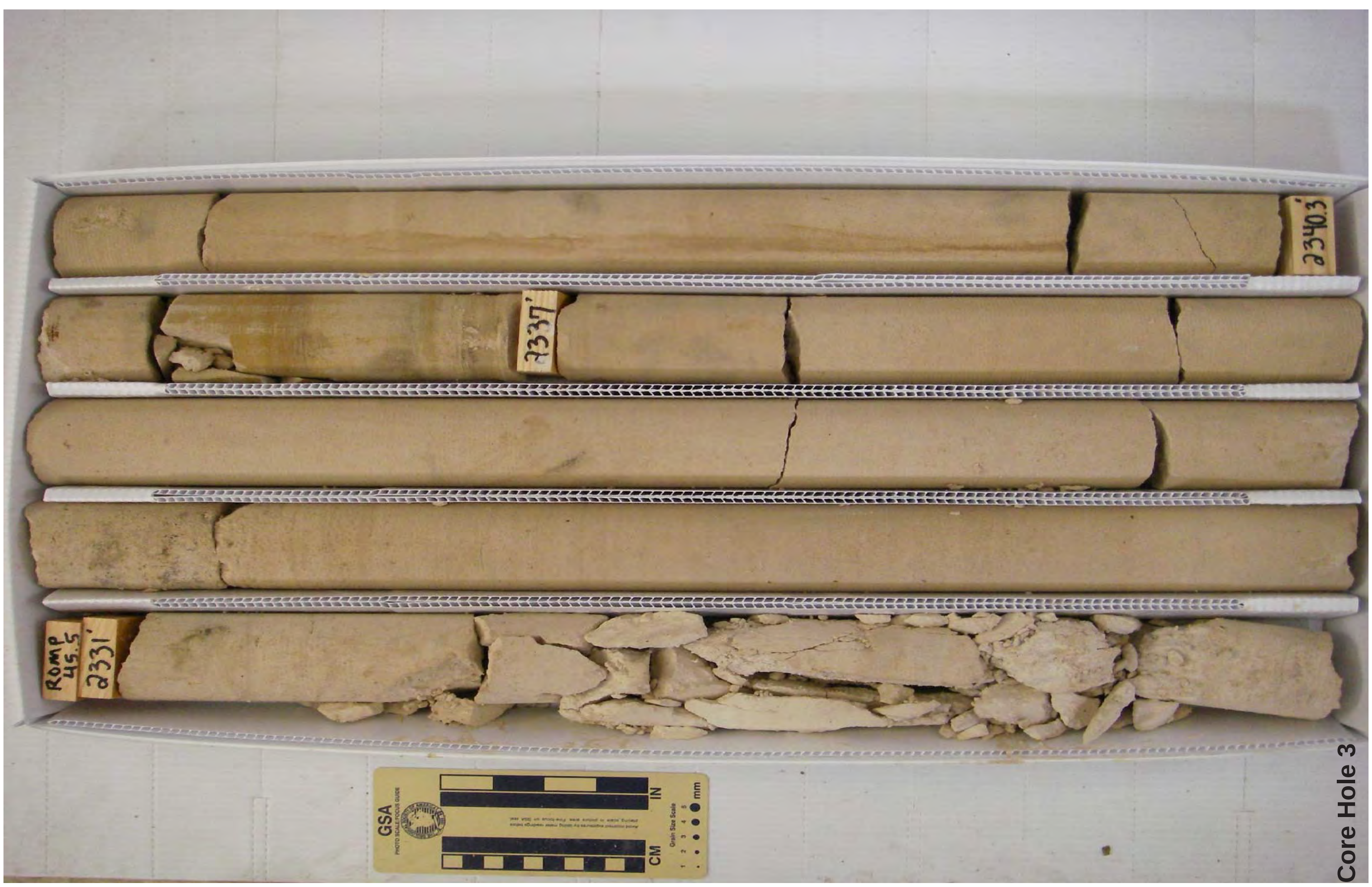
Core Hole 3

Core Hole 3


2331'
ROMP 45.5
2321'
GSA
IN
CM
Core Hole 3

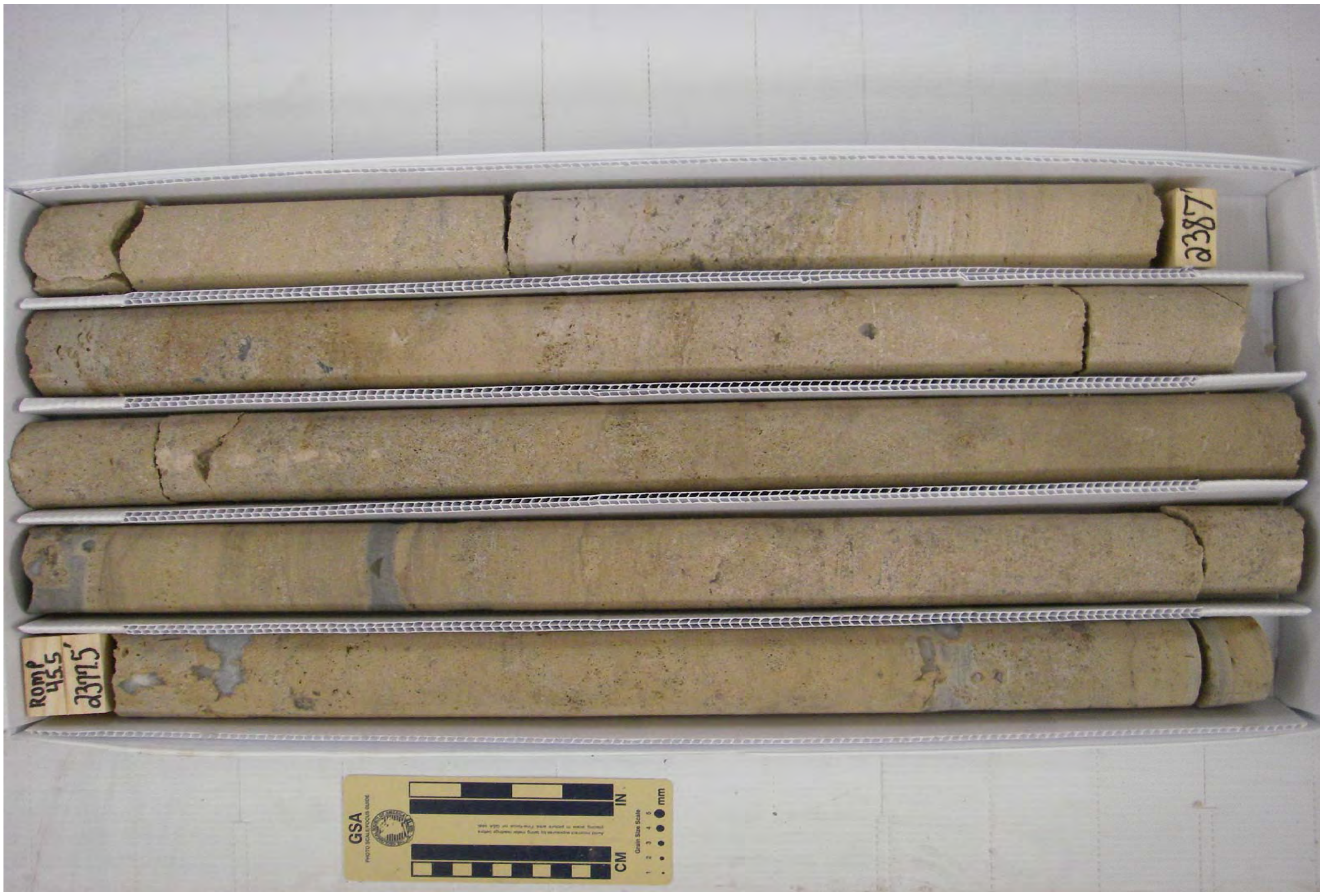

2321'
2317'
ROMP 45.5
2311.5'
GSA
IN
CM
Core Hole 3


2349.5'
2347'
ROMP 45.5
2340.3'
GSA
IN
CM
mm
Core Hole 3

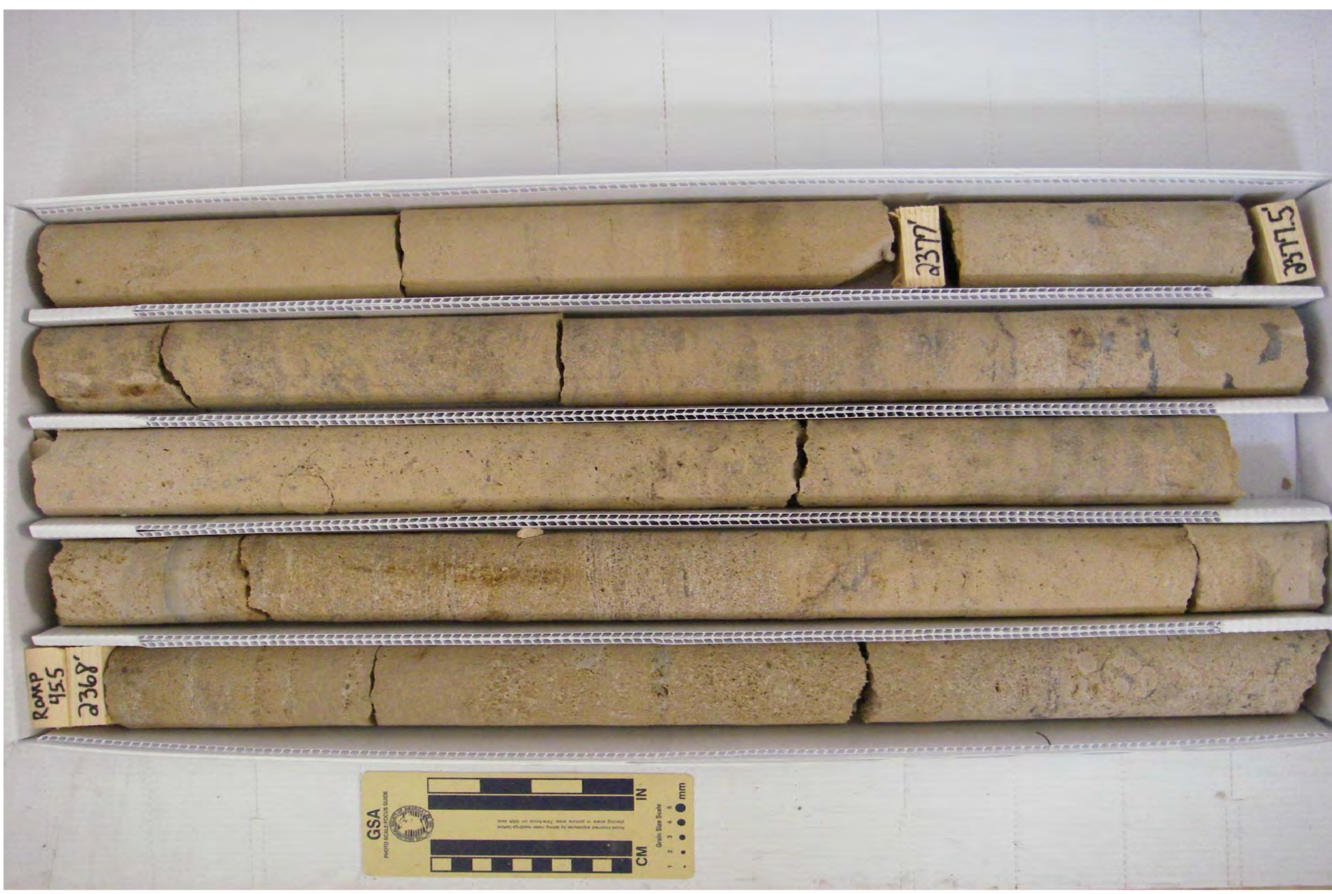

2340.3'
2337'
ROMP 45.5
2331'
GSA
IN
CM
mm
Core Hole 3


2367'
2368'
ROMP
45.5
2359'
GSA
IN
CM
Core Hole 3


2357'
2359'
ROMP
45.5
2349.5
GSA
IN
CM
Core Hole 3

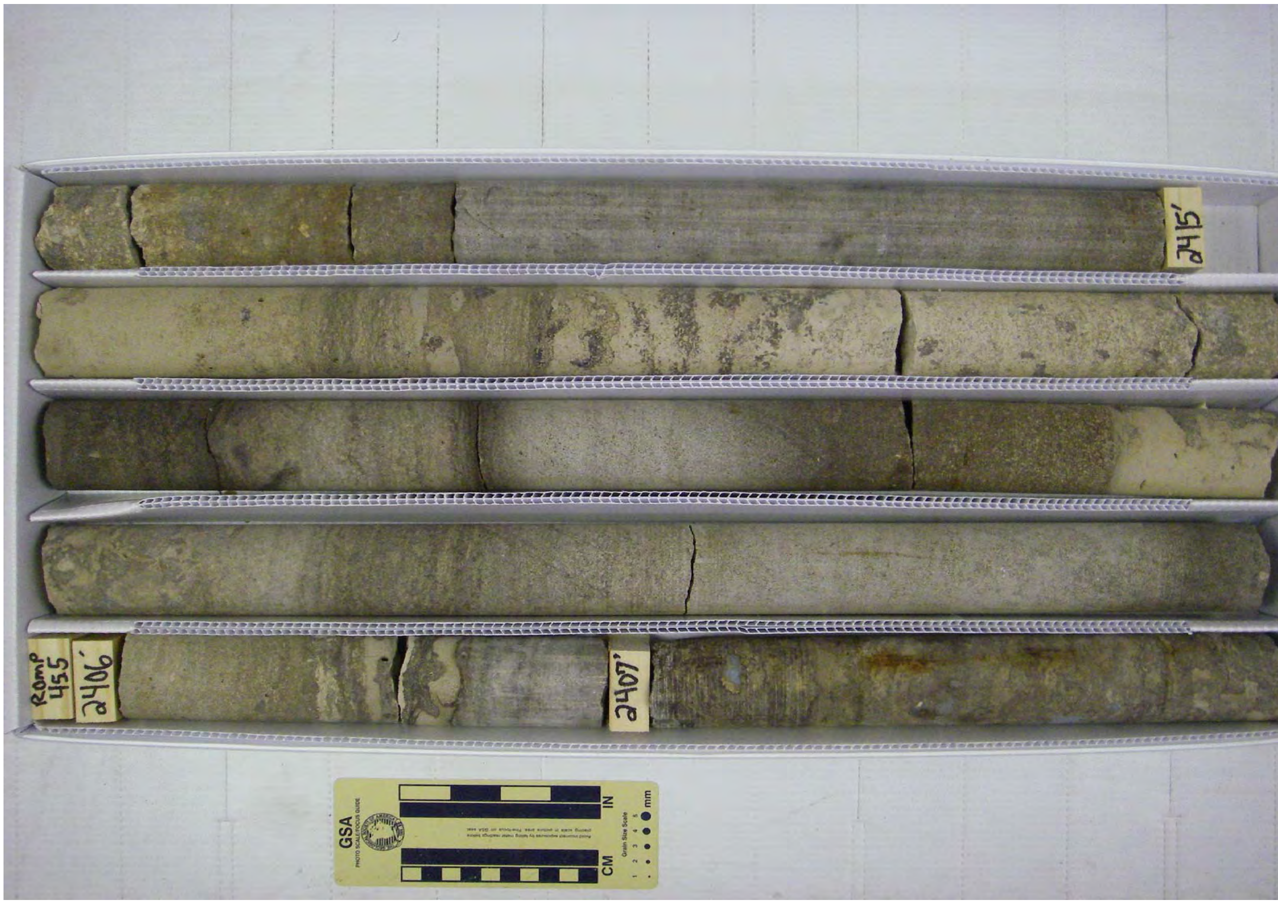


Core Hole 3

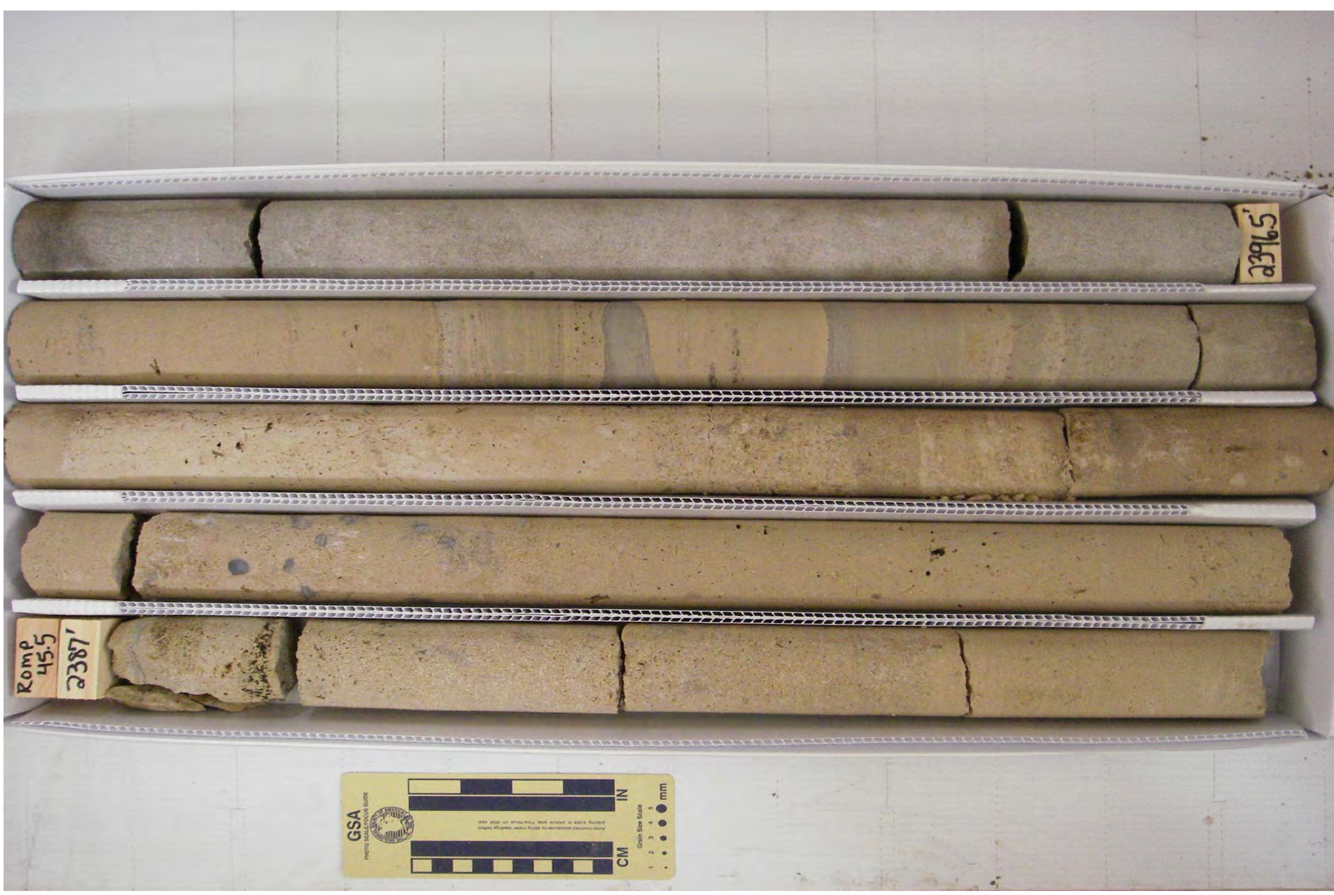


Core Hole 3

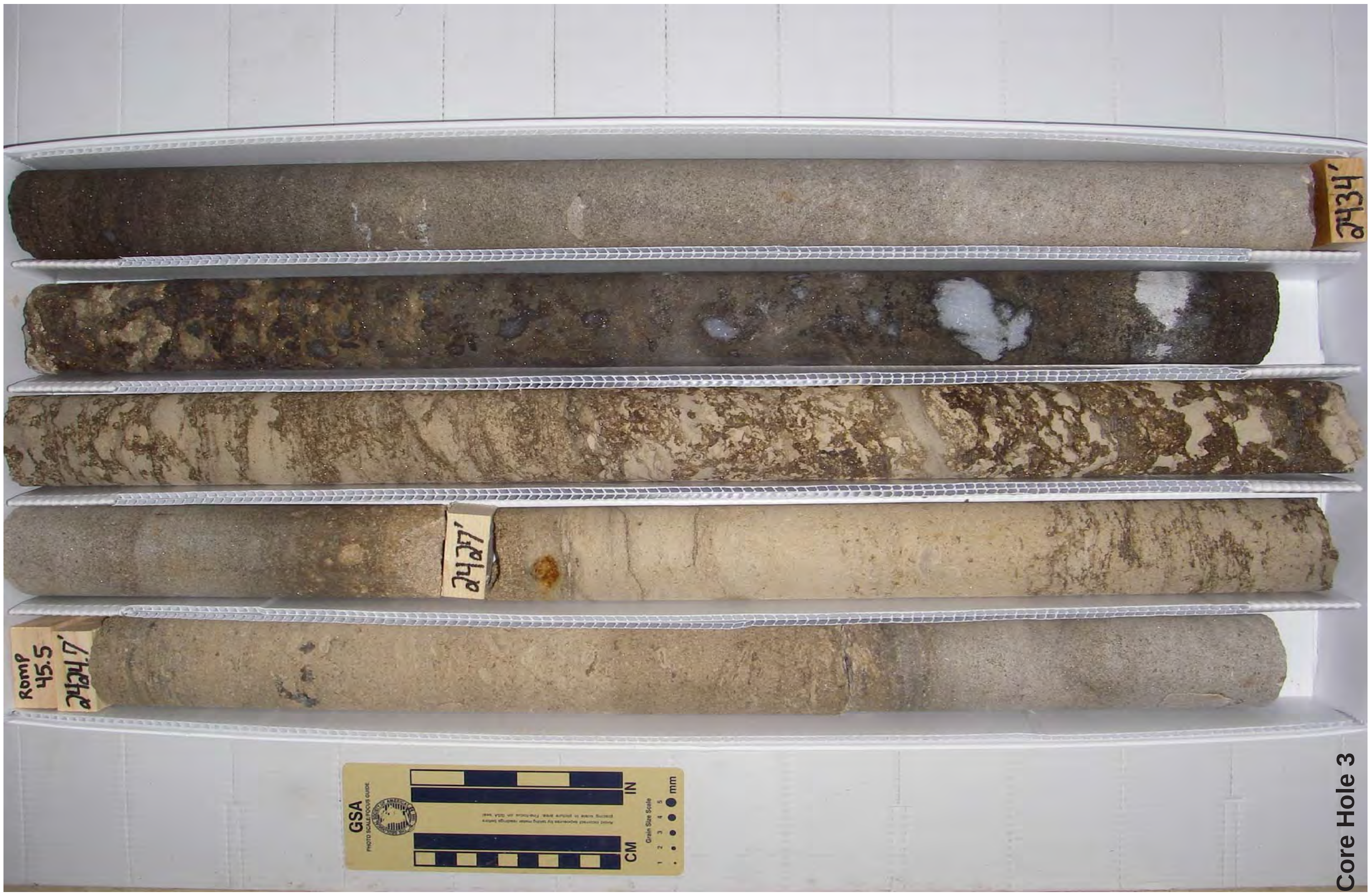
Box 74 (from 2,396.5 to 2,406 feet bls) photograph missing

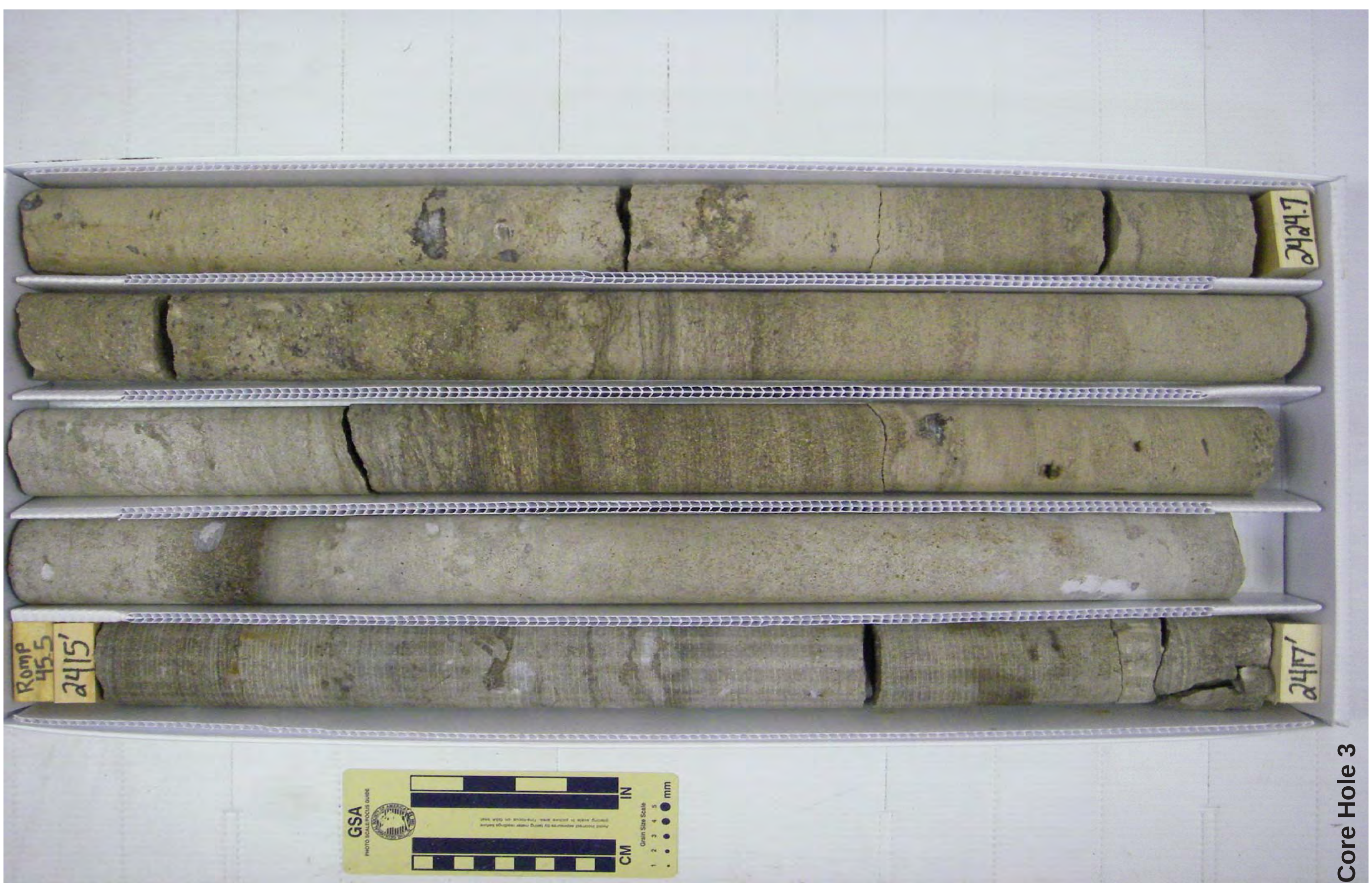


Core Hole 3

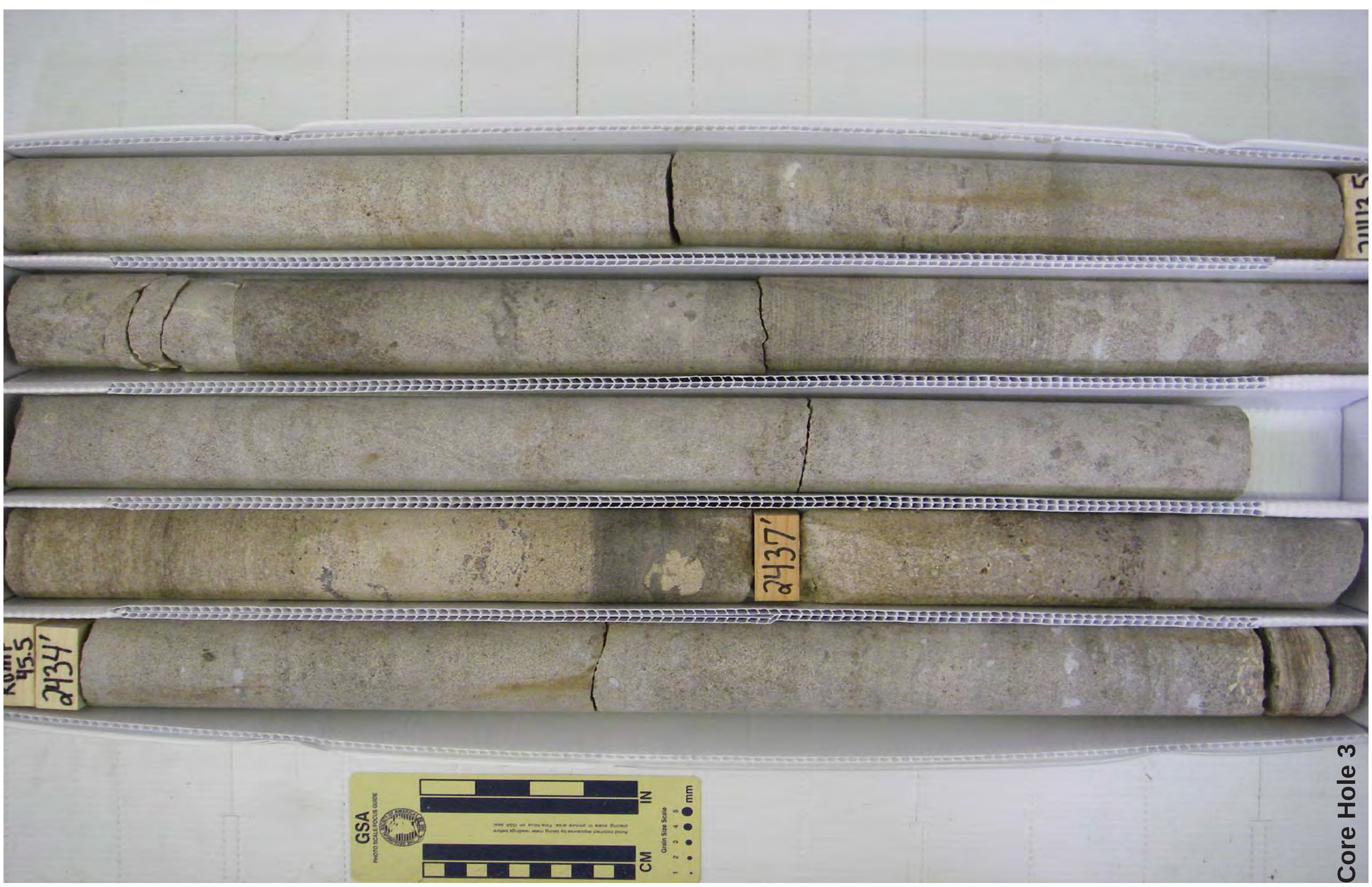


Core Hole 3

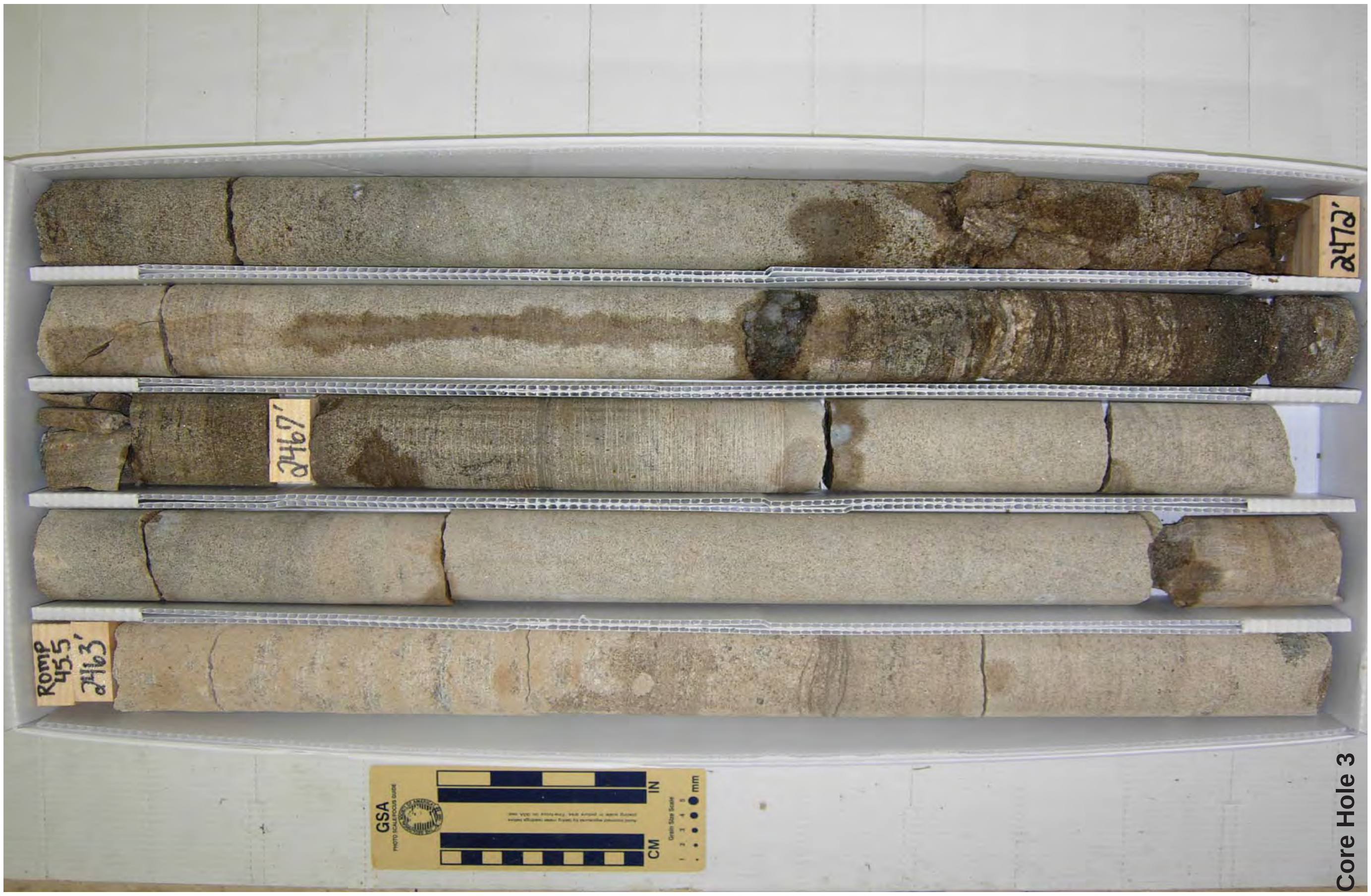

Core Hole 3


Core Hole 3

2452.5
2445'
ROMP 45.5
2443.5
GSA
IN
CM
Core Hole 3

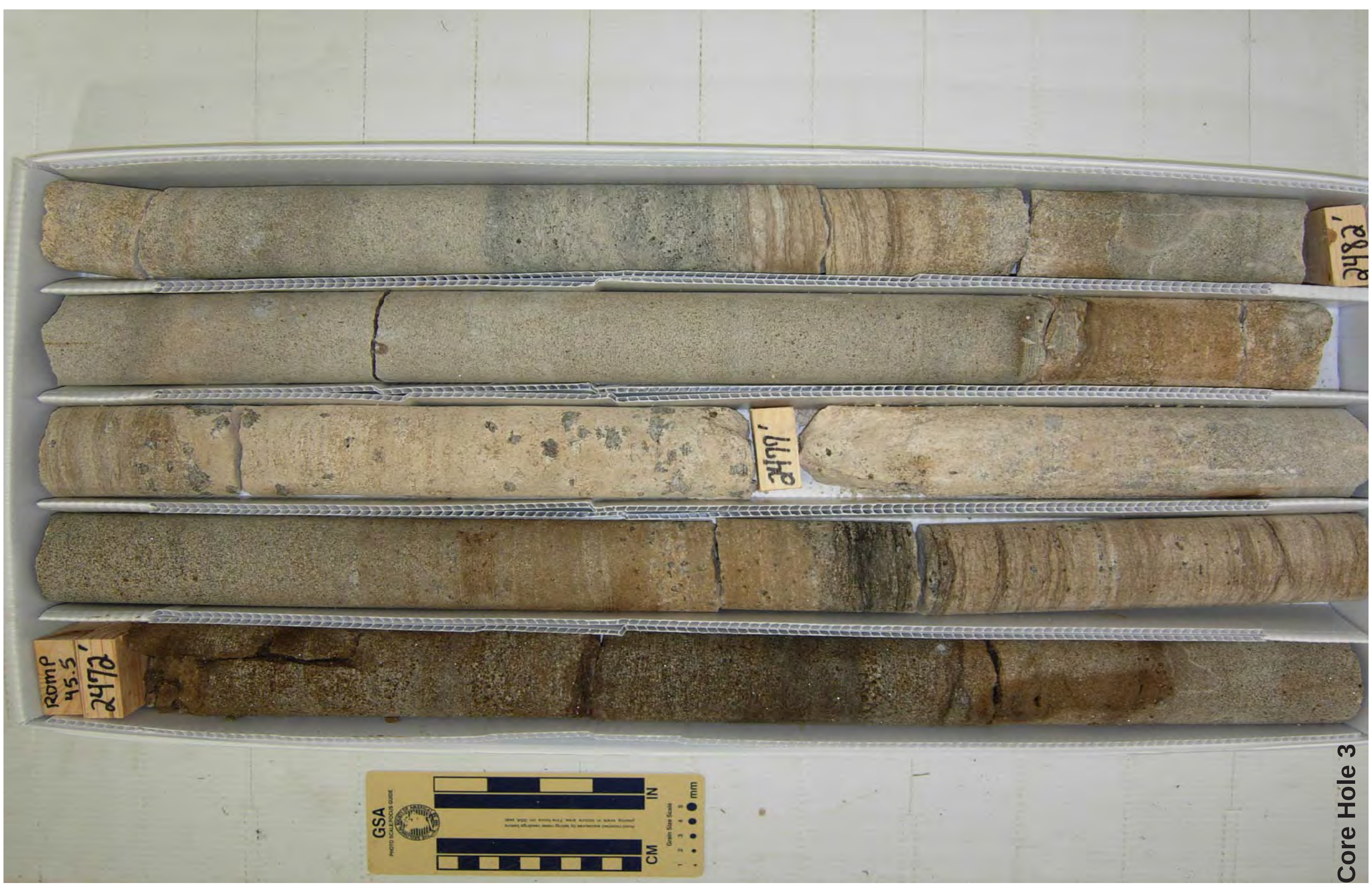


2437'
45.5
2434'
GSA
IN
CM
Core Hole 3


2472'
2467'
Romp 45.5
2463'
GSA
IN
CM
mm
Core Hole 3


2463'
2457'
Romp 45.5
2452.5
GSA
IN
CM
mm
Core Hole 3


2491'
2487'
ROMP 45.5 2482'
GSA
IN
CM
Core Hole 3


2482'
2477'
ROMP 45.5 2472'
GSA
IN
CM
Core Hole 3

Core Hole 3

Core Hole 3


2527'
2528'
2519'
GSA
IN
CM
Core Hole 3


2519'
2517'
45.5
2510'
GSA
IN
CM
Core Hole 3

Core Hole 3

Core Hole 3


2564.5'
ROMP 45.5
2555.5'
2557'
GSA
IN
CM
mm
Core Hole 3


2555.5
ROMP 45.5
2546.7
2547'
GSA
IN
CM
mm
Core Hole 3


2573.5'
2567'
ROMP
45.5
2564.5
GSA
IN
CM
mm
Core Hole 3


ROMP
45.5
2555.5'
2557'
GSA
IN
CM
mm
Core Hole 3


2583'
2577'
ROMP
45.5
2573.5'
GSA
IN
CM
mm
Core Hole 3


2573.5'
2567'
45.5
2564.5
GSA
IN
CM
mm
Core Hole 3


2593'
2587'
95.5
2583'
GSA
IN
CM
mm
Core Hole 3


2587'
95.5
2583'
GSA
IN
CM
mm
Core Hole 3

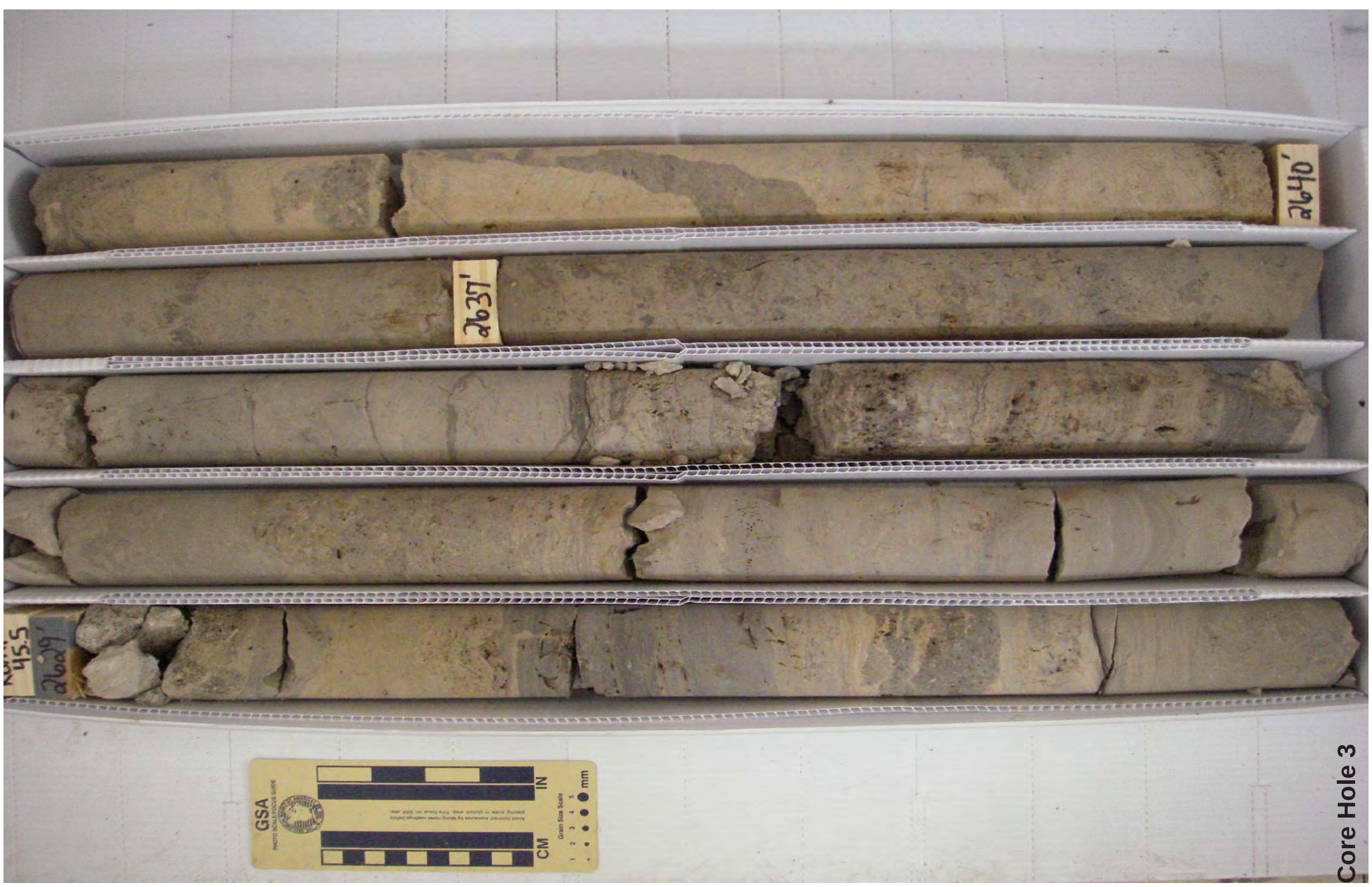

2611.5
2607'
45.5
2602'
GSA
IN
CM
mm
Core Hole 3

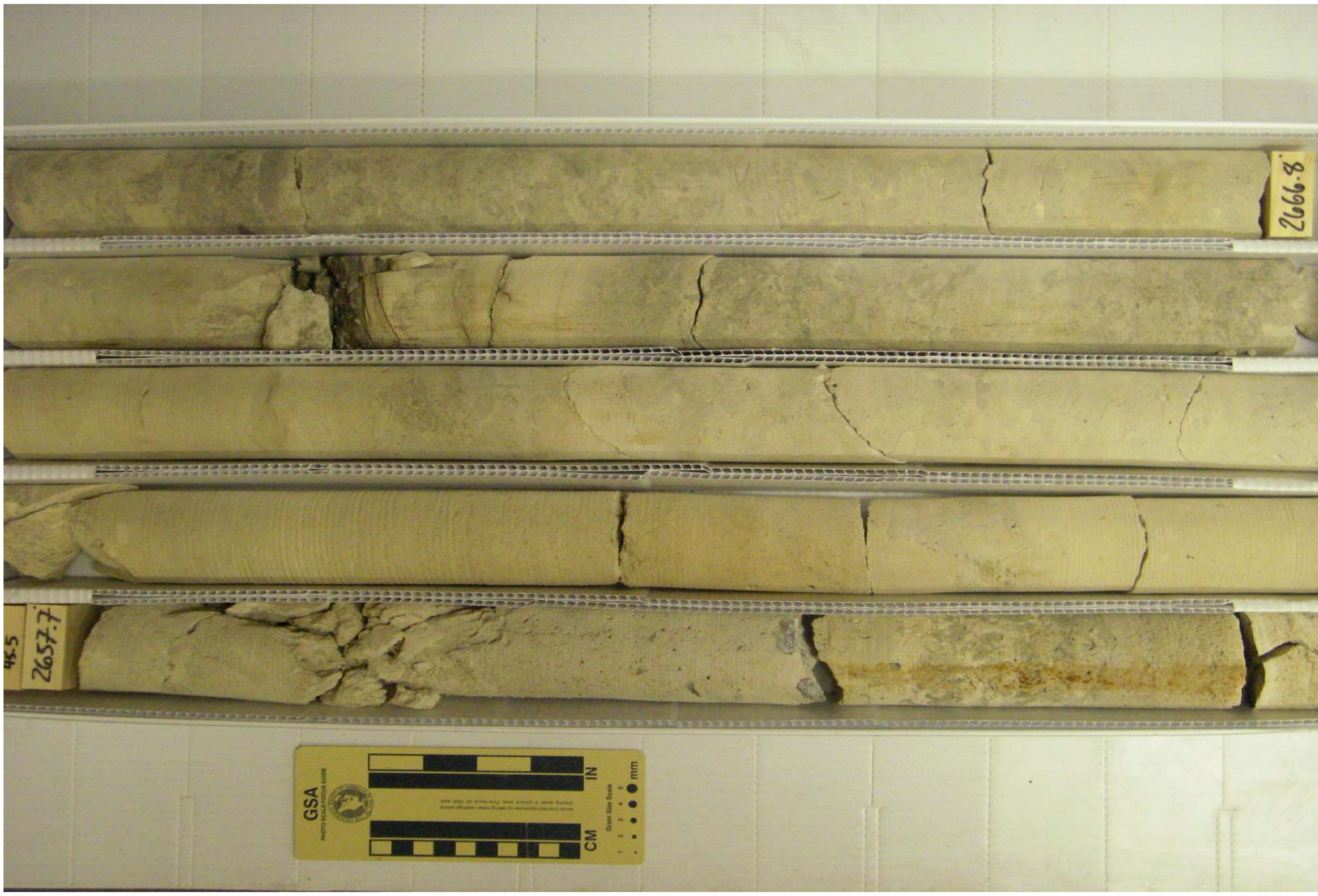

2602'
2597'
45.5
2593'
GSA
IN
CM
mm
Core Hole 3


2629'
2627'
2621'
45.5
GSA
IN
CM
Core Hole 3


2621'
2617'
2611.5'
45.5
GSA
IN
CM
Core Hole 3


2649'
2647'
45.5
2640'
GSA
IN
CM
mm
Core Hole 3


2640'
2635'
45.5
2629'
GSA
IN
CM
mm
Core Hole 3



Core Hole 3

Core Hole 3


Core Hole 3


Core Hole 3

Core Hole 3

Core Hole 3

Appendix E. Geophysical Log Suites for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

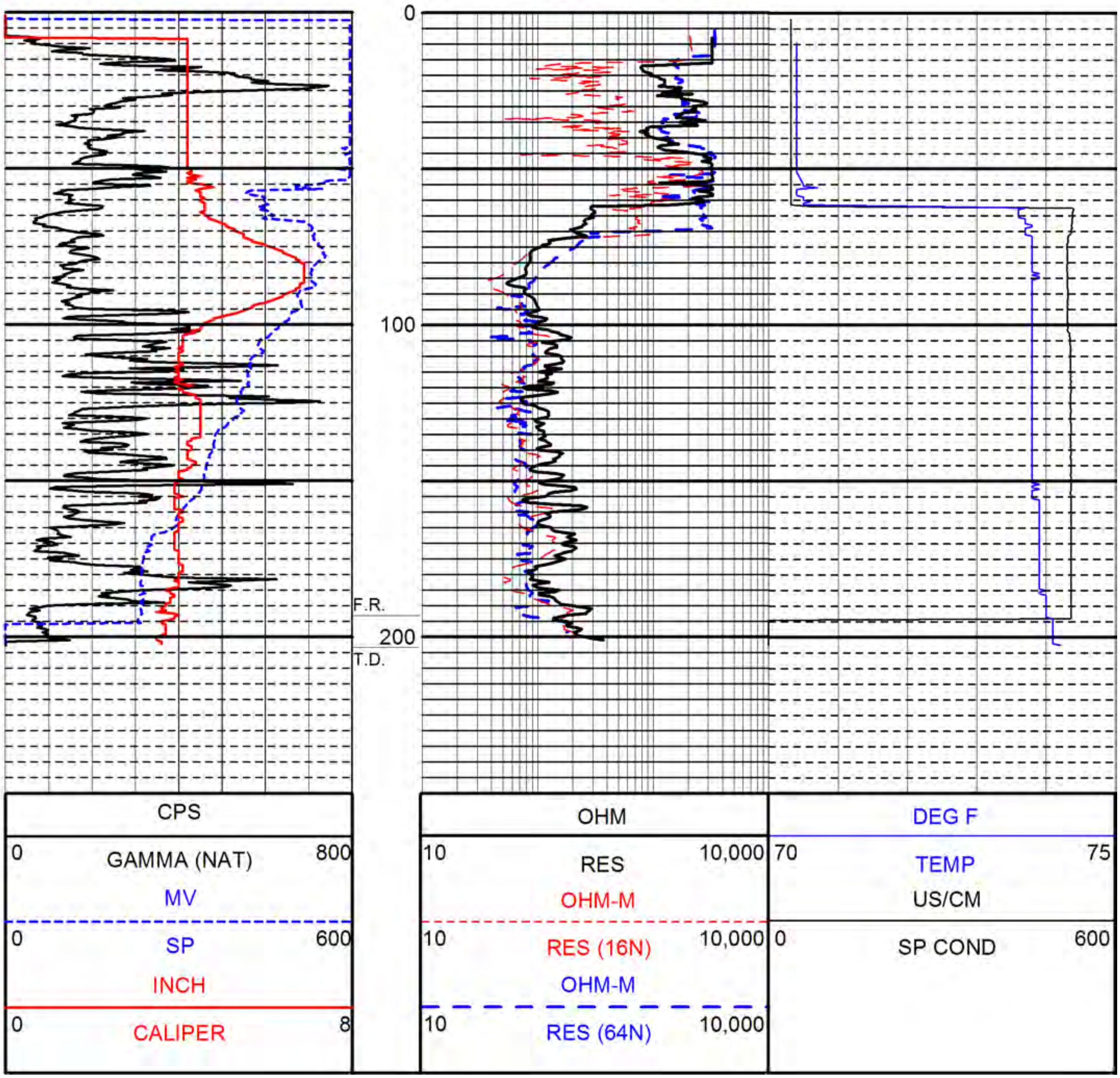


Figure E1. Geophysical log suite for core hole 1 from land surface to 202.50 feet below land surface conducted at the ROMP 45.5 – Progress Energy well site in Polk County, Florida. The log was performed on October 4, 2005, using the 9165C (caliper/gamma-ray) and 8044C (multifunction) tools. The casing depth at time of logging was 50 feet below land surface. The log scale is 2 inches per 100 feet. Tracks 1 and 3 are linearly scaled and track 2 is in logarithmic scale.

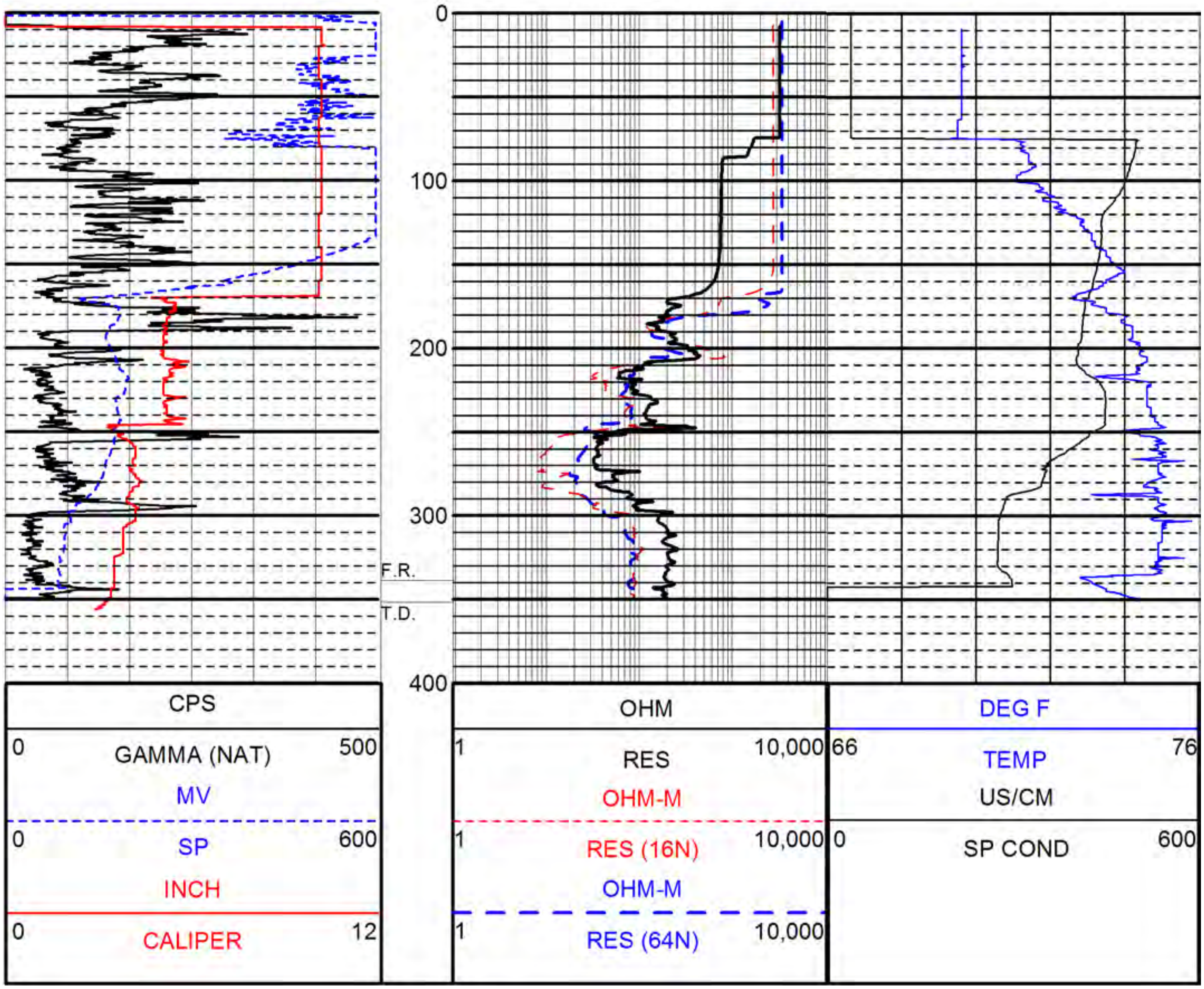


Figure E2. Geophysical log suite for core hole 2 from land surface to 356 feet below land surface conducted at the ROMP 45.5 – Progress Energy well site in Polk County, Florida. The log was performed on December 7, 2005, using the 9165C (caliper/gamma-ray) and 8044C (multifunction) tools. The casing depth at time of logging was 246 feet below land surface. The log scale is 1 inch per 100 feet. Tracks 1 and 3 are linearly scaled and track 2 is in logarithmic scale.

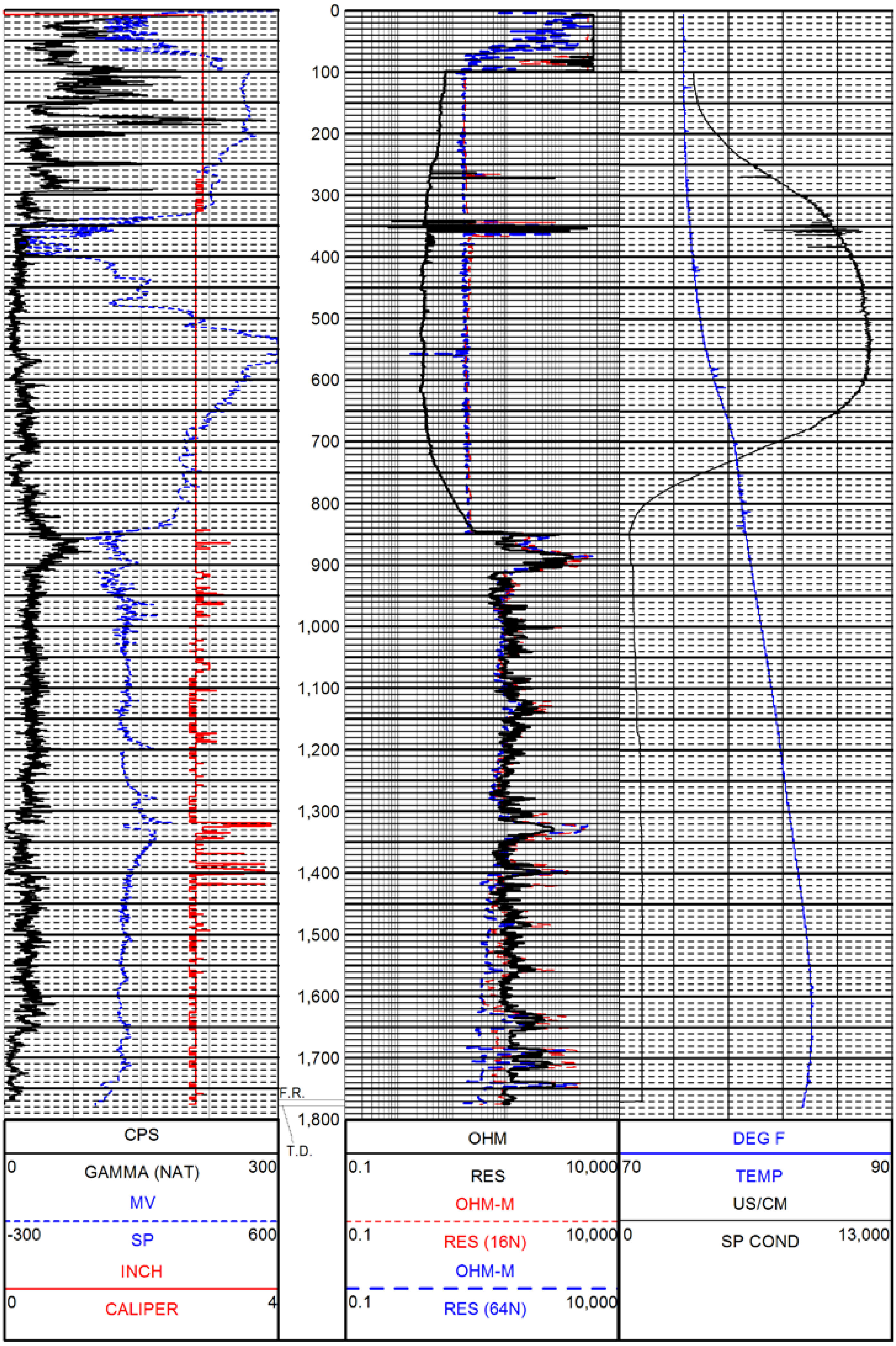


Figure E3. Geophysical log suite for core hole 2 from land surface to 1,779.90 feet below land surface conducted at the ROMP 45.5 - Progress Energy well site in Polk County, Florida. The log was performed on August 7, 2006, using the 9074C (caliper/gamma-ray), 8043C (multifunction), and 9511C (induction) tools. The casing depth at time of logging was 850 feet below land surface. The log scale is 1 inch per 200 feet. Tracks 1 and 3 are linearly scaled and track 2 is in logarithmic scale. The specific conductance sensor may have malfunctioned because the values do not correspond to field and laboratory values for specific conductance.

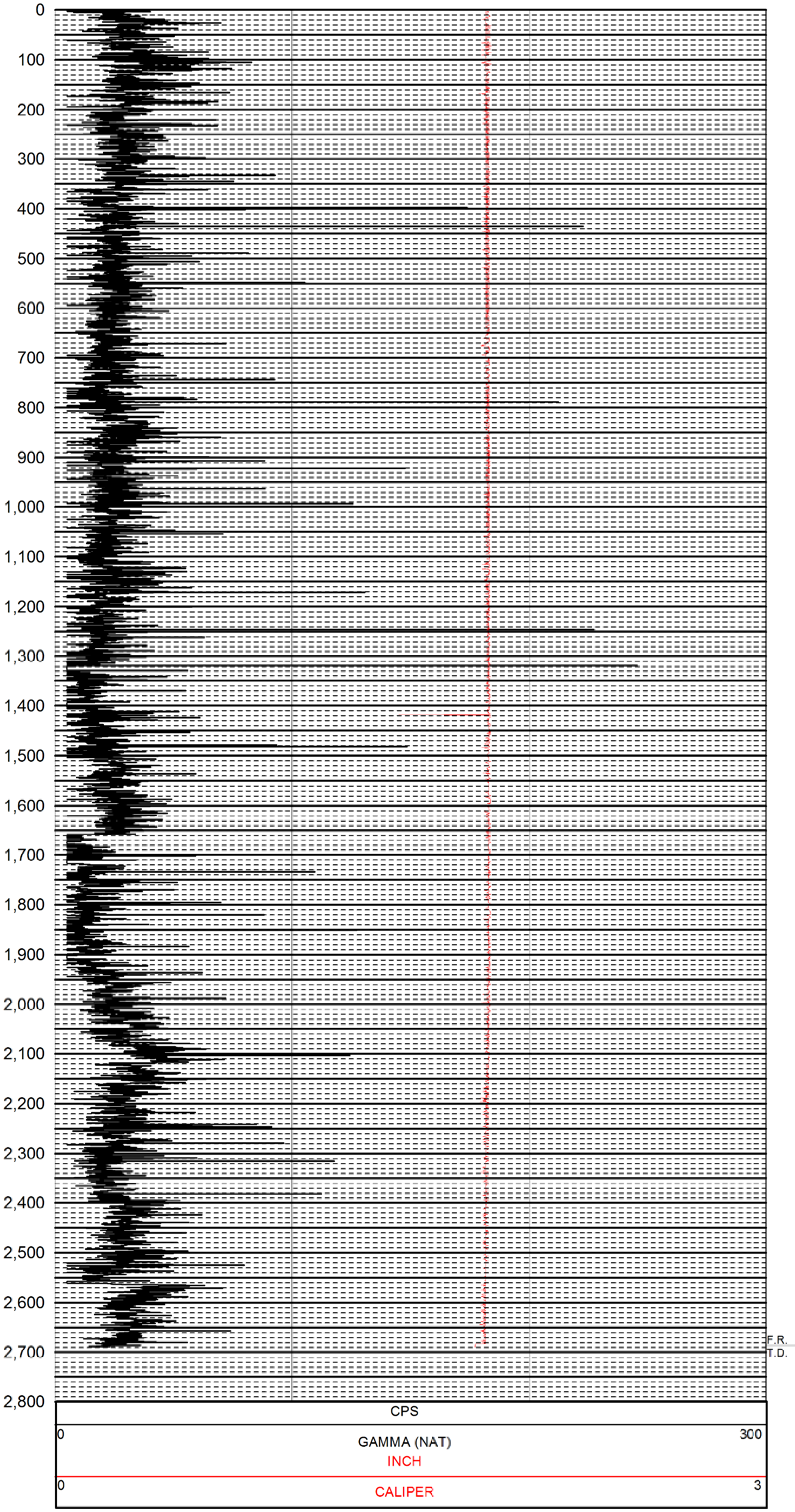


Figure E4. Gamma-ray log for core hole 3 from land surface to 2,688.7 feet below land surface conducted at the ROMP 45.5 - Progress Energy well site in Polk County, Florida. The log was performed on March 24, 2008, by a contractor. The casing depth at time of logging was 1,717 feet below land surface. The log scale is 1 inch per 200 feet and is linear. The data was filtered twice to exclude every second data point.

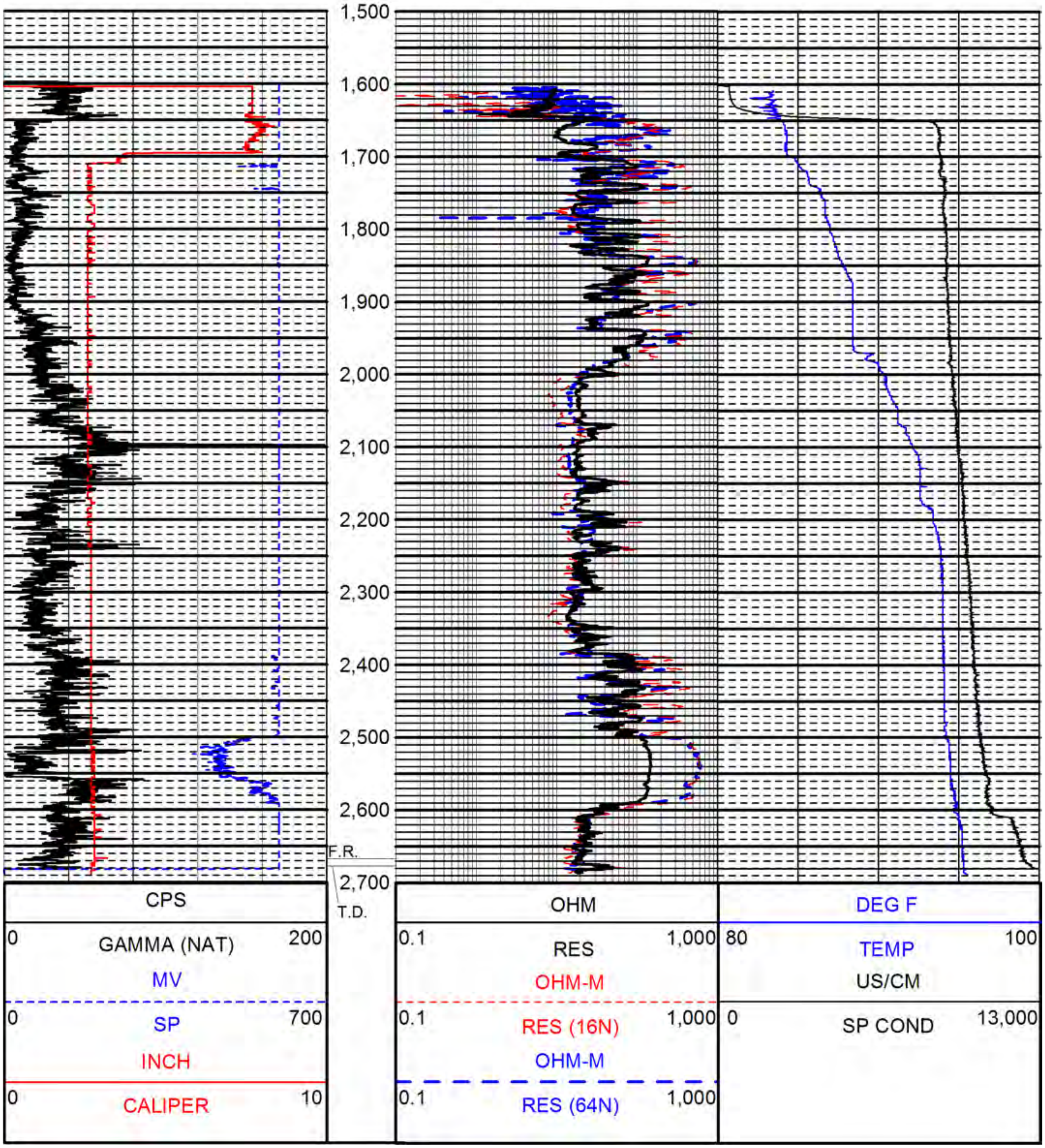


Figure E5. Geophysical log suite for core hole 3 from 1,596.4 feet to 2,688.4 feet below land surface conducted at the ROMP 45.5 – Progress Energy well site in Polk County, Florida. The log was performed on June 3, 2010, using the 9074C (caliper/gamma-ray) and 8044C (multifunction) tools. The casing depth at time of logging was 1,650 feet below land surface. The log scale is 1 inch per 200 feet. Tracks 1 and 3 are linearly scaled and track 2 is in logarithmic scale. The logs were performed approximately two years after core hole 3 core drilling and testing ended.

Appendix F. Slug Test Data Acquisition Sheets for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

Slug Test No. 1

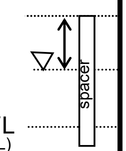
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	9/26/2005
Well:	CH 1 (water supply well)	Performed by:	Kraft/Dawson/Dewitt
Well Depth (ft bls)	90	Test Interval (ft - ft bls)	51-90
Test Casing Height (ft als)	3.8	Date of Last Development	9/23/2005
Test Casing Diameter (in)	4	Initial Static WL (ft btoc)	10.37
Test Casing Type	HW	Final Static WL (ft btoc)	10.34
Test Interval Length (ft)	39	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	15.75	-0.108
Transducer #2	NA	NA	annulus	NA	NA
Transducer #3	10 psi	7036	surface pressure		-0.021

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length	N/A	Spacer Placement (ft above static WL)	N/A
Spacer OD.	N/A		



Displaced WL
(maybe +/-static WL)

Comments: Did not use packer. Used HW casing as packer.

Test start (Nextel): 1500 Test end (Nextel): 1625

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	
Pre-test Sub. #1	5.638	5.648	5.125	
Pre-test Sub. #2	NA	NA	NA	
Expected Displacement (ft)	3.154	1.856	3.463	
Observed Displacement (ft)	3.154	1.81	3.446	
Slug Discrepancy (%)	0%	2.5	0.5	
Max Rebound above Static				
Post-test Sub. #1	5.591	5.125	5.099	
Residual Dev. from H_o (%)	0.8	4	1.5	
Data Logger File Name	LWPY_PT1A_50-90	LWPY_PT1B_50-90	LWPY_PT1C_50-90	
Specific Conductance (uS)	580	580	580	
K_h (feet/day)		3		
Lithology	unconsolidated limestone and phosphatic clayey sand			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 2

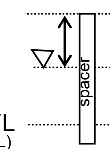
General Information

Site Name:	ROMP 45.5 - Progress Energy	Date:	9/27/2005
Well:	CH 1 (water supply well)	Performed by:	Kraft
Well Depth (ft bls)	90	Test Interval (ft - ft bls)	66-90
Test Casing Height (ft als)	3.95	Date of Last Development	9/23/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	11.6
Test Casing Type	NQ	Final Static WL (ft btoc)	11.71
Test Interval Length (ft)	24	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	17.3	0.05
Transducer #2	15 psi	6292	annulus	20	0.011
Transducer #3	20 psi	6868	surface pressure		-0.165

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.5
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.804	5.833	5.81	5.815
Pre-test Sub. #2	12.147	12.14	12.133	12.151
Expected Displacement (ft)	4.388	1.756	0.961	3.7
Observed Displacement (ft)	4.346	1.836	0.937	3.616
Slug Discrepancy (%)	1%	4.3	2.5	2.2
Max Rebound above Static				
Post-test Sub. #1	5.817	5.839	5.812	5.81
Residual Dev. from H_o (%)	0.02	0.01	0.03	0.1
Data Logger File Name	LWPY_PT2A_66-90	LWPY_PT2B_66-90	LWPY_PT2C_66-90	LWPY_PT2D_66-90
Specific Conductance (uS)	580	580	580	580
K_h (feet/day)			0.5	
Lithology	unconsolidated limestone and phosphatic clayey sand			
Other				

Comments

vent tube on transducer cable attached to transducer #3 is plugged; switched cable

new reading in air is 0.010.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 3

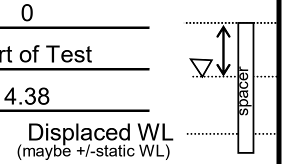
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	9/29/2005
Well:	CH 1 (water supply well)	Performed by:	Dawson/Dewitt
Well Depth (ft bls)	130	Test Interval (ft - ft bls)	95-130
Test Casing Height (ft als)	4.65	Date of Last Development	9/28/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	21.18
Test Casing Type	NQ	Final Static WL (ft btoc)	21.35
Test Interval Length (ft)	35	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	27	0.035
Transducer #2	15 psi	6292	annulus	20	0.011
Transducer #3	20 psi	6868	surface pressure		0.008

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.38
Spacer OD. (in)	1.68		



Comments: Test start (Nextel): 1025 Test end (Nextel): 1230

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.84	5.779	5.767	5.755
Pre-test Sub. #2	11.78	11.79	11.795	11.804
Expected Displacement (ft)	4.142	2.132	1.082	3.99
Observed Displacement (ft)	4.047	1.833	0.971	3.482
Slug Discrepancy (%)	2%	14.0	10.3	12.7
Max Rebound above Static				
Post-test Sub. #1	5.779	5.761	5.755	5.741
Residual Dev. from H_o (%)	1	0.3	0.2	0.2
Data Logger File Name	LWPY_PT3A_95-130	LWPY_PT3B_95-130	LWPY_PT2C_95-130	LWPY_PT2D_95-130
Specific Conductance (uS)	564	564	564	564
K_h (feet/day)			2	
Lithology	fossiliferous dolostone and limestone with dolosilt			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 5

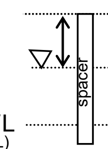
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	10/4/2005
Well:	CH 1 (water supply well)	Performed by:	Dawson/Dewitt
Well Depth (ft bls)	200	Test Interval (ft - ft bls)	175-200
Test Casing Height (ft als)	4.11	Date of Last Development	9/30/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	75.3
Test Casing Type	NQ	Final Static WL (ft btoc)	75.35
Test Interval Length (ft)	25	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	81	0.053
Transducer #2	15 psi	6292	annulus	14	0.011
Transducer #3	20 psi	6868	surface pressure		0.032

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.5
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.77	5.798	5.809	5.816
Pre-test Sub. #2	1.51	1.52	1.53	1.584
Expected Displacement (ft)	4.044	2.04	4.219	3.972
Observed Displacement (ft)	4.871	2.497	4.584	3.054
Slug Discrepancy (%)	20	22.0	8.7	23.0
Max Rebound above Static				
Post-test Sub. #1	5.798	5.803	5.813	5.819
Residual Dev. from H_o (%)	0.49	0.09	0.07	0.05
Data Logger File Name	LWPY_PT5A_175-200	LWPY_PT5B_175-200	LWPY_PT5C_175-200	LWPY_PT5D_175-200
Specific Conductance (uS)	562	562	562	562
K_h (feet/day)			99	
Lithology	limestone and weathered limestone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 6

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	11/2/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	190	Test Interval (ft - ft bls)	173-190
Test Casing Height (ft als)	3.65	Date of Last Development	11/1/2005
Test Casing Diameter (in)	4	Initial Static WL (ft btoc)	74.43
Test Casing Type	HW	Final Static WL (ft btoc)	74.41
Test Interval Length (ft)	17	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	81	0.044
Transducer #2			annulus		
Transducer #3	15 psi	6292	surface pressure		0.004

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		

spacer

Displaced WL
(maybe +/-static WL)

Comments: Did not use packer, used HW as isolator. This test is the first for CH 2 and overlaps PT 4.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	
Pre-test Sub. #1	5.73	5.621	5.822	
Pre-test Sub. #2	NA	NA	NA	
Expected Displacement (ft)	2.888	0.816	0.782	
Observed Displacement (ft)	2.89	0.853	0.799	
Slug Discrepancy (%)	0.07	4.5	2.2	
Max Rebound above Static				
Post-test Sub. #1	5.609	5.72	5.779	
Residual Dev. from H_o (%)	2.11	1.76	0.74	
Data Logger File Name	LWPY_PT6A_173-190	LWPY_PT6B_173-190	LWPY_PT6C_173-190	
Specific Conductance (uS)	NR	NR	NR	
K_h (feet/day)			0.2	
Lithology	weathered limestone			
Other				

Comments:

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 7

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	11/8/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	215	Test Interval (ft - ft bls)	195-215
Test Casing Height (ft als)	5.27	Date of Last Development	11/8/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	76.55
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	20	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	82.5	0.043
Transducer #2	10 psi	7036	annulus		0.005
Transducer #3	15 psi	6292	surface pressure		0.005

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.25
Spacer OD. (in)	1.68		

spacer

Displaced WL
(maybe +/-static WL)

Comments:

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.928	5.947	5.959	5.965
Pre-test Sub. #2	7.092	7.125	7.126	7.11
Expected Displacement (ft)	4.027	1.991	0.961	3.991
Observed Displacement (ft)	3.703	1.652	0.761	4.314
Slug Discrepancy (%)	8	17.0	20.8	8.1
Max Rebound above Static				
Post-test Sub. #1	5.947	5.956	5.965	5.968
Residual Dev. from H_o (%)	0.32	0.15	0.1	0.05
Data Logger File Name	LWPY_PT7A_195-215	LWPY_PT7B_195-215	LWPY_PT7C_195-215	LWPY_PT7D_195-215
Specific Conductance (uS)	567	567	567	567
K_h (feet/day)		110		
Lithology	limestone and dolostone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 8

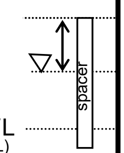
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	11/16/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	245	Test Interval (ft - ft bls)	218-245
Test Casing Height (ft als)	6.19	Date of Last Development	11/15/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	77.95
Test Casing Type	NQ	Final Static WL (ft btoc)	77.64
Test Interval Length (ft)	27	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	10 psi	7036	test casing	83.7	0.011
Transducer #2	20 psi	6477	annulus		0.031
Transducer #3	15 psi	6292	surface pressure		0.006

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.45
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	6.095	6.095	6.103	6.108
Pre-test Sub. #2	6.876	6.879	6.886	6.886
Expected Displacement (ft)	1.95	3.962	2.391	3.969
Observed Displacement (ft)	1.408	4.254	1.946	3.225
Slug Discrepancy (%)	28	7.0	18.6	18.7
Max Rebound above Static				
Post-test Sub. #1	6.095	6.105	6.108	6.109
Residual Dev. from H_o (%)	0	0.16	0.08	0.02
Data Logger File Name	LWPY_PT8A_218-245	LWPY_PT8B_218-245	LWPY_PT8C_218-245	LWPY_PT8D_218-245
Specific Conductance (uS)	515	515	515	515
K_h (feet/day)	90			
Lithology	limestone with quartz and calcareous sand			
Other				

Comments: Interval was sufficiently cleaned, however still having high discrepancies.
Formation may not be conducive to testing.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 9

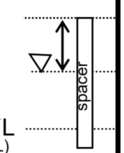
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	11/29/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	265	Test Interval (ft - ft bls)	247-265
Test Casing Height (ft als)	4.23	Date of Last Development	11/28/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	75.11
Test Casing Type	NQ	Final Static WL (ft btoc)	75.28
Test Interval Length (ft)	18	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	7182	test casing	80	0.029
Transducer #2	20 psi	6477	annulus	80	0.04
Transducer #3			surface pressure		

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Drop slug			
Rising/Falling head	Falling			
Pre-test Sub. #1	5.097			
Pre-test Sub. #2	6.571			
Expected Displacement (ft)	1.5			
Observed Displacement (ft)	1.283			
Slug Discrepancy (%)	14.5			
Max Rebound above Static				
Post-test Sub. #1	4.8			
Residual Dev. from H_o (%)	5.8			
Data Logger File Name	LWPY_PT9A_247-265			
Specific Conductance (uS)	NR			
K_h (feet/day)	0.005			
Lithology	stiff clay			
Other				
Comments	some spill out occurred through side valve			

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 10

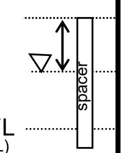
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/1/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	315	Test Interval (ft - ft bls)	289-315
Test Casing Height (ft als)	5.27	Date of Last Development	12/1/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	94.93
Test Casing Type	NQ	Final Static WL (ft btoc)	94.91
Test Interval Length (ft)	26	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	101	0.023
Transducer #2	10 psi	7036	annulus	80	0.019
Transducer #3	20 psi	7182	surface pressure		0.023

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.13
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	6.324	6.334	6.337	6.337
Pre-test Sub. #2	6.281	6.447	6.474	6.5
Expected Displacement (ft)	3.997	2.054	0.987	3.989
Observed Displacement (ft)	3.692	1.997	0.831	3.861
Slug Discrepancy (%)	7.6	2.8	15.8	3.2
Max Rebound above Static				
Post-test Sub. #1	6.334	6.337	6.337	6.337
Residual Dev. from H_o (%)	0.16	0.05	0	0
Data Logger File Name	LWPY_PT10A_289-315	LWPY_PT10B_289-315	LWPY_PT10C_289-315	LWPY_PT10D_289-315
Specific Conductance (uS)	522	52	522	522
K_h (feet/day)		2		
Lithology	limestone - soft grainstone (Suwannee)			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 11

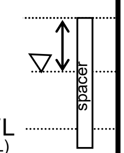
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/6/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	375	Test Interval (ft - ft bls)	340-375
Test Casing Height (ft als)	5.47	Date of Last Development	12/6/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	95.01
Test Casing Type	NQ	Final Static WL (ft btoc)	95.02
Test Interval Length (ft)	35	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	101	0.041
Transducer #2	10 psi	7036	annulus	80	0.026
Transducer #3	20 psi	7182	surface pressure		0.024

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.21
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	6.288	6.304	6.307	6.31
Pre-test Sub. #2	2.232	2.249	2.269	2.281
Expected Displacement (ft)	5.011	3.044	1.991	4.982
Observed Displacement (ft)	4.579	2.793	1.951	4.211
Slug Discrepancy (%)	8.6	8.2	2.0	15.5
Max Rebound above Static				
Post-test Sub. #1	6.304	6.307	6.31	NM
Residual Dev. from H_o (%)	0.16	0.05	0.05	
Data Logger File Name	LWPY_PT11A_340-375	LWPY_PT11B_340-375	LWPY_PT11C_340-375	LWPY_PT11D_340-375
Specific Conductance (uS)	561	561	561	561
K_h (feet/day)			36	
Lithology	soft fossiliferous limestone - Suwannee			
Other				
Comments	spacer submerged ~0.3 ft			

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 12

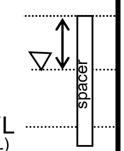
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/13/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	415	Test Interval (ft - ft bls)	396-415
Test Casing Height (ft als)	4.4	Date of Last Development	12/13/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	93.59
Test Casing Type	NQ	Final Static WL (ft btoc)	93.6
Test Interval Length (ft)	19	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	101	0.036
Transducer #2	10 psi	7036	annulus	100	0.021
Transducer #3	20 psi	7182	surface pressure		0.027

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	2.79
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	7.74	7.772	7.754	7.754
Pre-test Sub. #2	9.579	9.587	9.584	9.583
Expected Displacement (ft)	4.916	2.947	0.978	4.933
Observed Displacement (ft)	4.816	2.742	0.972	4.888
Slug Discrepancy (%)	2	7.0	0.6	0.9
Max Rebound above Static				
Post-test Sub. #1	7.757	7.754	7.754	7.755
Residual Dev. from H_o (%)	0.2	0.2	0	0.01
Data Logger File Name	LWPY_PT12A_396-415	LWPY_PT12B_396-415	LWPY_PT12C_396-415	LWPY_PT12D_396-415
Specific Conductance (uS)	573	573	573	573
K_h (feet/day)			0.9	
Lithology	Limestone - grainstone (Ocala)			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 13

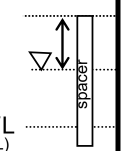
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/16/2005
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	435	Test Interval (ft - ft bls)	415-435
Test Casing Height (ft als)	4.88	Date of Last Development	12/15/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	94.08
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	20	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	101	0.022
Transducer #2	10 psi	7036	annulus	100	0.019
Transducer #3	20 psi	7182	surface pressure		0.017

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	3.28
Spacer OD. (in)	1.68		



Comments: Test start (pc): 1211

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	
Pre-test Sub. #1	7.154	7.154	7.154	
Pre-test Sub. #2	9.488	9.501	9.511	
Expected Displacement (ft)	3.84	1.897	3.846	
Observed Displacement (ft)	3.784	1.834	3.847	
Slug Discrepancy (%)	1.5	3.3	0.0	
Max Rebound above Static				
Post-test Sub. #1	7.154	7.154	7.149	
Residual Dev. from H_o (%)	0	0	0.07	
Data Logger File Name	LWPY_PT13A_415-435	LWPY_PT13B_415-435	LWPY_PT13C_415-435	
Specific Conductance (uS)	544	544	544	
K_h (feet/day)	0.1			
Lithology	Limestone - Ocala			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 14

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/21/2005
Well:	CH 2	Performed by:	Dewiit/Mallams
Well Depth (ft bls)	475	Test Interval (ft - ft bls)	440-475
Test Casing Height (ft als)	5.88	Date of Last Development	12/20/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	95.36
Test Casing Type	NQ	Final Static WL (ft btoc)	95.26
Test Interval Length (ft)	35	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	101	0.014
Transducer #2	10 psi	7036	annulus	100	0.015
Transducer #3	20 psi	7182	surface pressure		-0.003

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.56
Spacer OD. (in)	1.68		

Displaced WL
(maybe +/-static WL)

spacer

Comments: Test casing height was measured with top compression fitting in place, actual casing height is 5.75 ft a

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	6.139	6.2	6.131	6.191
Pre-test Sub. #2	9.234	9.25	9.252	9.273
Expected Displacement (ft)	4.96	4.842*	1.963	4.988
Observed Displacement (ft)		4.828	1.925	4.972
Slug Discrepancy (%)		0.2	1.94	0.32
Max Rebound above Static				
Post-test Sub. #1		6.125	6.089	6.04
Residual Dev. from H_o (%)		1.21	0.69	2.44
Data Logger File Name	LWPY_PT14A_440-475	LWPY_PT14B_440-475	LWPY_PT14C_440-475	LWPY_PT14D_440-475
Specific Conductance (uS)	542	542	542	542
K_h (feet/day)			0.08	
Lithology	Limestone (grainstone) - Ocala			
Other				

Comments: Test A was started prematurely and aborted.
* value obtained from ch 3 before test initiation; value in data set not recorded properly.
Test D abandoned on its own while water level was half recovered.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 15

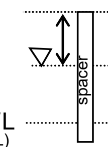
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/30/2005
Well:	CH 2	Performed by:	Kraft
Well Depth (ft bls)	515	Test Interval (ft - ft bls)	495-515
Test Casing Height (ft als)	4.38	Date of Last Development	12/29/2005
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	91.45
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	20	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	98.3	-0.048
Transducer #2	10 psi	7036	annulus	100	0.011
Transducer #3	20 psi	7182	surface pressure		0.002

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	3.4
Spacer OD. (in)	1.68	Displaced WL (maybe +/-static WL)	



Comments: HW wlater level is ~13 ft higher than previous packer test; may be leaking.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic		
Rising/Falling head	Rising	Rising		
Pre-test Sub. #1	7.008	7.015		
Pre-test Sub. #2	23.26	23.421		
Expected Displacement (ft)	4.825	1.928		
Observed Displacement (ft)	4.801	1.877		
Slug Discrepancy (%)	0.5	2.7		
Max Rebound above Static				
Post-test Sub. #1	7.015	7.01		
Residual Dev. from H_o (%)	0.1	0.7		
Data Logger File Name	LWPY_PT15A_495-515	LWPY_PT15B_495-515		
Specific Conductance (uS)	509	509		
K_h (feet/day)		0.1		
Lithology	Limestone - wackestone to packstone with abundant *Lepidocyclina* (Ocala)			
Other				

Comments: Test B first few numbers appear to be noisy

channel 1 misnamed as 7182 in bin files

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 16

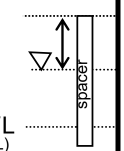
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	1/6/2006
Well:	CH 2	Performed by:	Dawson/Dewitt
Well Depth (ft bls)	555	Test Interval (ft - ft bls)	520-555
Test Casing Height (ft als)	4.42	Date of Last Development	1/5/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	94.08
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	35	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	100	-0.047
Transducer #2	10 psi	7036	annulus	100	0.012
Transducer #3	20 psi	7182	surface pressure		-0.006

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.28
Spacer OD. (in)	1.68		



Displaced WL
(maybe +/-static WL)

Comments: channel 1 on bin file named 7182 but parameters are for transducer 6477.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic		
Rising/Falling head	Rising	Rising		
Pre-test Sub. #1	5.98	5.96		
Pre-test Sub. #2	22.28	22.35		
Expected Displacement (ft)	4.063	1.974		
Observed Displacement (ft)	3.91	1.911		
Slug Discrepancy (%)	3.77	3.2		
Max Rebound above Static				
Post-test Sub. #1	5.96	NR		
Residual Dev. from H_o (%)	0.33			
Data Logger File Name	LWPY_PT16A_520-555	LWPY_PT16B_520-555		
Specific Conductance (uS)	510	510		
K_h (feet/day)		0.09		
Lithology	Limestone - grainstone and packstone with abundant *Lepidocyclina* (Ocala)			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 17

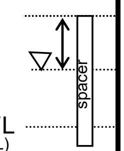
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	1/19/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	595	Test Interval (ft - ft bls)	565-595
Test Casing Height (ft als)	4.5	Date of Last Development	1/18/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	96.49
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	30	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	102	0
Transducer #2	10 psi	7036	annulus	100	0.012
Transducer #3	20 psi	7182	surface pressure		-0.005

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.69
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.668	5.645	5.626	5.591
Pre-test Sub. #2	16.619	16.73	16.795	16.84
Expected Displacement (ft)	4.035	2.014	3.82	2.02
Observed Displacement (ft)	4.179	1.902	3.883	1.933
Slug Discrepancy (%)	3.57	5.6	1.7	4.3
Max Rebound above Static				
Post-test Sub. #1	5.645	5.626	5.591	5.562
Residual Dev. from H_o (%)	0.41	0.34	0.62	0.52
Data Logger File Name	LWPY_PT17A_565-595	LWPY_PT17B_565-595	LWPY_PT17C_565-595	LWPY_PT17D_565-595
Specific Conductance (uS)	460	460	460	460
K_h (feet/day)				0.2
Lithology	Limestone - grainstone (Ocala)			
Other				
Comments	First few values in Test D are noisy			

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 18

TEST INVALID

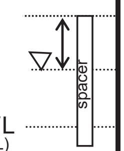
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	2/10/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	665	Test Interval (ft - ft bls)	625-665
Test Casing Height (ft als)	6	Date of Last Development	2/10/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	98.81
Test Casing Type	NQ	Final Static WL (ft btoc)	98.82
Test Interval Length (ft)	40	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	104.6	-0.003
Transducer #2	10 psi	7036	annulus	105	0.014
Transducer #3	20 psi	7182	surface pressure		-0.006

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.41
Spacer OD. (in)	1.68	Displaced WL (maybe +/-static WL)	



Comments: TEST INVALID - packer leaking, HW movement

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.902	5.921	5.93	5.922
Pre-test Sub. #2	10.078	10.102	10.109	10.112
Expected Displacement (ft)	4.032	1.994	1.015	3.989
Observed Displacement (ft)	3.881	1.787	0.974	3.909
Slug Discrepancy (%)	3.75	10.4	4.0	2.0
Max Rebound above Static				
Post-test Sub. #1	5.915	5.93	9.922	5.925
Residual Dev. from H_o (%)	0.22	0.152	0.13	
Data Logger File Name	LWPY_PT18A_625-665	LWPY_PT18B_625-665	LWPY_PT18C_625-665	LWPY_PT18D_625-665
Specific Conductance (uS)	325	325	325	325
K_h (feet/day)				
Lithology	Limestone - grainstone (Avon Park)			
Other				

Comments: Need to re-test

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 19

General Information

Site Name: ROMP 45.5 – Progress Energy | Date: 2/22/2006

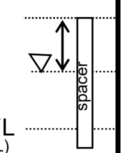
Well: CH 2 | Performed by: Dawson

Well Depth (ft bls)	665.6	Test Interval (ft - ft bls)	605-665.6
Test Casing Height (ft als)	4.91	Date of Last Development	2/22/2006
Test Casing Diameter (in)	4	Initial Static WL (ft btoc)	99.81
Test Casing Type	HW	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	60.6	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	7182	test casing	105	0.027
Transducer #2	10 psi	7036	annulus	4	0.028
Transducer #3	20 psi	6477	surface pressure		0.038

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		



Displaced WL
(maybe +/-static WL)

Comments: This test is a re-test of PT 17. Using HW instead of a packer even though interval is large due to no working packer available. Set transducer 2 in permanent casing to monitor HW for leakage.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.384	5.388	5.395	5.395
Pre-test Sub. #2	2.994	3	2.996	2.993
Expected Displacement (ft)	4.093	2.034	1.052	3.984
Observed Displacement (ft)	3.936	2.099	0.985	3.836
Slug Discrepancy (%)	3.84	3.2	6.4	3.71
Max Rebound above Static				
Post-test Sub. #1	5.37	5.389	5.395	5.403
Residual Dev. from H_o (%)	0.26	0.02	0	0.15
Data Logger File Name	LWPY_PT19A_605-665	LWPY_PT19B_605-665	LWPY_PT19C_605-665	LWPY_PT19D_605-665
Specific Conductance (uS)	NR	NR	NR	NR
K_h (feet/day)			5	
Lithology	Limestone - grainstone (Avon Park)			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 20

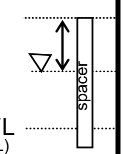
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	2/24/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	705	Test Interval (ft - ft bls)	676-705
Test Casing Height (ft als)	4.5	Date of Last Development	2/24/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	99.5
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	29	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	104.6	0.047
Transducer #2	10 psi	7036	annulus	105	0.033
Transducer #3	20 psi	7182	surface pressure		0.024

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	5.1
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	5.24	5.22	5.22	5.217
Pre-test Sub. #2	8.246	8.23	8.236	8.236
Expected Displacement (ft)	4.095	2.008	1.01	3.995
Observed Displacement (ft)	3.932	1.985	0.951	4.365
Slug Discrepancy (%)	3.98	1.15	5.84	9.26
Max Rebound above Static				
Post-test Sub. #1	5.22	5.22	5.217	5.217
Residual Dev. from H_o (%)	0.38	0	0.06	0.00
Data Logger File Name	LWPY_PT20A_676-705	LWPY_PT20B_676-705	LWPY_PT20C_676-705	LWPY_PT20D_676-705
Specific Conductance (uS)	343	343	343	343
K_h (feet/day)			1	
Lithology	Limestone - grainstone (Avon Park)			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 21

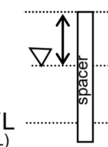
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	3/2/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	755	Test Interval (ft - ft bls)	725-755
Test Casing Height (ft als)	5.58	Date of Last Development	3/1/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	99.82
Test Casing Type	NQ	Final Static WL (ft btoc)	100.23
Test Interval Length (ft)	30	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	20 psi	6477	test casing	104.6	0.045
Transducer #2	10 psi	7036	annulus	105	0.019
Transducer #3	20 psi	7182	surface pressure		0.023

Data Logger	Hermit 3000 (Shemp)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	5.42
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	4.723	4.685	4.647	4.626
Pre-test Sub. #2	8.84	8.814	8.772	8.752
Expected Displacement (ft)	2.071	1.107	3.004	1.528
Observed Displacement (ft)	2.332	0.951	2.602	1.988
Slug Discrepancy (%)	12.6	14.09	13.38	30.10
Max Rebound above Static				
Post-test Sub. #1	4.7	4.671	4.626	4.6
Residual Dev. from H_o (%)	0.49	0.3	0.45	0.56
Data Logger File Name	LWPY_PT21A_725-755	LWPY_PT21B_725-755	LWPY_PT21C_725-755	LWPY_PT21D_725-755
Specific Conductance (uS)	397	397	397	397
K_h (feet/day)		200		
Lithology	Dolostone, grainstone and clayey calcareous sand			
Other				
Comments	There is a 12 ft void from 730 ft to 742 ft bls within this test interval.			

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 22

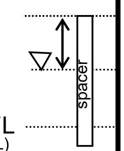
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	3/17/2006
Well:	CH 2	Performed by:	Dawson/Dewitt
Well Depth (ft bls)	810	Test Interval (ft - ft bls)	790-810
Test Casing Height (ft als)	5.61	Date of Last Development	3/16/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	104.14
Test Casing Type	NQ	Final Static WL (ft btoc)	104.53
Test Interval Length (ft)	20	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	20 psi	6477	test casing	108.6	NR
Transducer #2 (Curley)	10 psi	7036	annulus	105	0.028
Transducer #3 (Curley)	20 psi	7182	surface pressure		0.017

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	5.74
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	4.311	4.306	4.225	4.159
Pre-test Sub. #2	4.426	4.426	4.356	4.289
Expected Displacement (ft)	1.353	0.561	1.004	0.510
Observed Displacement (ft)	1.428	0.928	1.511	0.727
Slug Discrepancy (%)	5.5	65.4	50.5	42.6
Max Rebound above Static				
Post-test Sub. #1	4.306	4.225	4.159	4.144
Residual Dev. from H_o (%)	0.12	1.88	1.56	0.36
Data Logger File Name	LWPY_PT22A_790-810	LWPY_PT22B_790-810	LWPY_PT22C_790-810	LWPY_PT22D_790-810
Specific Conductance (uS)	691	691	691	691
K_h (feet/day)	230			
Lithology	Fractured dolostone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 23

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	3/24/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	830	Test Interval (ft - ft bls)	810-830
Test Casing Height (ft als)	5.93	Date of Last Development	3/24/2006
Test Casing Diameter (in)	3	Initial Static WL (ft btoc)	106.51
Test Casing Type	NW	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	20	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	20 psi	7182	test casing	109	0.015
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6292	surface pressure		0.012

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		

spacer

Displaced WL
(maybe +/-static WL)

Comments: testing on the NW casing

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.483	2.463	2.464	2.446
Pre-test #3	NR	0.546	1.011	0.514
Expected Displacement (ft)	1.144	0.557	1.04	0.532
Observed Displacement (ft)	1.388	0.587	1.245	0.71
Slug Discrepancy (%)	21.3	5.4	19.7	33.5
Max Rebound above Static				
Post-test Sub. #1	2.463	2.464	2.452	2.446
Residual Dev. from H_o (%)	0.81	0.041	0.49	0
Data Logger File Name	LWPY_PT23A_810-830	LWPY_PT23B_810-830	LWPY_PT23C_810-830	LWPY_PT23D_810-830
Specific Conductance (uS)	702	702	702	702
K_h (feet/day)		490		
Lithology	Fractured dolostone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 24

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	4/4/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	870	Test Interval (ft - ft bls)	850-880
Test Casing Height (ft als)	5.75	Date of Last Development	4/4/2006
Test Casing Diameter (in)	3	Initial Static WL (ft btoc)	108.81
Test Casing Type	NW	Final Static WL (ft btoc)	109.04
Test Interval Length (ft)	30	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	20 psi	7182	test casing	111.5	0.023
Transducer #2			annulus		
Transducer #4 (Curley)	20 psi	6477	surface pressure		0.012

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		

Displaced WL (maybe +/-static WL)

spacer

Comments: testing on the NW casing

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.638	2.609	2.588	2.579
Pre-test #4	1.031	0.627	0.337	0.569
Expected Displacement (ft)	1.035	0.613	0.309	0.570
Observed Displacement (ft)	0.747	0.604	0.475	0.753
Slug Discrepancy (%)	27.8	1.5	53.7	32
Max Rebound above Static				
Post-test Sub. #1	2.609	2.588	2.579	2.570
Residual Dev. from H_o (%)	1	0.8	0.35	0.35
Data Logger File Name	LWPY_PT24A_850-880	LWPY_PT24B_850-880	LWPY_PT24C_850-880	LWPY_PT24D_850-880
Specific Conductance (uS)	777	777	777	777
K_h (feet/day)		340		
Lithology	Fractured dolostone			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 25

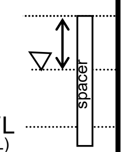
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	4/11/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	940	Test Interval (ft - ft bls)	915-940
Test Casing Height (ft als)	4.68	Date of Last Development	4/11/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	110.65
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	25	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	20 psi	7182	test casing	113.5	0.008
Transducer #2			annulus		
Transducer #3 (Curley)	20 psi	6477	surface pressure		0.038

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	7.35
Spacer OD. (in)	1.68		
Comments:			



Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.378	2.386	2.402	2.442
Pre-test #3	1.010	0.565	0.545	1.133
Expected Displacement (ft)	1.006	0.573	0.544	1.148
Observed Displacement (ft)	1.079	0.801	0.618	1.909
Slug Discrepancy (%)	7.3	39.8	13.6	66.2
Max Rebound above Static				
Post-test Sub. #1	2.386	2.384	2.430	NR
Residual Dev. from H_o (%)	0.34	0.08	1.17	
Data Logger File Name	LWPY_PT25A_915-940	LWPY_PT25B_915-940	LWPY_PT25C_915-940	LWPY_PT25D_915-940
Specific Conductance (uS)	2,540	2,540	2,540	2,540
K_h (feet/day)	17			
Lithology	Dolostone/dolomitic limestone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 26

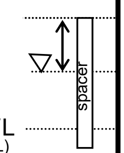
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	4/14/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	1,000	Test Interval (ft - ft bls)	975-1,000
Test Casing Height (ft als)	4.72	Date of Last Development	4/14/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	111.95
Test Casing Type	NQ	Final Static WL (ft btoc)	112.3
Test Interval Length (ft)	25	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	20 psi	6477	test casing	114.5	0.036
Transducer #2			annulus		
Transducer #3 (Curley)	20 psi	7182	surface pressure		0.014

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	7.65
Spacer OD. (in)	1.68		



Displaced WL
(maybe +/-static WL)

Comments:

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.921	2.731	2.675	2.642
Pre-test #3	0.961	0.534	0.550	1.027
Expected Displacement (ft)	0.861	0.538	0.552	1.021
Observed Displacement (ft)	1.071	0.606	0.442	1.355
Slug Discrepancy (%)	10.41	12.6	19.93	32.7
Max Rebound above Static				
Post-test Sub. #1	2.828	2.714	2.661	2.635
Residual Dev. from H_o (%)	3.2	0.62	0.52	0.26
Data Logger File Name	LWPY_26A_975-1000	LWPY_26B_975-1000	LWPY_26C_975-1000	LWPY_26D_975-1000
Specific Conductance (uS)	2,640	2,640	2,640	2,640
K_h (feet/day)	22			
Lithology	Dolostone/dolomitic limestone			
Other				

Comments Packer combination line may have been leaking during test.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 27

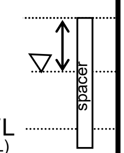
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	4/18/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	1,040	Test Interval (ft - ft bls)	1,016-1,040
Test Casing Height (ft als)	4.75	Date of Last Development	4/18/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	113
Test Casing Type	NQ	Final Static WL (ft btoc)	113.7
Test Interval Length (ft)	24	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	15 psi	6325	test casing	115.5	0.02
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6641	surface pressure		0.024

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	7.7
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.721	2.698	2.689	2.663
Pre-test #3	1.038	0.491	0.525	1.020
Expected Displacement (ft)	1.062	0.491	0.606	1.098
Observed Displacement (ft)	0.603	0.612	0.790	1.395
Slug Discrepancy (%)	43	25	30	27
Max Rebound above Static				
Post-test Sub. #1	2.705	2.692	2.668	2.657
Residual Dev. from H_o (%)	0.59	0.22	0.78	0.23
Data Logger File Name	LWPY_27A_1016-1040	LWPY_27B_1016-1040	LWPY_27C_1016-1040	LWPY_27D_1016-1040
Specific Conductance (uS)	2,780	2,780	2,780	2,780
K_h (feet/day)				
Lithology	Dolostone/dolomitic limestone			
Other				

Comments: Used linear schedule for channel 3 on Test B but it did not capture data fast enough; used pre-test value from channel 3.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 27 continued

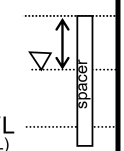
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	4/18/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	1,040	Test Interval (ft - ft bls)	1,016-1,040
Test Casing Height (ft als)	4.75	Date of Last Development	4/18/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	113
Test Casing Type	NQ	Final Static WL (ft btoc)	113.7
Test Interval Length (ft)	24	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	15 psi	6325	test casing	115.5	0.02
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6641	surface pressure		0.024

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	7.7
Spacer OD. (in)	1.68		
Comments:			



Displaced WL
(maybe +/-static WL)

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test E	Test F	Test G	Test H
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	2.403	2.383	2.369	2.362
Pre-test #3	1.360	0.613	1.074	1.056
Expected Displacement (ft)	1.434	0.579	1.164	1.160
Observed Displacement (ft)	0.727	0.707	1.061	1.142
Slug Discrepancy (%)	49	22	8.8	1.6
Max Rebound above Static				
Post-test Sub. #1	2.383	2.369	2.365	2.358
Residual Dev. from H_o (%)	0.83	0.59	0.17	0.17
Data Logger File Name	LWPY_27E_1016-1040	LWPY_27F_1016-1040	LWPY_27G_1016-1040	LWPY_27H_1016-1040
Specific Conductance (uS)	2,780	2,780	2,780	2,780
K_h (feet/day)				21
Lithology	Dolostone/dolomitic limestone			
Other				

Comments: Used linear schedule for channel 3 on Test B but it did not capture data fast enough; used pre-test value from channel 3.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 29

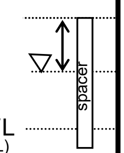
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	5/8/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	1,140	Test Interval (ft - ft bls)	1,111-1,140
Test Casing Height (ft als)	5.4	Date of Last Development	5/5/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	119.27
Test Casing Type	NQ	Final Static WL (ft btoc)	119.82
Test Interval Length (ft)	29	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	15 psi	6325	test casing	123.5	0.027
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6641	surface pressure		0.023

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	5.97
Spacer OD. (in)	1.68		



Displaced WL
(maybe +/-static WL)

Comments: New combination line installed

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	4.230	4.221	4.210	4.208
Pre-test #3	1.504	0.538	0.594	1.499
Expected Displacement (ft)	1.509	0.463	0.642	1.557
Observed Displacement (ft)	2.057	0.456	0.612	1.59
Slug Discrepancy (%)	36.3	1.51	4.7	2.12
Max Rebound above Static				
Post-test Sub. #1	4.221	4.210	4.206	4.195
Residual Dev. from H_o (%)	0.21	0.26	0.10	0.31
Data Logger File Name	LWPY_29A_1111-1140	LWPY_29B_1111-1140	LWPY_29C_1111-1140	LWPY_29D_1111-1140
Specific Conductance (uS)	2,780	2,780	2,780	2,780
K_h (feet/day)				15
Lithology	Dolostone			
Other				

Comments: Ignored first value on Test B.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 31

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	5/15/2006
Well:	CH 2	Performed by:	Dawson
Well Depth (ft bls)	1,240	Test Interval (ft - ft bls)	1,218-1,240
Test Casing Height (ft als)	6.31	Date of Last Development	5/15/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	120.84
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	22	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	15 psi	6325	test casing	124.5	0.019
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6641	surface pressure		0.025

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	6.54
Spacer OD. (in)	1.68		
Comments:			

Displaced WL
(maybe +/-static WL)

spacer

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	3.914	3.783	3.779	3.777
Pre-test #3	2.025	1.027	0.547	2.048
Expected Displacement (ft)	2.01	1.062	0.577	2.072
Observed Displacement (ft)	2.043	1.456	0.560	2.456
Slug Discrepancy (%)	2	37	3	19
Max Rebound above Static				
Post-test Sub. #1	3.790	3.779	3.780	3.764
Residual Dev. from H_o (%)	3.2	0.1	0.03	0.34
Data Logger File Name	LWPY_31A_1218-1240	LWPY_31B_1218-1240	LWPY_31C_1218-1240	LWPY_31D_1218-1240
Specific Conductance (uS)	2,920	2,920	2,920	2,920
K_h (feet/day)			23	
Lithology	Dolostone			
Other				
Comments				

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 32

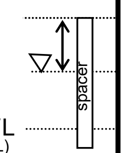
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	5/22/2006
Well:	CH 2	Performed by:	Dawson/Beck
Well Depth (ft bls)	1,300	Test Interval (ft - ft bls)	1,270-1,300
Test Casing Height (ft als)	4.86	Date of Last Development	5/18/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	119.27
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	30	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1 (Shemp)	15 psi	6325	test casing	123.5	0.02
Transducer #2			annulus		
Transducer #3 (Curley)	15 psi	6641	surface pressure		0.026

Data Logger	Hermit 3000 (Shemp & Curley)	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	10.2	Spacer Placement (ft above static WL)	4.23
Spacer OD. (in)	1.68		



Displaced WL
(maybe +/-static WL)

Comments:

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Rising	Rising	Rising	Rising
Pre-test Sub. #1	4.230	4.203	4.227	4.234
Pre-test #3	1.574	0.592	1.043	0.584
Expected Displacement (ft)	1.641	0.665	1.123	0.674
Observed Displacement (ft)	1.904	0.655	1.168	0.885
Slug Discrepancy (%)	16	1.5	4	31
Max Rebound above Static				
Post-test Sub. #1	4.184	4.224	4.234	4.260
Residual Dev. from H_o (%)	1.1	0.5	0.20	0.61
Data Logger File Name	LWPY_32A_1270-1300	LWPY_32B_1270-1300	LWPY_32C_1270-1300	LWPY_32D_1270-1300
Specific Conductance (uS)	3,430	3,430	3,430	3,430
K_h (feet/day)		8		
Lithology	Dolostone and limestone			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 33

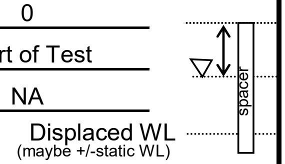
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	6/21/2006
Well:	CH 2	Performed by:	Dawson/Beck/Dewitt
Well Depth (ft bls)	1,480	Test Interval (ft - ft bls)	1,300-1,480
Test Casing Height (ft als)	3.9	Date of Last Development	6/20/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	109.73
Test Casing Type	NQ	Final Static WL (ft btoc)	109.32
Test Interval Length (ft)	180	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	100 psi	6232	test casing	115	0.01
Transducer #2			annulus		
Transducer #3			surface pressure		

Data Logger	Hermit 3000 Shemp	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		



Comments: Due to the tight nature of the MCU II, used a 180 ft interval and large drop slug.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Drop	Drop		
Rising/Falling head	Falling	Falling		
Pre-test Sub. #1	5.779	6.212		
Pre-test #3				
Expected Displacement (ft)	51.6	23.47		
Observed Displacement (ft)	46.017	20.838		
Slug Discrepancy (%)	10.8	11.2		
Max Rebound above Static				
Post-test Sub. #1	6.212	NR		
Residual Dev. from H_o (%)	7.5	NR		
Data Logger File Name	LWPY_33A_1300-1480	LWPY_33B_1300-1480		
Specific Conductance (uS)	NR	NR		
K_h (feet/day)		0.01		
Lithology	Dolostone and evaporites			
Other				

Comments: Some water splashed out of casing while pouring slug for Test A. Water level may not have been static because it seemed it was still dropping very slowly even though background data collection showed a plateau.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 34

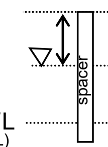
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	6/23/2006
Well:	CH 2	Performed by:	Dawson/Young
Well Depth (ft bls)	1,480	Test Interval (ft - ft bls)	1,425-1,480
Test Casing Height (ft als)	3.9	Date of Last Development	6/20/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	113.53
Test Casing Type	NQ	Final Static WL (ft btoc)	113.35
Test Interval Length (ft)	55	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	100 psi	6232	test casing	115	0.01
Transducer #2			annulus		
Transducer #3			surface pressure		

Data Logger	Hermit 3000 Shemp	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		



Displaced WL
(maybe +/-static WL)

Comments: On 06/22/2006 water level still dropping, taped at 113.39 ft bls. On 06/23/2006 water level measured 113.73 ft bls and appeared stable despite a slight fluctuation.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Drop			
Rising/Falling head	Falling			
Pre-test Sub. #1	1.814			
Pre-test #3				
Expected Displacement (ft)	11.7			
Observed Displacement (ft)	10.461			
Slug Discrepancy (%)	10.6			
Max Rebound above Static				
Post-test Sub. #1	2.038			
Residual Dev. from H_o (%)	12.3			
Data Logger File Name	LWPY_34A_1425-1480			
Specific Conductance (uS)	6,680			
K_h (feet/day)	0.01			
Lithology	Dolostone and evaporites			
Other				

Comments: Water level not completely back down to pre-test level, however curve shows it steady. Rain and decrease in pumping may be effecting it.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 36

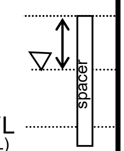
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	7/27/2006
Well:	CH 2	Performed by:	Dawson/Beck
Well Depth (ft bls)	1,749	Test Interval (ft - ft bls)	1,698-1,749
Test Casing Height (ft als)	5.36	Date of Last Development	7/26/2006
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	145.8
Test Casing Type	NQ	Final Static WL (ft btoc)	146.38
Test Interval Length (ft)	51	Slot Size & Filter Pack Type	NA

Set-up Information

	Type	Serial No.	Purpose & Depth (ft)		Reading in Air (ft)
Transducer #1	100 psi	6232	test casing	150	0.18
Transducer #2			annulus		
Transducer #3 (Test B & C only)	15	9772	surface pressure		-0.036

Data Logger	Hermit 3000 Shemp	Pressure Display Mode	Surface
Logging schedule	Log	Level Reference	0
Time Interval	1 min	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		



Displaced WL
(maybe +/-static WL)

Comments: Cannot monitor annulus due to too little annulus between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

	Test A	Test B	Test C	Test D
Initiation method	Drop	Pneumatic	Pneumatic	
Rising/Falling head	Falling	Rising	Rising	
Pre-test Sub. #1	4.838	5.301	5.254	
Pre-test #3	NA	0.775	1.122	
Expected Displacement (ft)	23.47	0.763	1.098	
Observed Displacement (ft)	19.316	0.746	0.933	
Slug Discrepancy (%)	17.7	2.2	15	
Max Rebound above Static				
Post-test Sub. #1	5.256	5.254	5.268	
Residual Dev. from H_o (%)	8.6	0.9	0.27	
Data Logger File Name	LWPY_36A_1698-1749	LWPY_36B_1698-1749	LWPY_36C_1698-1749	
Specific Conductance (uS)	42,300	42,300	42,300	
K_h (feet/day)		0.1		
Lithology	Interbedded limestone (packstone) and evaporitic dolostone			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 38

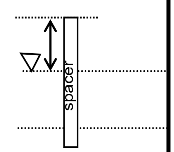
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	10/9/2007
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson/L. Soto
Well Depth (ft bls)	1,700	Test Interval (ft - ft bls)	1,650-1,700
Test Casing Height (ft als)	0.06	Date of Last Development	10/2/2007
Test Casing Diameter (in)	8	Initial Static WL (ft btoc)	142.93
Test Casing Type	steel permanent	Final Static WL (ft btoc)	143.81
Test Interval Length (ft)	50	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi		165	Test Casing		
CH 2 (Red)	15 psi			Surface Pressure		
CH 3 (Yellow)	15 psi			Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA		



Displaced WL
(maybe +/-static WL)

Comments: using a solid slug that is 5.12 feet long and 4.5 inches in diameter. Testing on 8-inch permanent steel casing

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet): 1.6

	Test A	Test B	Test C	Test D	Test E
Initiation method	Drop/Physical				
Rising/Falling head	Falling				
Pre-test Sub. #1	22.38				
Pre-test Sub. #2	NA				
Expected Displacement (ft)	1.6				
Observed Displacement (ft)	1.604				
Slug Discrepancy (%)	0.25				
Max Rebound above Static					
Post-test Sub. #1	NM				
Residual Dev. from H_o (%)	NM				
Data Logger File Name	ROMP45.5_ST38_1650-1700_A				
Specific Conductance (uS)	43,600				
K_h (feet/day)	0.08				
Lithology	Interbedded limestone (packstone) and evaporitic dolostone				
Other					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 40

General Information

Site Name: ROMP 45.5 – Progress Energy   Date: 11/8/2007 & 11/9/2007

Well: CH-3 Lower Floridan core hole   Performed by: T.Dawson

Well Depth (ft bls)	1,887	Test Interval (ft - ft bls)	1,751-1,887
Test Casing Height (ft als)	6.1	Date of Last Development	11/7/2007
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	144.41(11/8/07)/143.79(11/9/07)
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	136	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	165/147	Test Casing	-0.06	
CH 2 (Red)	15 psi	0704727		Surface Pressure	0.05	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA		

Displaced WL (maybe +/-static WL)

spacer

Comments: used spacer as a solid slug. Performed drop slug on 11/8/2007 with the transducer at a depth of 165 feet bls and performed pneuamtic slug test on 11/9/2007 with the transducer at a depth of 147 feet bls.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	2.436	1	0.5	1	2
	Test A	Test B	Test C	Test D	Test E
Initiation method	Drop	Pneumatic	Pneumatic	Pneumatic	Pneumatic
Rising/Falling head	Falling	Rising	Rising	Rising	Rising
Pre-test Sub. #1	20.83	3.28	3.31	3.35	3.35
Pre-test Sub. #2	NA	NA	NA	NA	NA
Expected Displacement (ft)	2.436	0.982	0.484	1.003	2.11
Observed Displacement (ft)	1.905	1.055	0.498	1.047	2
Slug Discrepancy (%)	21.8	7.43	2.89	4.39	5.21
Max Rebound above Static	NA	NA	NA	NA	NA
Post-test Sub. #1	20.90	3.27	3.29	3.34	3.34
Residual Dev. from H_o (%)	0.33	0.30	0.60	0.30	0.30
Data Logger File Name	ROMP45.5_ST40_1751-1887_A	ROMP45.5_ST40_1751-1887_B	RO MP45.5_ST40_1751-1887_C	RO MP45.5_ST40_1751-1887_D	RO MP45.5_ST40_1751-1887_E
Specific Conductance (uS)	36,600	36,600	36,600	36,600	36,600
K_h (feet/day)			0.1		
Lithology	Interbedded limestone (wackestone) and evaporitic dolostone				
Other					

Comments Used translation method to ignore early time noisy data during analysis on all tests. Used Cooper et al method. No apparent skin.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 41

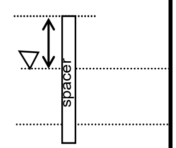
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	12/11/2007
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,037	Test Interval (ft - ft bls)	1,927-2,037
Test Casing Height (ft als)	8	Date of Last Development	12/10/2007
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	146.56
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	110	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	150	Test Casing	-0.02	
CH 2 (Red)	15 psi	0704727		Surface Pressure	0.03	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA	Displaced WL (maybe +/-static WL)	



Comments: Did not use spacer due to low permeability formation.
Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet): 1.5 | 0.7 | 1.5

	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic		
Rising/Falling head	Rising	Rising	Rising		
Pre-test Sub. #1	3.67	4.57	4.6		
Pre-test Sub. #2	NA	NA	NA		
Expected Displacement (ft)	1.45	0.696	0.484		
Observed Displacement (ft)	1.435	0.696	0.498		
Slug Discrepancy (%)	1.0	0	2.89		
Max Rebound above Static	NA	NA	NA		
Post-test Sub. #1	3.76	4.54	3.29		
Residual Dev. from H_o (%)	2.45	0.66	1.30		
Data Logger File Name	ROMP45.5_ST41_1927-2037_A	ROMP45.5_ST41_1927-2037_B	RO MP45.5_ST41_1927-2037_C		
Specific Conductance (uS)	23,100	23,100	23,100		
K_h (feet/day)		0.03			
Lithology	Interbedded limestone (wackestone) and evaporitic dolostone				
Other K_h (feet/day)					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 42

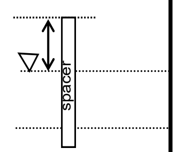
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	1/3/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,237	Test Interval (ft - ft bls)	2,151-2,237
Test Casing Height (ft als)	5.21	Date of Last Development	1/2/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	136.47
Test Casing Type	NQ	Final Static WL (ft btoc)	136.46
Test Interval Length (ft)	80	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	140	Test Casing	0.07	
CH 2 (Red)	15 psi	0704727		Surface Pressure	0.00	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA		



Displaced WL
(maybe +/-static WL)

Comments: Did not use spacer due to low permeability formation.
Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	1.5	0.5	1	1.5	
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	Rising	
Pre-test Sub. #1	3.74	3.76	3.76	3.78	
Pre-test Sub. #2	NA	NA	NA	NA	
Expected Displacement (ft)	1.497	0.484	0.968	1.511	
Observed Displacement (ft)	1.527	0.521	1.042	1.526	
Slug Discrepancy (%)	2	7.64	7.64	0.99	
Max Rebound above Static	NA	NA	NA	NA	
Post-test Sub. #1	3.74	3.76	3.79	3.78	
Residual Dev. from H_o (%)	0	0	.80	0	
Data Logger File Name	ROMP45.5_ST42_2151-2237_A	ROMP45.5_ST42_2151-2237_B	RO MP45.5_ST42_2151-2237_C	RO MP45.5_ST42_2151-2237_D	
Specific Conductance (uS)	12,200	12,200	12,200	12,200	
K_h (feet/day)	0.8				
Lithology	Limestone - wackestone/mudstone with evaporites				
Other					

Comments: Cooper et al good match.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 43

General Information

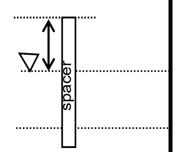
Site Name:	ROMP 45.5 – Progress Energy	Date:	1/13/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,367	Test Interval (ft - ft bls)	2,267-2,367
Test Casing Height (ft als)	6.96	Date of Last Development	1/13/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	140.89
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	100	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	145	Test Casing	0.02	
CH 2 (Red)	15 psi	0704727		Surface Pressure	0.00	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA		

Displaced WL
(maybe +/-static WL)



Comments: Did not use spacer due to low permeability formation.
Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	1.5	0.5	1	1.5	
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	Rising	
Pre-test Sub. #1	4.34	4.34	4.34	4.34	
Pre-test Sub. #2	NA	NA	NA	NA	
Expected Displacement (ft)	1.459	0.476	1.041	1.525	
Observed Displacement (ft)	1.51	0.491	1.026	1.525	
Slug Discrepancy (%)	3.5	3.15	1.44	0	
Max Rebound above Static	NA	NA	NA	NA	
Post-test Sub. #1	4.34	4.34	4.34	4.34	
Residual Dev. from H_o (%)	0	0	0	0	
Data Logger File Name	ROMP45.5_ST43_2267-2367_A	ROMP45.5_ST43_2267-2367_B	RO MP45.5_ST43_2267-2367_C	RO MP45.5_ST43_2267-2367_D	
Specific Conductance (uS)	23,600	23600	23,600	23,600	
K_h (feet/day)		4			
Lithology	Limestone - wackestone/mudstone				
Other					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 44

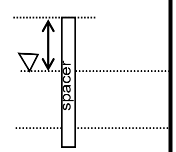
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	1/22/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,467	Test Interval (ft - ft bls)	2,395-2,467
Test Casing Height (ft als)	4.76	Date of Last Development	1/21/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	140.91
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	72	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	145	Test Casing	-0.03	
CH 2 (Red)	15 psi	0704727		Surface Pressure	-0.01	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		



Comments: Did not use spacer because permeability appears to be low.
Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	1.5	1	1.5		
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic		
Rising/Falling head	Rising	Rising	Rising		
Pre-test Sub. #1	4.25	4.73	4.61		
Pre-test Sub. #2	NA	NA	NA		
Expected Displacement (ft)	1.589	1.07	1.538		
Observed Displacement (ft)	1.56	1.055	1.516		
Slug Discrepancy (%)	1.83	1.4	1.43		
Max Rebound above Static	NR	NR	NR		
Post-test Sub. #1	4.25	4.6	4.67		
Residual Dev. from H_o (%)	0	2.75	1.30		
Data Logger File Name	ROMP45.5_ST44_2395-2467_A	ROMP45.5_ST44_2395-2467_B	RO MP45.5_ST44_2395-2467_C		
Specific Conductance (uS)	36,200	36,200	36,200		
K_h (feet/day)	0.02				
Lithology	Evaporitic dolostone				
Other					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 45

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	2/11/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,557	Test Interval (ft - ft bls)	2,467-2,557
Test Casing Height (ft als)	6.56	Date of Last Development	2/7/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	129.68
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	90	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	0704728	132	Test Casing	-0.02	
CH 2 (Red)	15 psi	0704727		Surface Pressure	-0.02	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length (ft)	NA	Spacer Placement (ft above static WL)	NA
Spacer OD. (in)	NA		

Displaced WL (maybe +/-static WL)

spacer

Comments: Did not use spacer because permeability is expected to be low.
Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	0.5	1	0.5		
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic		
Rising/Falling head	Rising	Rising	Rising		
Pre-test Sub. #1	2.32	2.32	2.33		
Pre-test Sub. #2	NA	NA	NA		
Expected Displacement (ft)	0.425	0.777	0.462		
Observed Displacement (ft)	0.41	0.747	0.454		
Slug Discrepancy (%)	3.53	3.86	1.73		
Max Rebound above Static	NR	NR	NR		
Post-test Sub. #1	2.32	2.31	2.33		
Residual Dev. from H_o (%)	0	0.43	0		
Data Logger File Name	ROMP45.5_ST45_2467-2557_A	ROMP45.5_ST45_2467-2557_B	RO MP45.5_ST45_2467-2557_C		
Specific Conductance (uS)	13,800	13,800	13,800		
K_h (feet/day)	0.1				
Lithology	Anhydritic dolostone				
Other					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 46

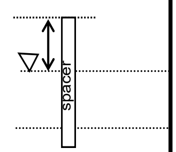
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	2/21/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson/A. Janosik
Well Depth (ft bls)	2,647	Test Interval (ft - ft bls)	2,583-2,647
Test Casing Height (ft als)	6.15	Date of Last Development	2/20/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	117.38
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	64	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	NR	120.5	Test Casing	0.02	
CH 2 (Red)	15 psi	0704727		Surface Pressure	-0.01	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length (ft)	5	Spacer Placement (ft above static WL)	3.12
Spacer OD. (in)	1.68		



Displaced WL
(maybe +/-static WL)

Comments: Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Magnitude (feet):	1.5	0.5	1	1.5	
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	Rising	
Pre-test Sub. #1	3.47	3.47	3.47	3.46	
Pre-test Sub. #2	NA	NA	NA	NA	
Expected Displacement (ft)	1.487	0.513	1.040	1.509	
Observed Displacement (ft)	1.465	0.506	0.996	1.502	
Slug Discrepancy (%)	1.48	1.36	4.23	0.46	
Max Rebound above Static	1.055	0.41	0.747	1.070	
Post-test Sub. #1	3.47	3.47	3.46	3.46	
Residual Dev. from H_o (%)	0	0	0.3	0	
Data Logger File Name	ROMP45.5_ST46_2583-2647_A	ROMP45.5_ST46_2583-2647_B	RO MP45.5_ST46_2583-2647_C	RO MP45.5_ST46_2583-2647_D	
Specific Conductance (uS)	7,690	7,690	7,690	7,690	
K_h (feet/day)		16			
Lithology	Crystalline dolostone				
Other					
Comments					

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. 47

General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	3/12/2008
Well:	CH-3 Lower Floridan core hole	Performed by:	T.Dawson
Well Depth (ft bls)	2,697	Test Interval (ft - ft bls)	2,583-2,697
Test Casing Height (ft als)	5.77	Date of Last Development	3/11/2008
Test Casing Diameter (in)	2.38	Initial Static WL (ft btoc)	117.28
Test Casing Type	NQ	Final Static WL (ft btoc)	NM
Test Interval Length (ft)	114	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air (ft)	Other
CH 1 (Blue)	15 psi	NR	120.5	Test Casing	0.05	
CH 2 (Red)	15 psi	0704727		Surface Pressure	-0.03	
CH 3 (Yellow)	15 psi	NA		Annulus		

Data Logger	Campbell CR 800	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval (sec)	Step 1 = 0.1; Step 2 = 1; Step 3 = 5	Reference Read Time	Start of Test
Spacer Length (ft)	5	Spacer Placement (ft above static WL)	3.22
Spacer OD. (in)	1.68		

Displaced WL (maybe +/-static WL)

spacer

Comments: Cannot monitor annulus due to not enough space between HW and NW casings.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

Slug Magnitude (feet):	1.5	0.5	1	1.5	
	Test A	Test B	Test C	Test D	Test E
Initiation method	Pneuamtic	Pneumatic	Pneumatic	Pneumatic	
Rising/Falling head	Rising	Rising	Rising	Rising	
Pre-test Sub. #1	3.45	3.45	3.44	3.44	
Pre-test Sub. #2	NA	NA	NA	NA	
Expected Displacement (ft)	1.524	0.535	1.047	1.538	
Observed Displacement (ft)	1.516	0.483	1.04	1.531	
Slug Discrepancy (%)	0.52	9.72	0.67	0.46	
Max Rebound above Static	NR	NR	NR	NR	
Post-test Sub. #1	3.45	3.45	3.44	3.44	
Residual Dev. from H_o (%)	0	0	0	0	
Data Logger File Name	ROMP45.5_ST47_2583-2697_A	ROMP45.5_ST47_2583-2697_B	RO MP45.5_ST47_2583-2697_C	RO MP45.5_ST47_2583-2697_D	
Specific Conductance (uS)	7,810	7,810	7,810	7,810	
K_h (feet/day)		9*			
Lithology	Crystalline dolostone				
Other					

Comments *The K is likely higher than actual value. The K value decreased by almost half from test 46 but 50 feet was added to test interval. The bottom 50 feet of interval is likely confining.

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Slug Test No. U ARCA AQ MONITOR well

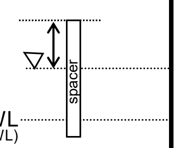
General Information

Site Name:	ROMP 45.5 – Progress Energy	Date:	10/15/2008
Well:	upper Arcadia aquifer	Performed by:	T.Dawson
Well Depth (ft bls)	151	Test Interval (ft - ft bls)	95-151
Test Casing Height (ft als)	4.17	Date of Last Development	7/17/2008
Test Casing Diameter (in)	8	Initial Static WL (ft btoc)	22.13
Test Casing Type	Sch 40 PVC	Final Static WL (ft btoc)	NR
Test Interval Length (ft)	56	Slot Size & Filter Pack Type	NA

Set-up Information

Transducer	Type	Serial No.	Depth (ft)	Purpose	Reading in Air	Other
CH 1 (Blue)	20 psi	6493	51	Test Casing	-0.07	
CH 2 (Red)	15 psi	6534	51	Test Casing duplicate	0.01	

Data Logger	Campbell CR 1000	Pressure Display Mode	Deviation from static
Logging schedule	Step	Level Reference	0
Time Interval	Step 1 = 0.1; Step 2 = 1; Step 3 = 60	Reference Read Time	Start of Test
Spacer Length	NA	Spacer Placement (ft above static WL)	NA
Spacer OD.	NA		



Displaced WL
(maybe +/-static WL)

Comments: drop slug of 2.5 liters (0.7 gallon) for a 0.25 foot slug in 8-inch casing.

Note: Reading in Air of the Transducer should be < +/-1% of the Full Scale of the Transducer

Test Data

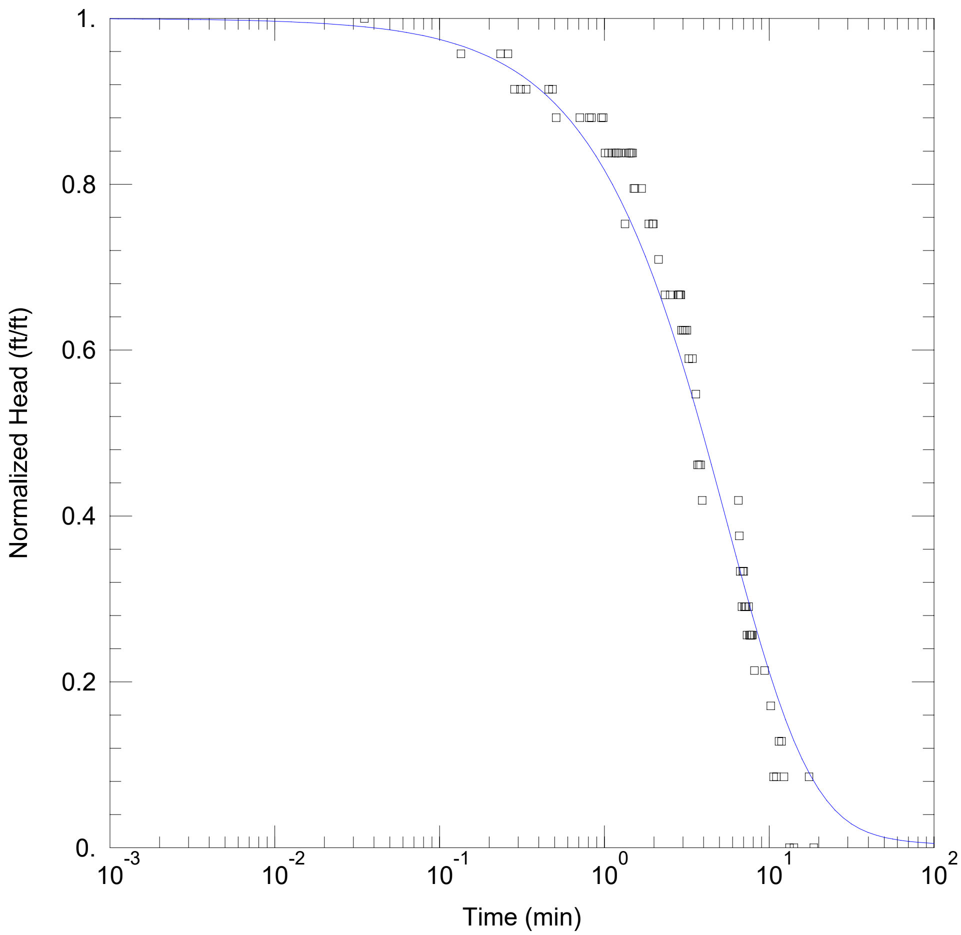
Magnitude: 0.25

	Test A	Test B	Test C	Test D
Initiation method	Drop			
Rising/Falling head	Falling			
Pre-test Sub. #1	28.57			
Pre-test Sub. #2	28.69			
Expected Displacement (ft)	0.25			
Observed Displacement (ft)	0.219			
Slug Discrepancy (%)	12			
Max Rebound above Static				
Post-test Sub. #1	28.71			
Residual Dev. from H_o (%)	0.49			
Data Logger File Name	ROMP 45.5 up arc slug			
Specific Conductance (uS)	NR			
K_h (feet/day)	2			
Lithology	Fossiliferous Dolostone and Limestone and Dolosilt			
Other				

Comments

Notes: Slug Discrepancy <10%; Residual Deviation from H_o < 5%; and Maximum Rebound < Spacer Placement above Static

Appendix G. Slug Test Curve-Match Analyses for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida



SLUG TEST ANALYSIS

Data Set: D:\My Documents\ROMP 45 5\APTs\upper Arcadia aq\Final for report\R45.5_U ARCA_KGS_FILTERED.aqt
Date: 06/28/11 Time: 10:32:03

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: U ARCA AQ MONITOR
Test Date: 10/15/2008

AQUIFER DATA

Saturated Thickness: 56. ft

WELL DATA (U ARCA AQ MONITOR)

Initial Displacement: 0.117 ft
Total Well Penetration Depth: 56. ft
Casing Radius: 0.3332 ft

Static Water Column Height: 133. ft
Screen Length: 56. ft
Well Radius: 0.1263 ft

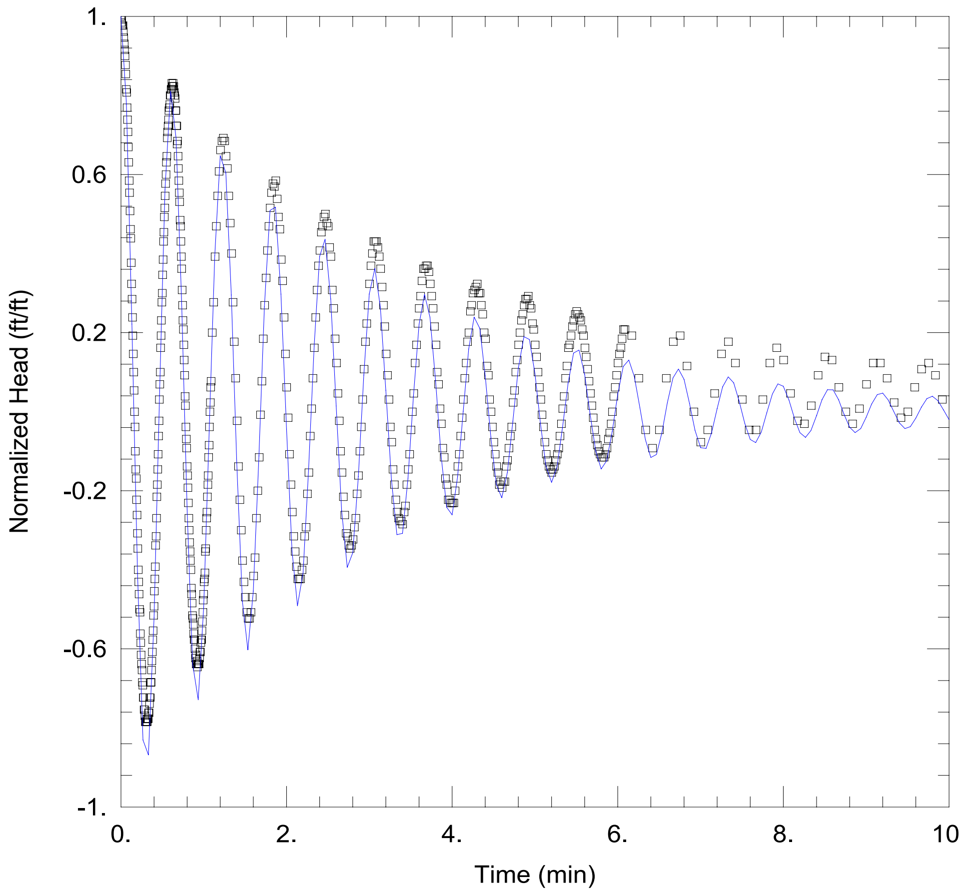
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.601 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\My Documents\ROMP 45 5\APTs\Avon Park\Avon Park APT recovery slug test.aqt
Date: 12/07/10 Time: 08:27:21

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: AVPK PZ MONITOR
Test Date: 9/30/2008

AQUIFER DATA

Saturated Thickness: 185. ft Anisotropy Ratio (Kz/Kr): 1.

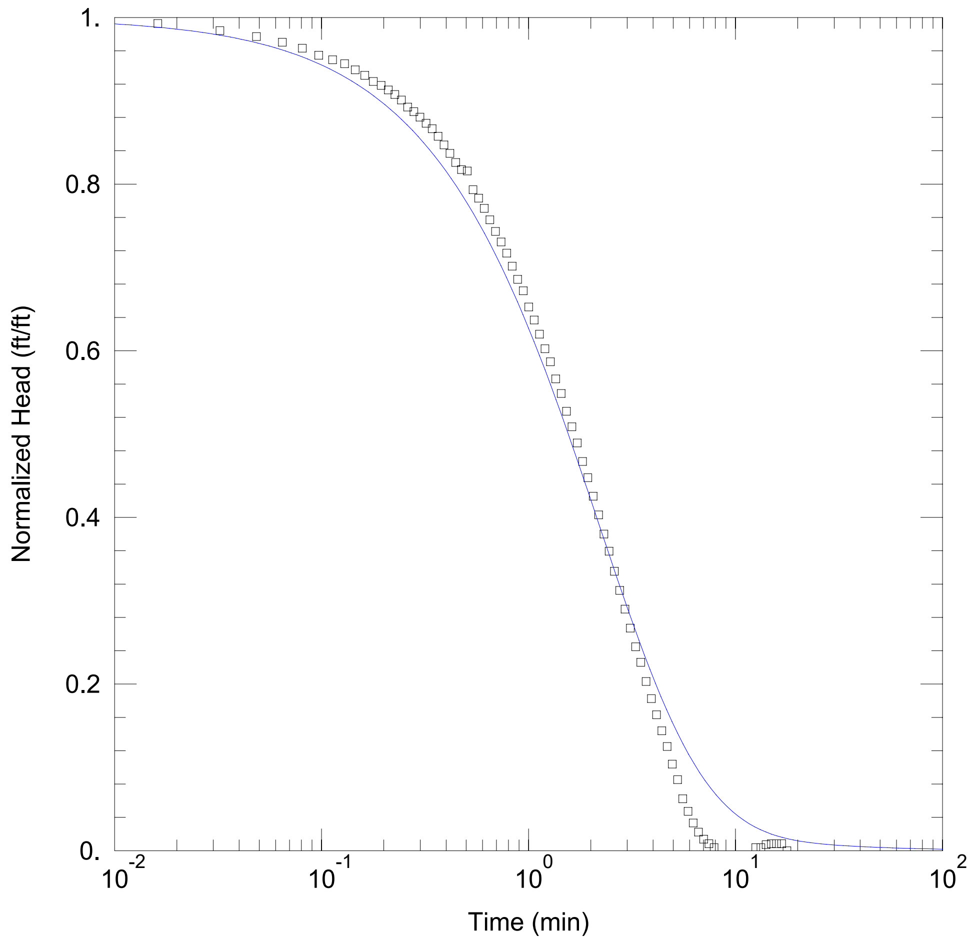
WELL DATA (AVPK PZ MONITOR)

Initial Displacement: 1.3 ft
Total Well Penetration Depth: 381. ft
Casing Radius: 0.8333 ft
Static Water Column Height: 787.4 ft
Screen Length: 331. ft
Well Radius: 0.8333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 2278.2 ft/day Le = 1097.1 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT1B_51-90_KGS.aqt
Date: 03/17/11 Time: 10:08:37

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-1
Test Date: 09/26/2005

AQUIFER DATA

Saturated Thickness: 22. ft

WELL DATA (PT1B_51-90)

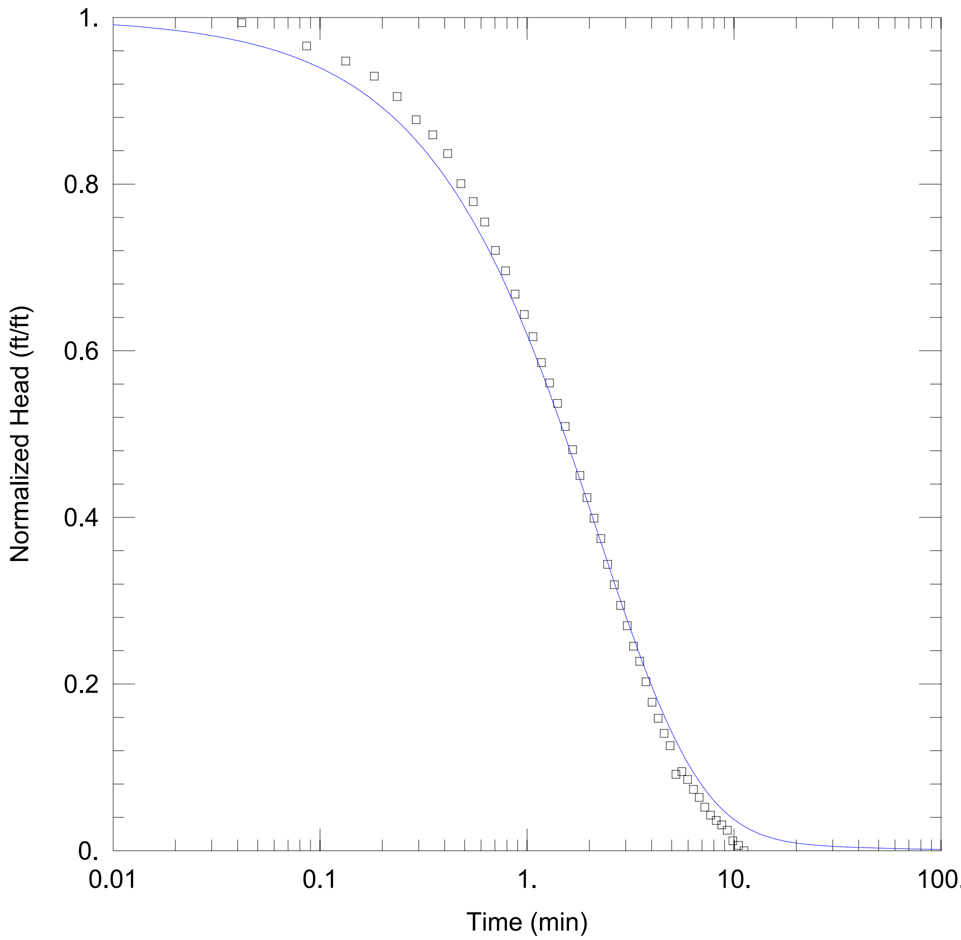
Initial Displacement: 1.655 ft
Total Well Penetration Depth: 40. ft
Casing Radius: 0.1664 ft

Static Water Column Height: 83.43 ft
Screen Length: 39. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 2.621 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT2C_66-90_KGS.aqt
Date: 12/07/10 Time: 07:25:46

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-1
Test Date: 09/27/2005

AQUIFER DATA

Saturated Thickness: 22. ft

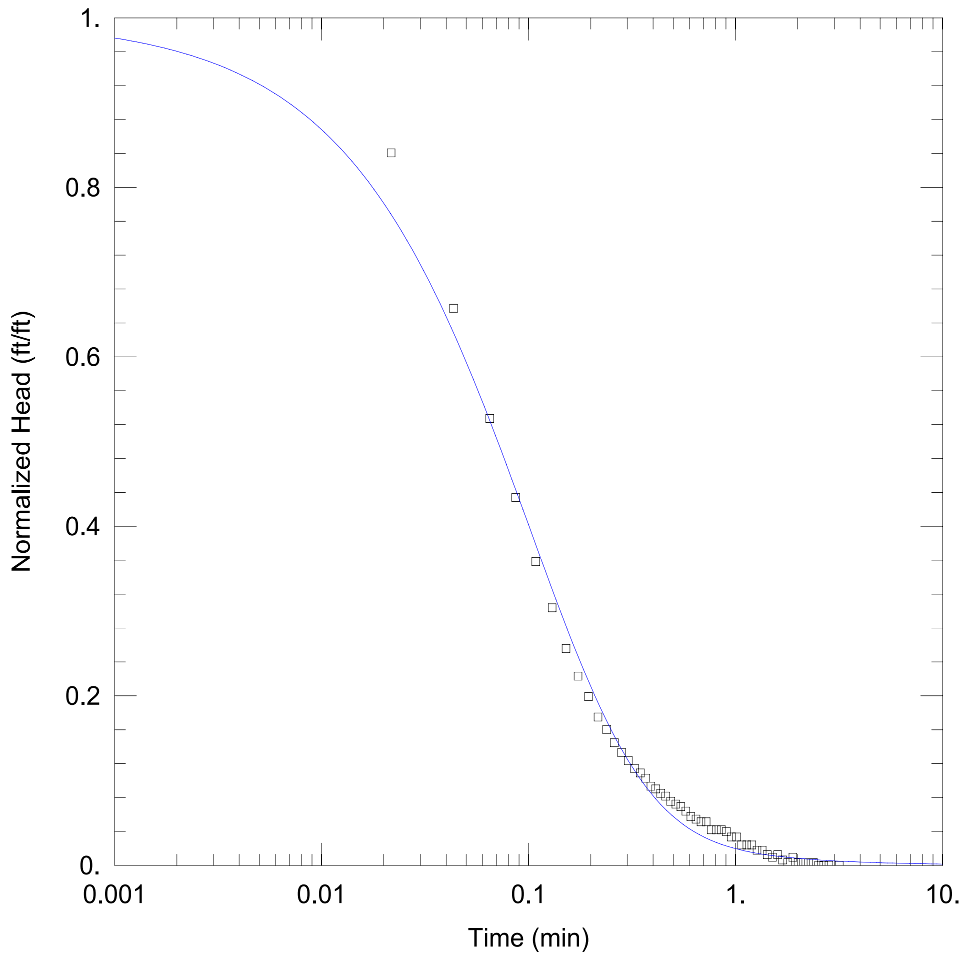
WELL DATA (PT2C_66-90)

Initial Displacement: 0.937 ft
Total Well Penetration Depth: 40. ft
Casing Radius: 0.06684 ft
Static Water Column Height: 82.35 ft
Screen Length: 24. ft
Well Radius: 0.1263 ft

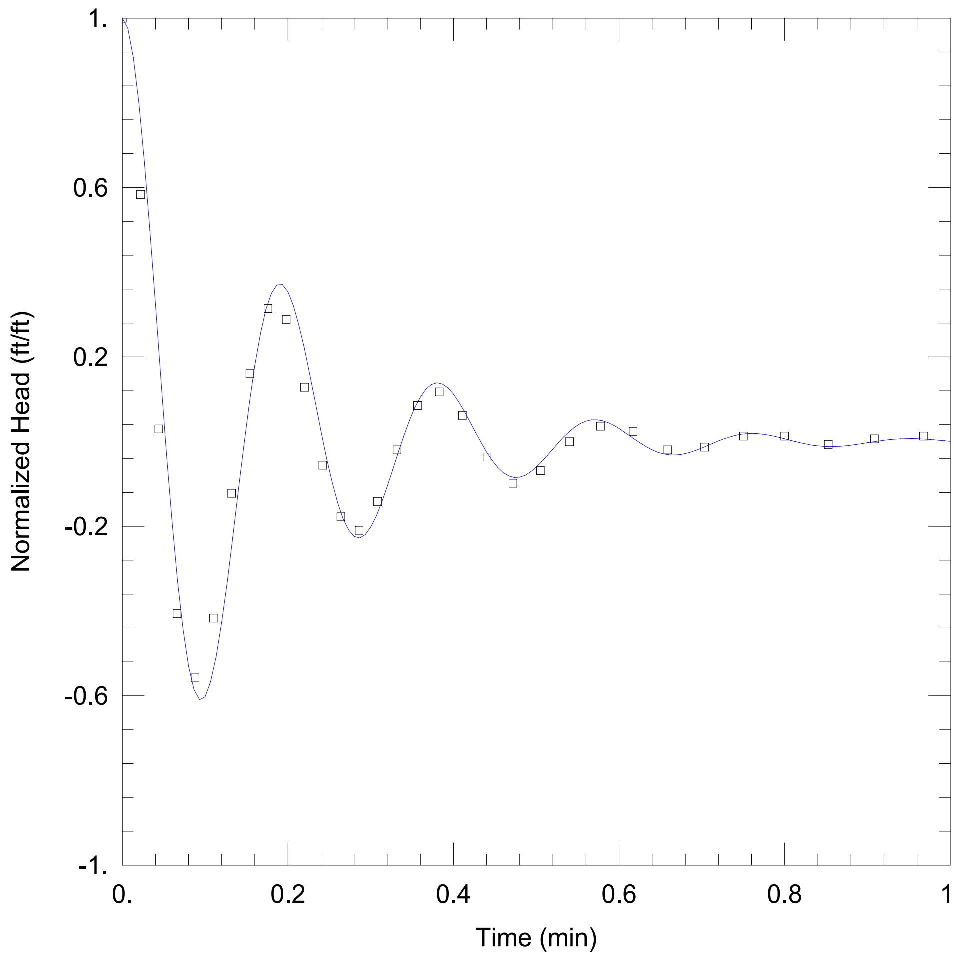
SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.5347 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS	
Data Set: D:\...\LWPY_PT3C_95-130_cooper.aqt	
Date: 12/07/10	Time: 07:27:19
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 45.5	
Location: Polk County	
Test Well: CH-1	
Test Date: 09/29/2005	
AQUIFER DATA	
Saturated Thickness: 56. ft	Anisotropy Ratio (Kz/Kr): 1.
WELL DATA (PT3C_95-130)	
Initial Displacement: 0.954 ft	Static Water Column Height: 113.5 ft
Total Well Penetration Depth: 35. ft	Screen Length: 35. ft
Casing Radius: 0.06684 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Cooper-Bredehoeft-Papadopulos
T = 113. ft^2/day	S = 0.0003752



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT5B_175-200_BUTLER_tanslated to 1st trough.aqt
Date: 12/07/10 Time: 07:28:48

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-1
Test Date: 10/04/2005

AQUIFER DATA

Saturated Thickness: 70.5 ft Anisotropy Ratio (Kz/Kr): 0.1

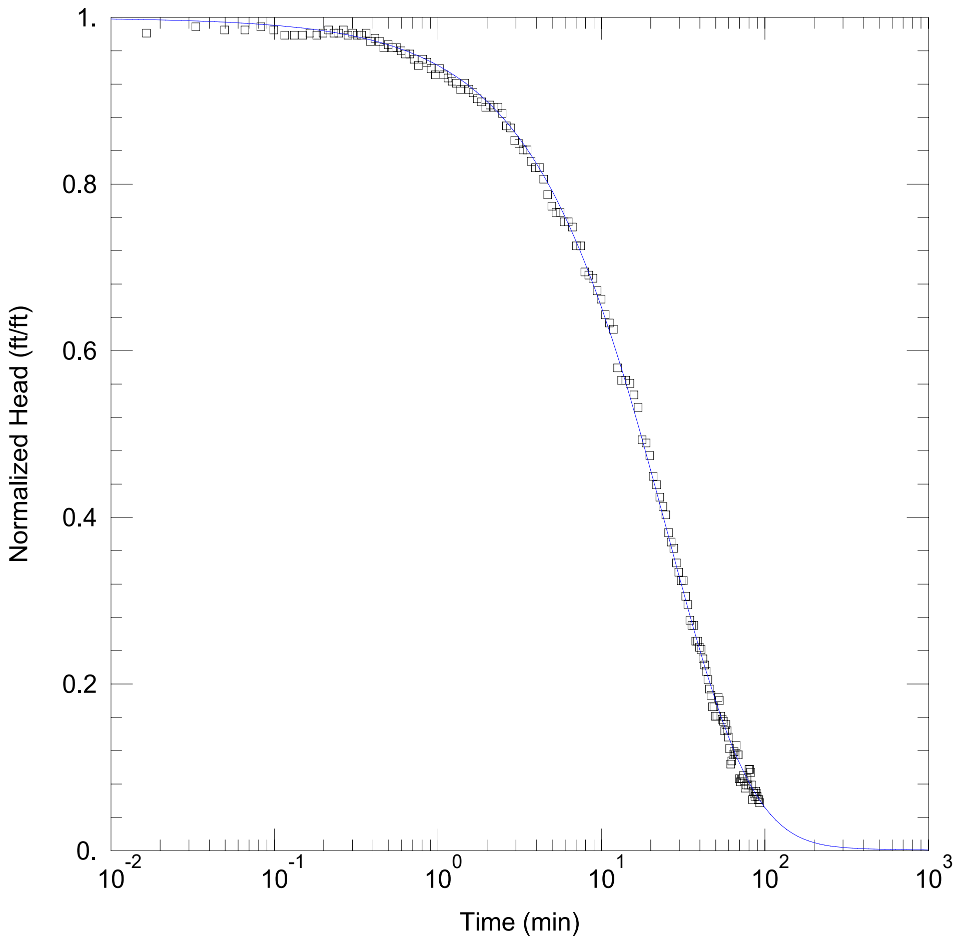
WELL DATA (PT5B_175-200)

Initial Displacement: -0.468 ft Static Water Column Height: 128.8 ft
Total Well Penetration Depth: 25.5 ft Screen Length: 25. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 99.36 ft/day Le = 103.6 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT6C_173-190_KGS_radius.aqt
Date: 03/17/11 Time: 09:51:49

PROJECT INFORMATION

Company: SWFWMD
Project: LWPY
Location: Polk County
Test Well: CH-2
Test Date: 11/02/2005

AQUIFER DATA

Saturated Thickness: 70.5 ft

WELL DATA (PT6C_173-190)

Initial Displacement: 0.799 ft
Total Well Penetration Depth: 19.5 ft
Casing Radius: 0.1664 ft

Static Water Column Height: 119.2 ft
Screen Length: 17. ft
Well Radius: 0.1263 ft

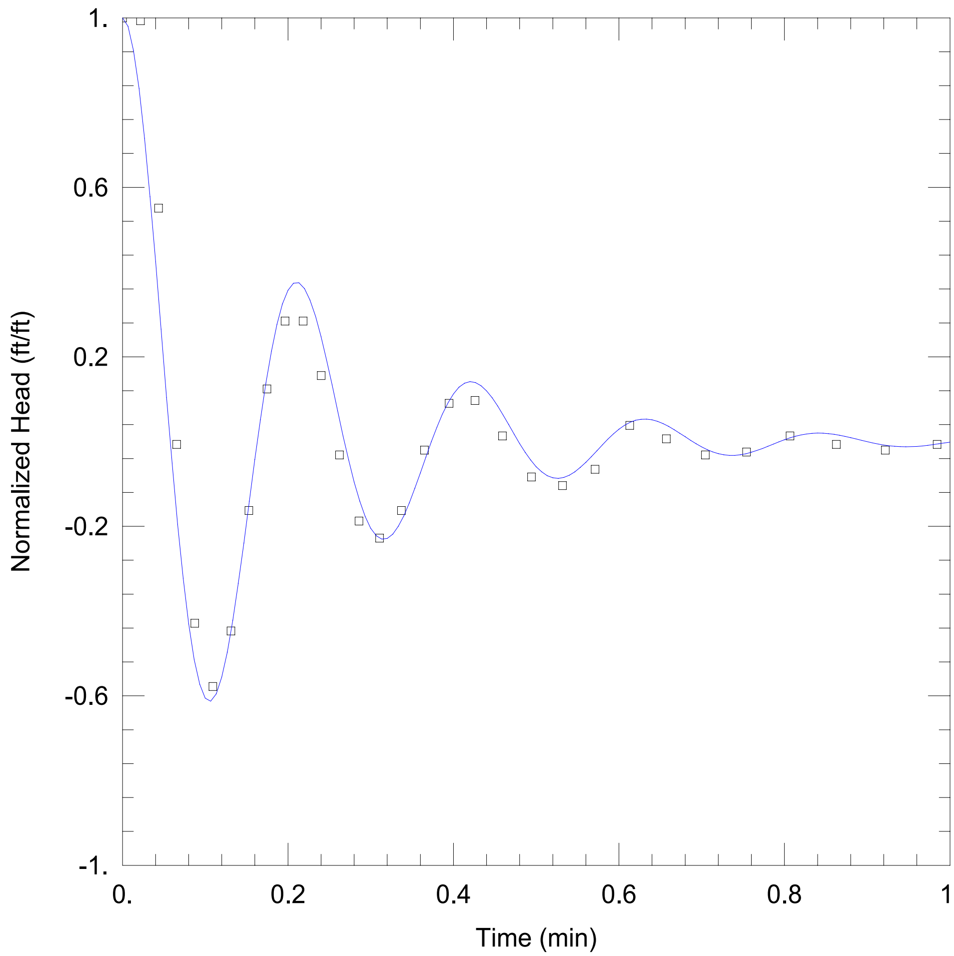
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.1835 ft/day
Kz/Kr = 1.

Ss = 3.508E-5 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT7B_195-215_BUTLER.aqt
Date: 07/28/10 Time: 16:18:15

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 11/08/2005

AQUIFER DATA

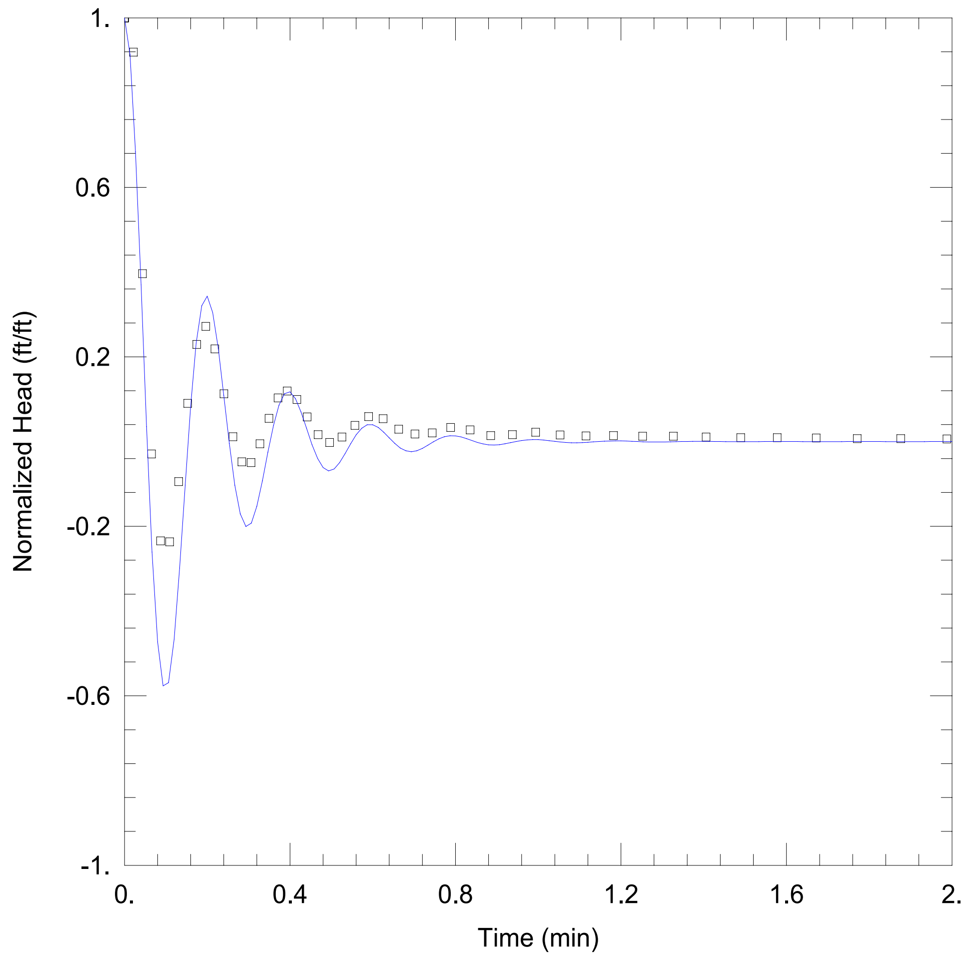
Saturated Thickness: 70.5 ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (PT7B_195-215)

Initial Displacement: -0.443 ft Static Water Column Height: 138.4 ft
Total Well Penetration Depth: 39.5 ft Screen Length: 20. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler
K = 109.6 ft/day Le = 126.8 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT8A_218-245_BUTLER.aqt
Date: 07/28/10 Time: 16:19:43

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 11/16/2005

AQUIFER DATA

Saturated Thickness: 70.5 ft Anisotropy Ratio (Kz/Kr): 0.1

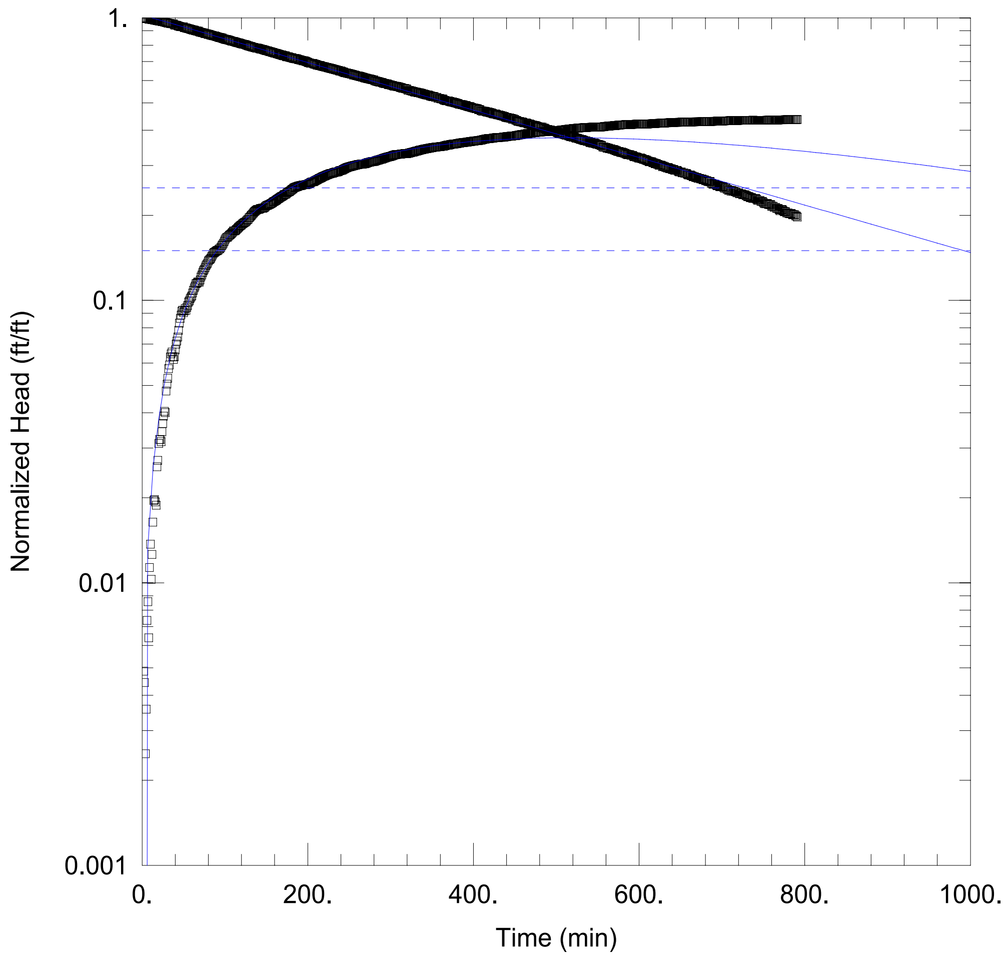
WELL DATA (PT8A_218-245)

Initial Displacement: 1.408 ft Static Water Column Height: 167.1 ft
Total Well Penetration Depth: 28. ft Screen Length: 27. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 85.3 ft/day Le = 111.7 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT9A_245-247-265_Hvorslev.aqt
Date: 07/28/10 Time: 16:20:30

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 11/29/2005

AQUIFER DATA

Saturated Thickness: 44.5 ft Anisotropy Ratio (Kz/Kr): 0.1

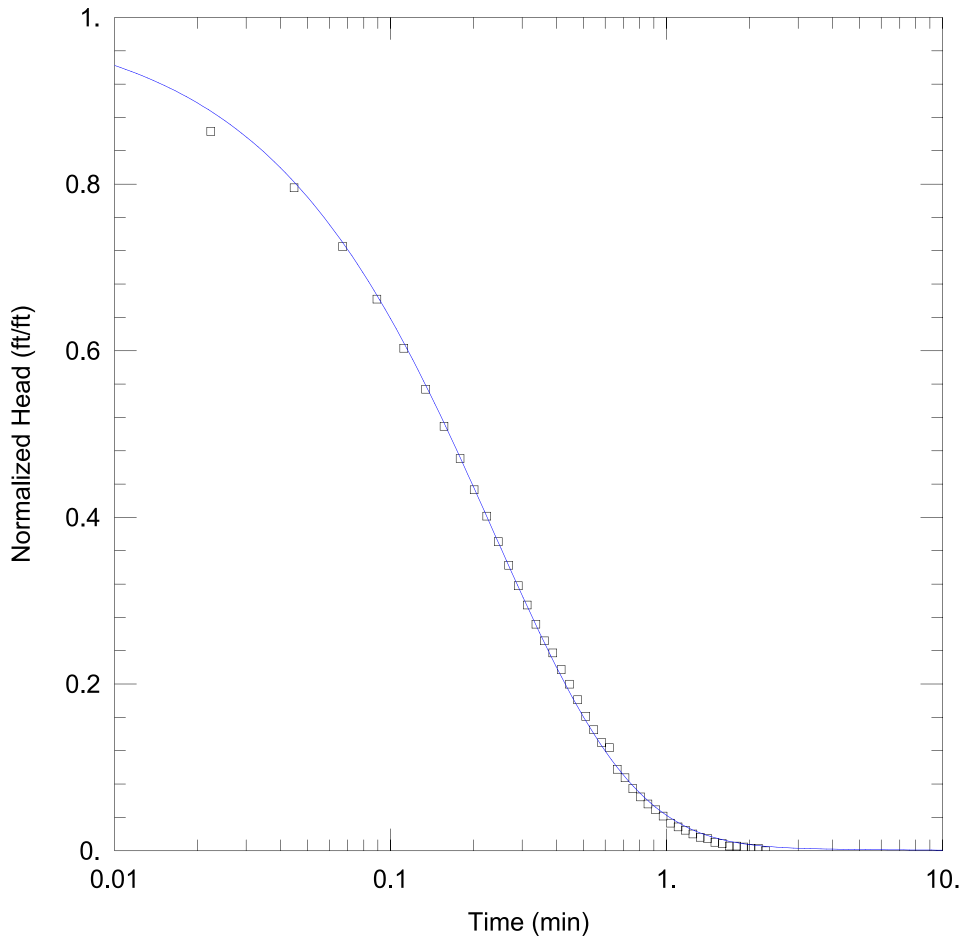
WELL DATA (PT9A_247-265)

Initial Displacement: 1.598 ft Static Water Column Height: 189.9 ft
Total Well Penetration Depth: 18. ft Screen Length: 18. ft
Casing Radius: 0.09514 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Hvorslev

K = 0.00477 ft/day y0 = 1.635 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT10B_289-315_KGS.aqt
Date: 07/28/10 Time: 16:21:45

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/01/2005

AQUIFER DATA

Saturated Thickness: 108.5 ft

WELL DATA (PT10B_289-315)

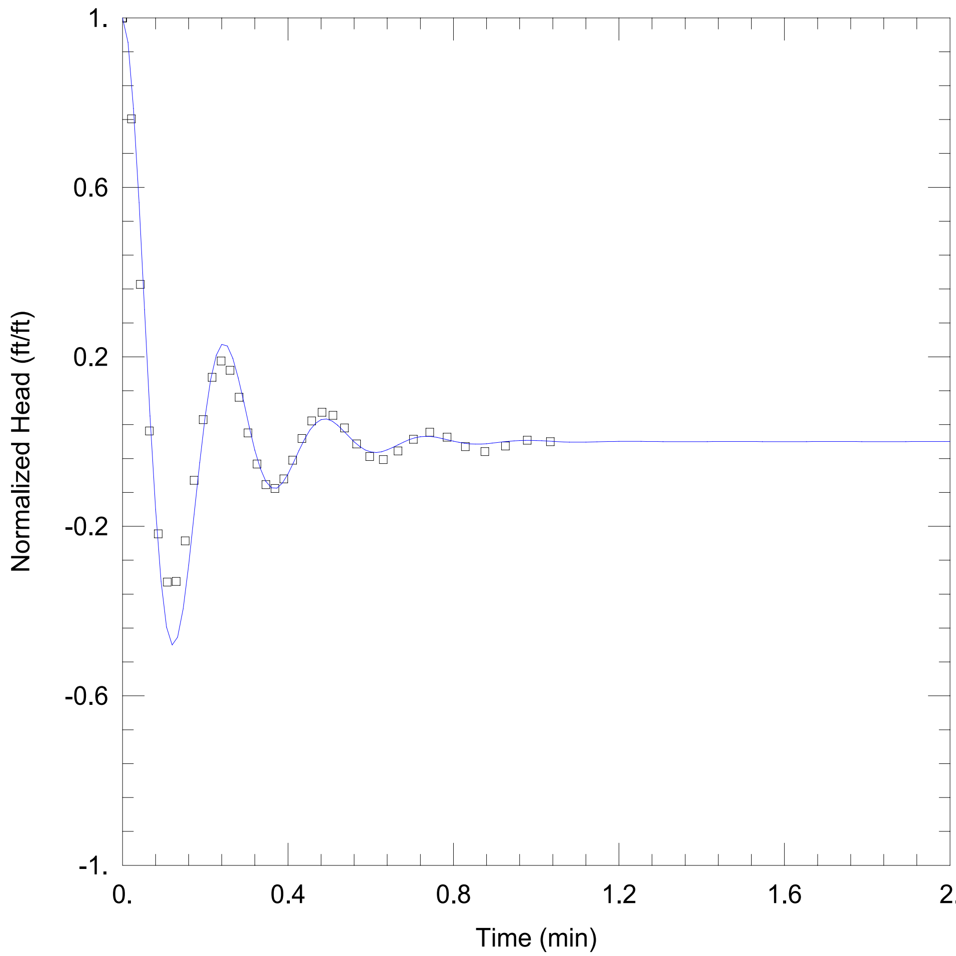
Initial Displacement: 1.997 ft
Total Well Penetration Depth: 27.5 ft
Casing Radius: 0.06684 ft

Static Water Column Height: 225.3 ft
Screen Length: 26. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 2.483 ft/day
Kz/Kr = 0.4639
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT11C_340-375_BUTLER.aqt
Date: 07/28/10 Time: 16:22:56

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/06/2005

AQUIFER DATA

Saturated Thickness: 108.5 ft Anisotropy Ratio (Kz/Kr): 0.1

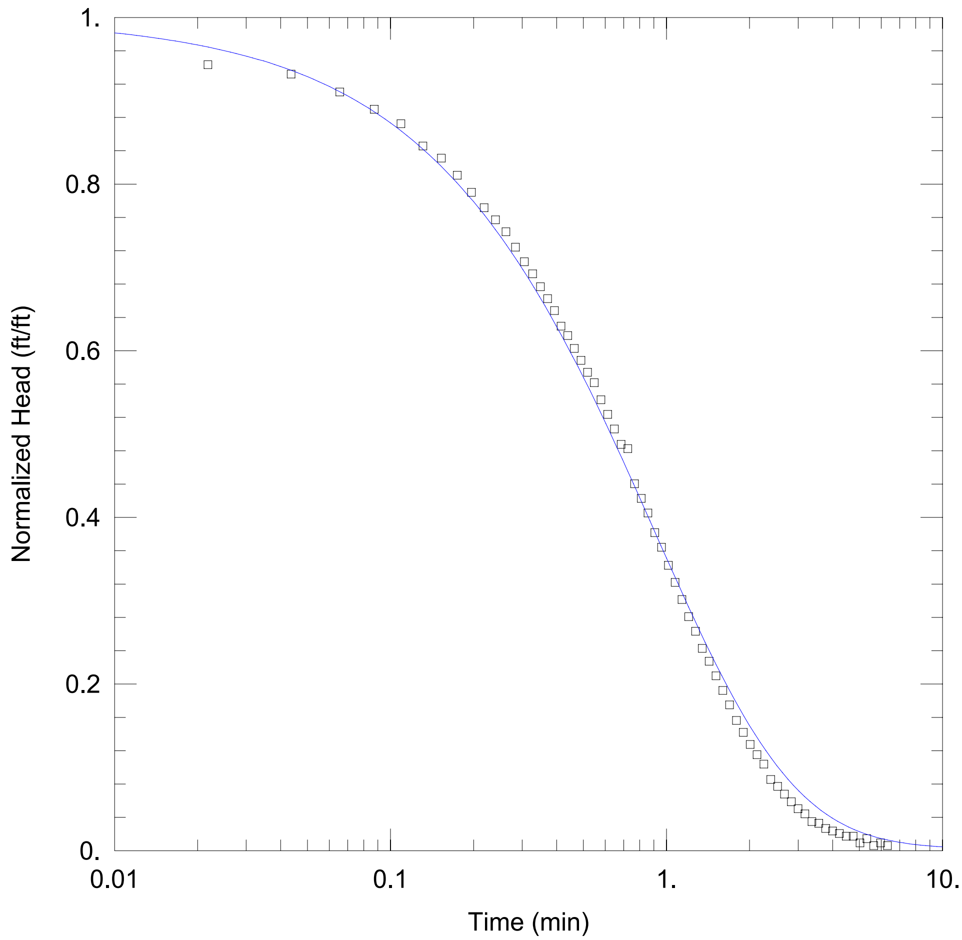
WELL DATA (11C_340-375)

Initial Displacement: 1.951 ft Static Water Column Height: 285.5 ft
Total Well Penetration Depth: 59. ft Screen Length: 35. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 36.16 ft/day Le = 166.5 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT12C_396-415_KGS.aqt
Date: 12/07/10 Time: 07:35:33

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/13/2005

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (12C_396-415)

Initial Displacement: 0.972 ft
Total Well Penetration Depth: 22. ft
Casing Radius: 0.06684 ft

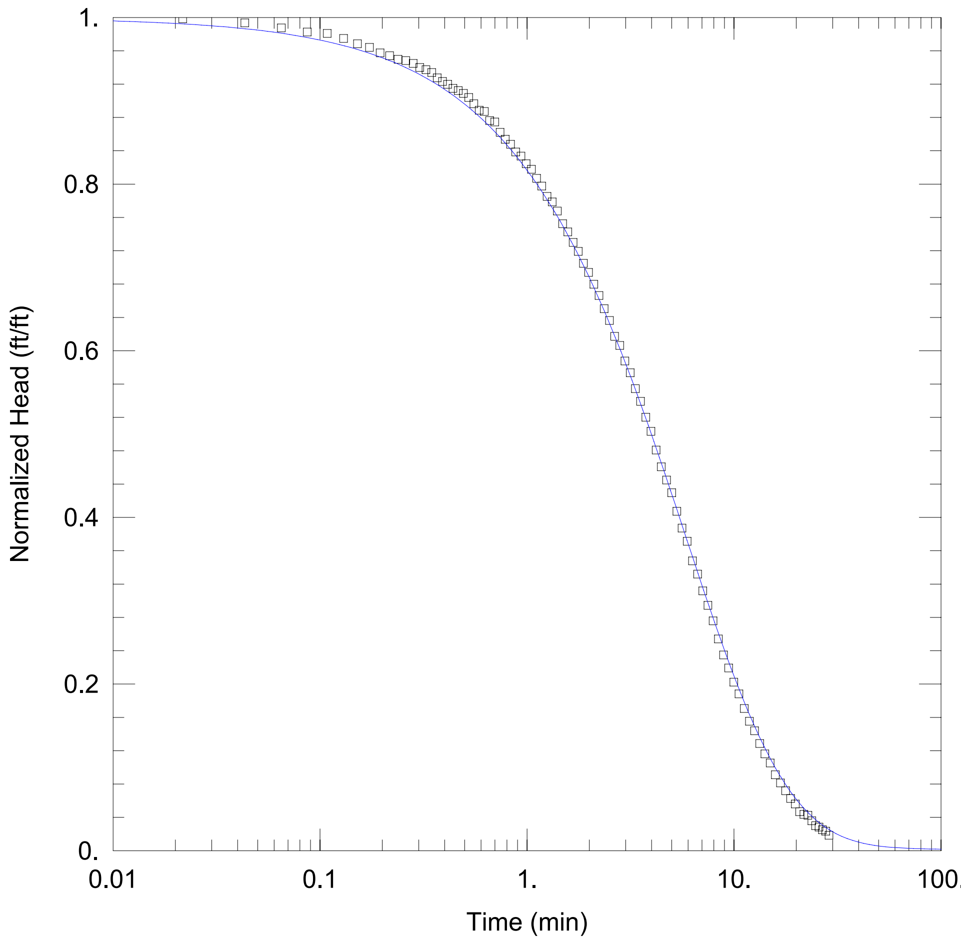
Static Water Column Height: 325.8 ft
Screen Length: 19. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.9176 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT13B_415-435_KGS.aqt
Date: 12/07/10 Time: 07:36:41

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/16/2005

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (13B_415-435)

Initial Displacement: 1.834 ft
Total Well Penetration Depth: 36. ft
Casing Radius: 0.06684 ft

Static Water Column Height: 345.8 ft
Screen Length: 20. ft
Well Radius: 0.1263 ft

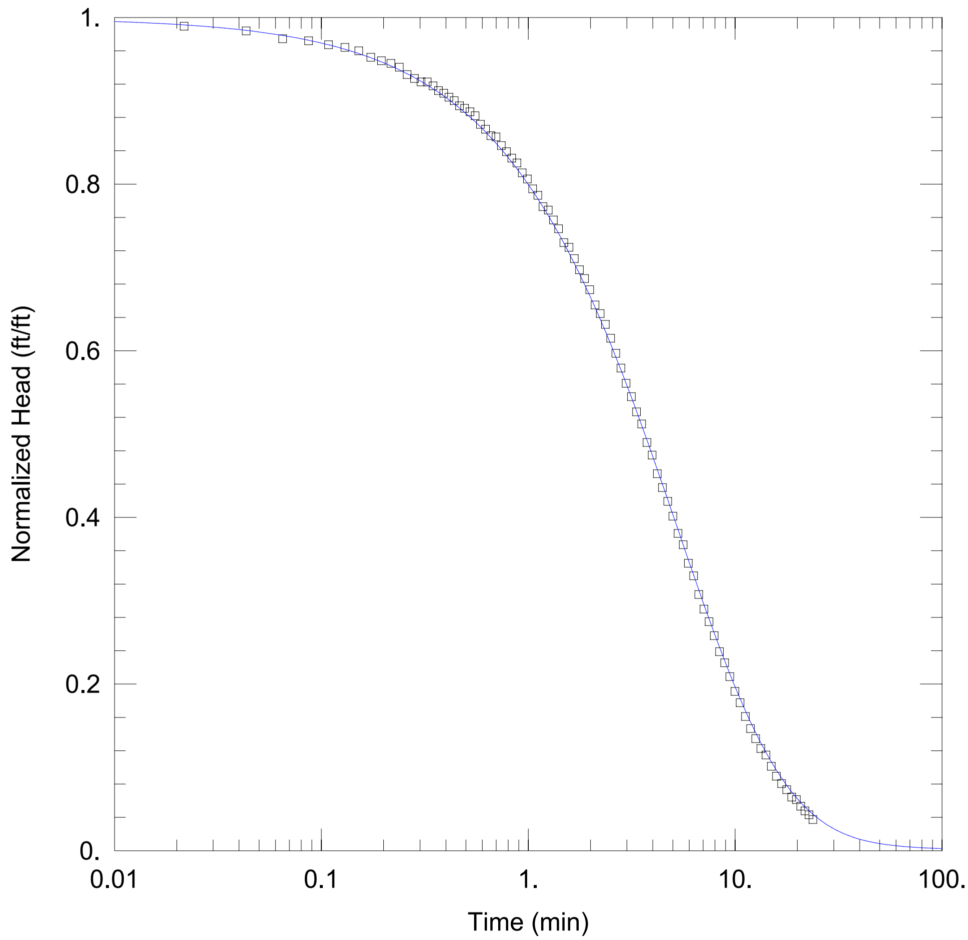
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.1367 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT14C_440-475_KGS.aqt
Date: 12/07/10 Time: 07:37:55

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/21/2005

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (14C_440-475)

Initial Displacement: 1.925 ft
Total Well Penetration Depth: 76. ft
Casing Radius: 0.06684 ft

Static Water Column Height: 385.5 ft
Screen Length: 35. ft
Well Radius: 0.1263 ft

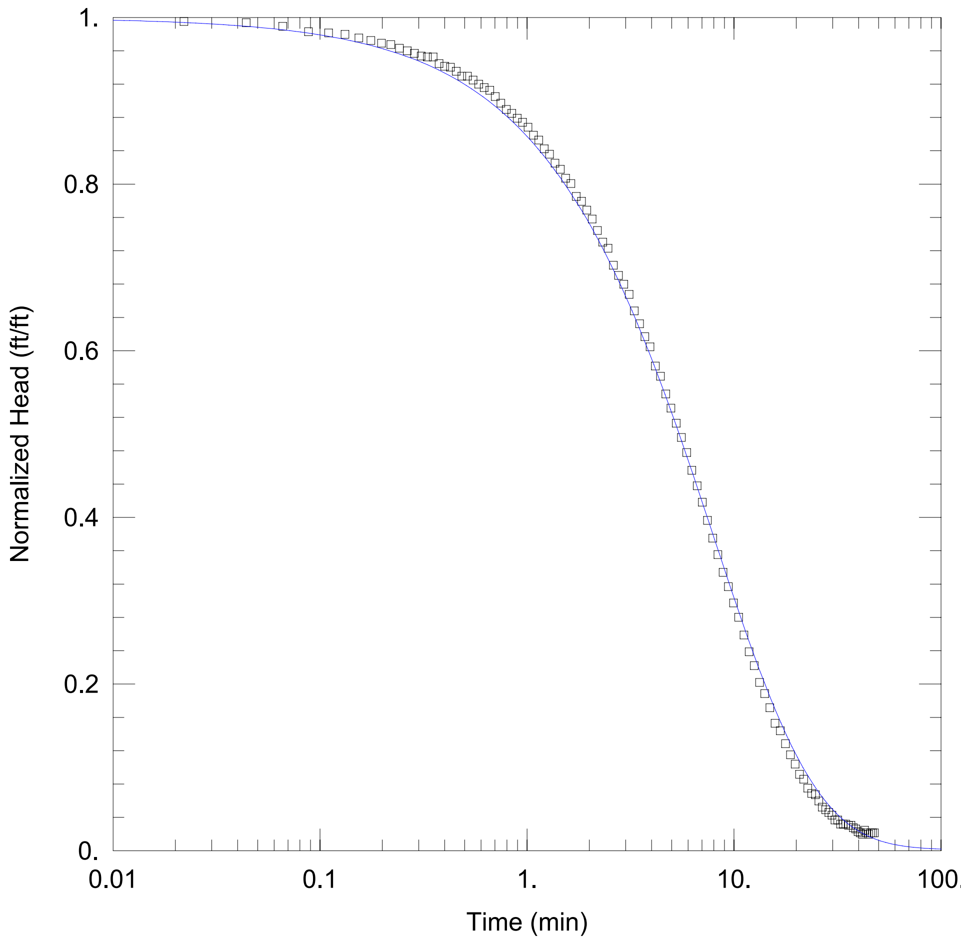
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.08297 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT15B_495-515_KGS.aqt
Date: 12/07/10 Time: 08:01:54

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 12/30/2005

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (15B_495-515)

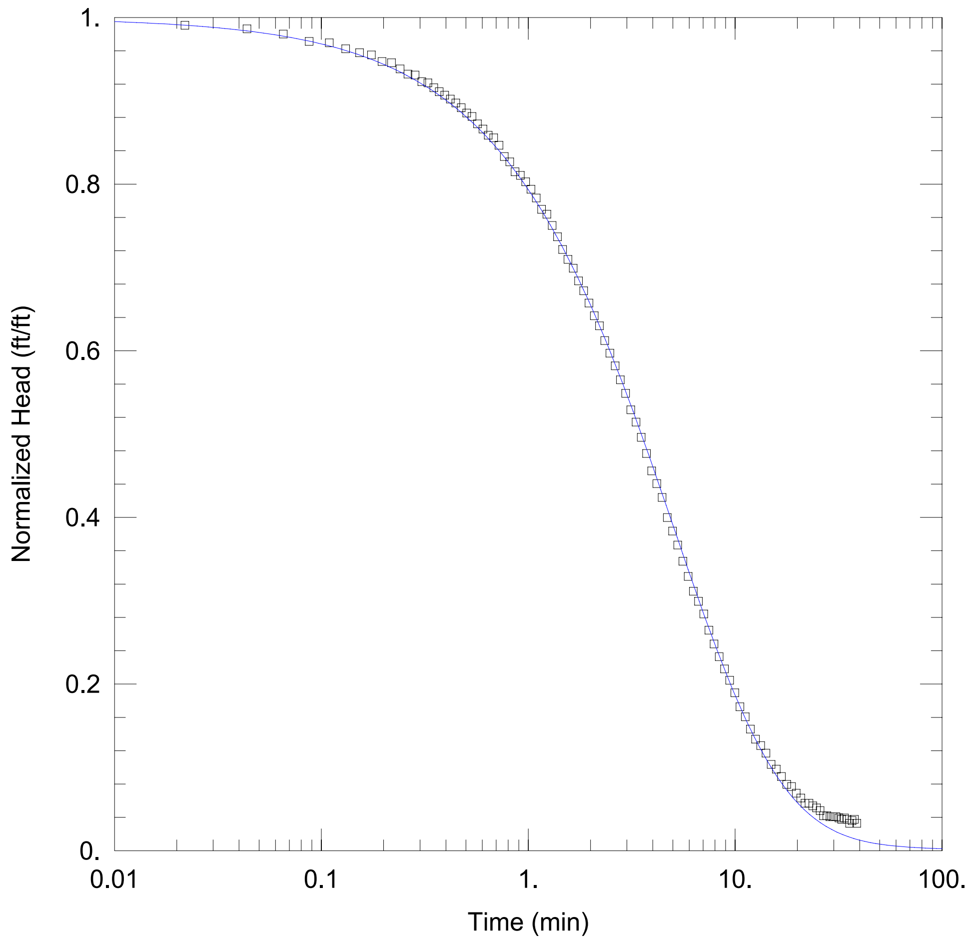
Initial Displacement: 1.877 ft
Total Well Penetration Depth: 110. ft
Casing Radius: 0.06684 ft

Static Water Column Height: 427.9 ft
Screen Length: 20. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.1003 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT16B_520-555_KGS.aqt
Date: 12/07/10 Time: 07:57:30

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 01/06/2006

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (16B_520-555)

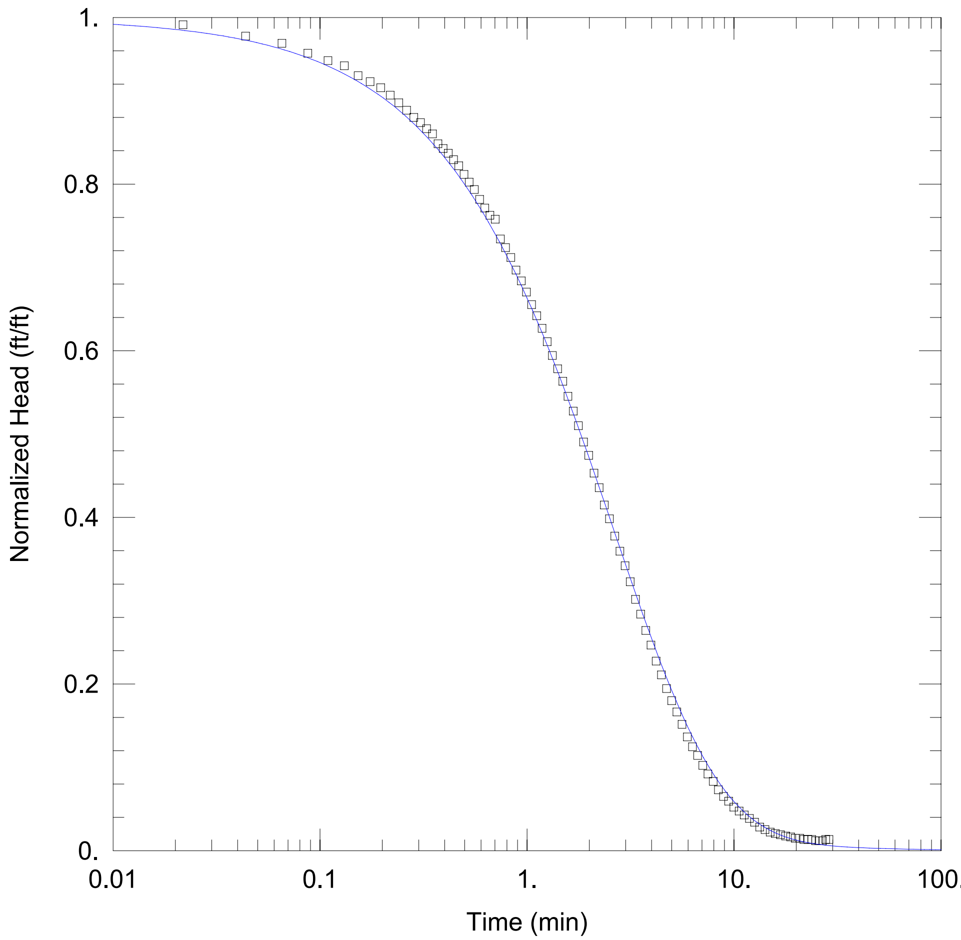
Initial Displacement: 1.911 ft
Total Well Penetration Depth: 85. ft
Casing Radius: 0.06684 ft

Static Water Column Height: 465.3 ft
Screen Length: 35. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.08629 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT17D_565-595_KGS.aqt
Date: 12/07/10 Time: 07:56:25

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 01/19/2006

AQUIFER DATA

Saturated Thickness: 206. ft

WELL DATA (17D_565-595)

Initial Displacement: 1.933 ft
Total Well Penetration Depth: 40. ft
Casing Radius: 0.06684 ft

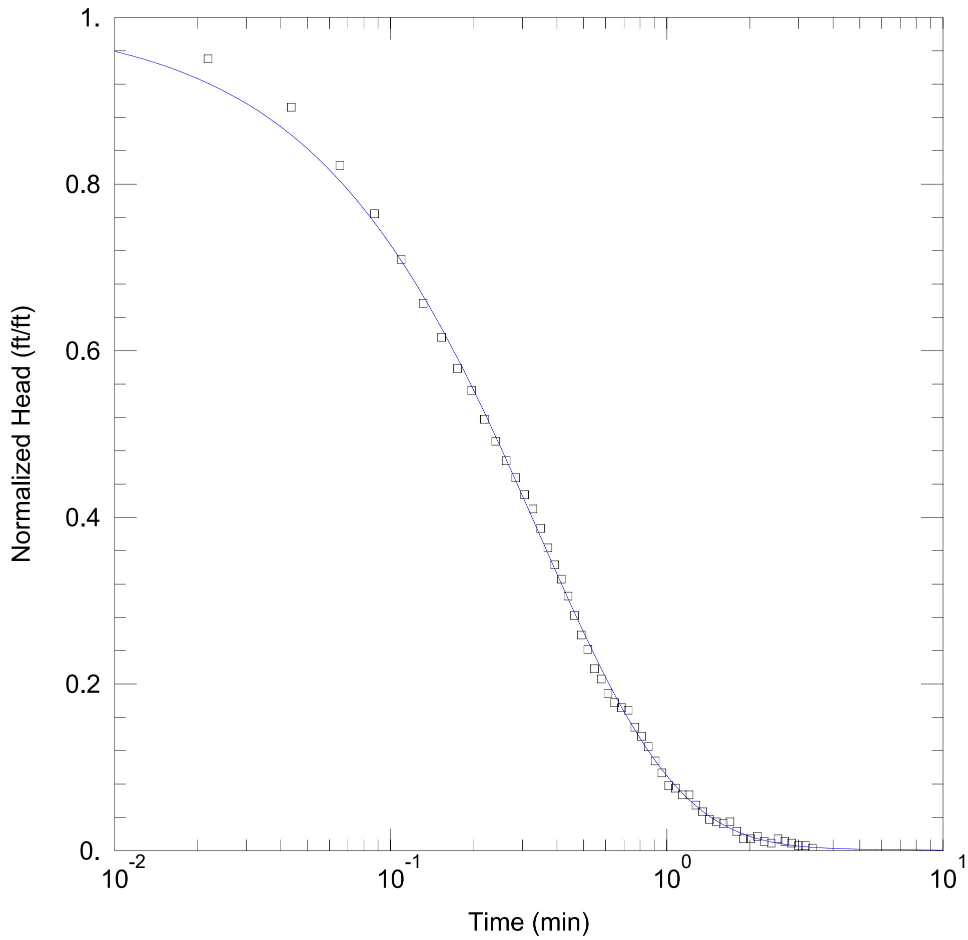
Static Water Column Height: 503. ft
Screen Length: 30. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.1969 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT19C_605-665_KGS_radius.aqt
Date: 03/17/11 Time: 09:55:24

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 02/22/2006

AQUIFER DATA

Saturated Thickness: 694. ft

WELL DATA (19C_605-665)

Initial Displacement: 0.985 ft
Total Well Penetration Depth: 60.6 ft
Casing Radius: 0.1664 ft

Static Water Column Height: 570.7 ft
Screen Length: 60.6 ft
Well Radius: 0.1263 ft

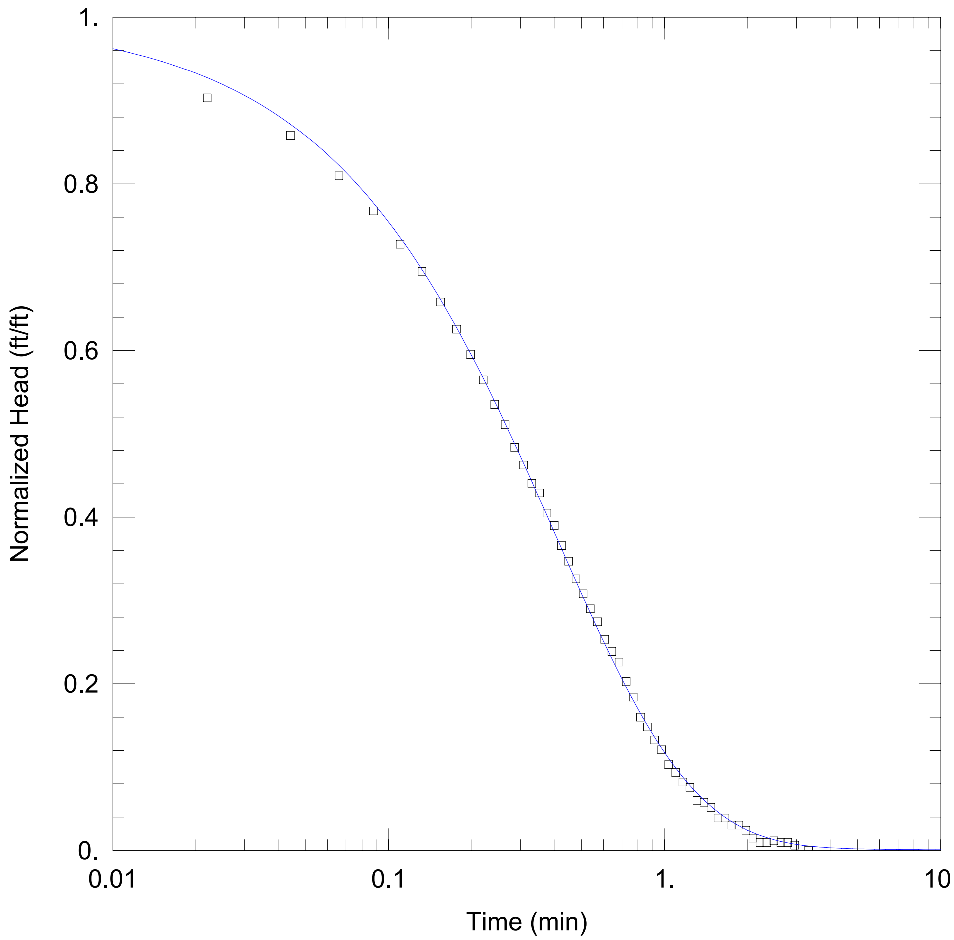
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 5.136 ft/day
Kz/Kr = 1.

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT20C_676-705_KGS.aqt
Date: 12/07/10 Time: 07:52:12

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 02/24/2006

AQUIFER DATA

Saturated Thickness: 694. ft

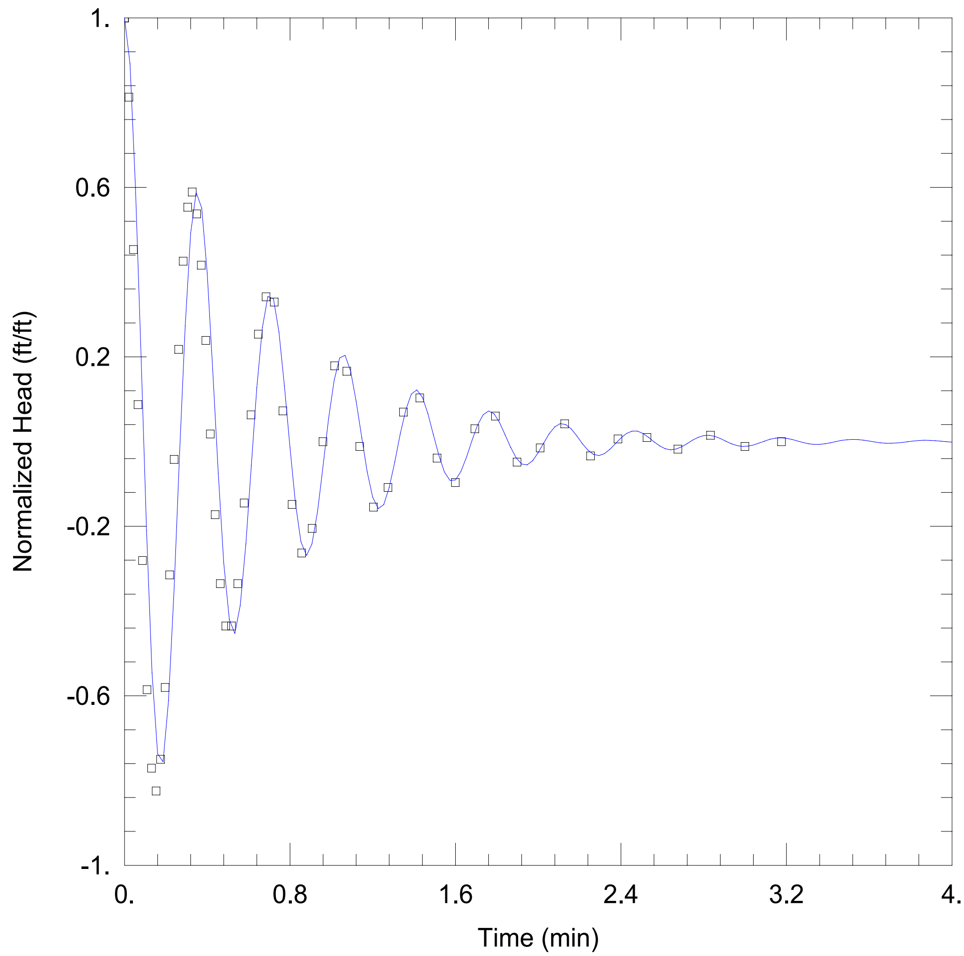
WELL DATA (20C_676-705)

Initial Displacement: 0.951 ft
Total Well Penetration Depth: 100. ft
Casing Radius: 0.06684 ft
Static Water Column Height: 610. ft
Screen Length: 29. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 1.298 ft/day
Kz/Kr = 0.3926
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT21B_725-755_Butler.aqt
Date: 07/29/10 Time: 07:41:15

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 03/02/2006

AQUIFER DATA

Saturated Thickness: 182. ft
Anisotropy Ratio (Kz/Kr): 0.1

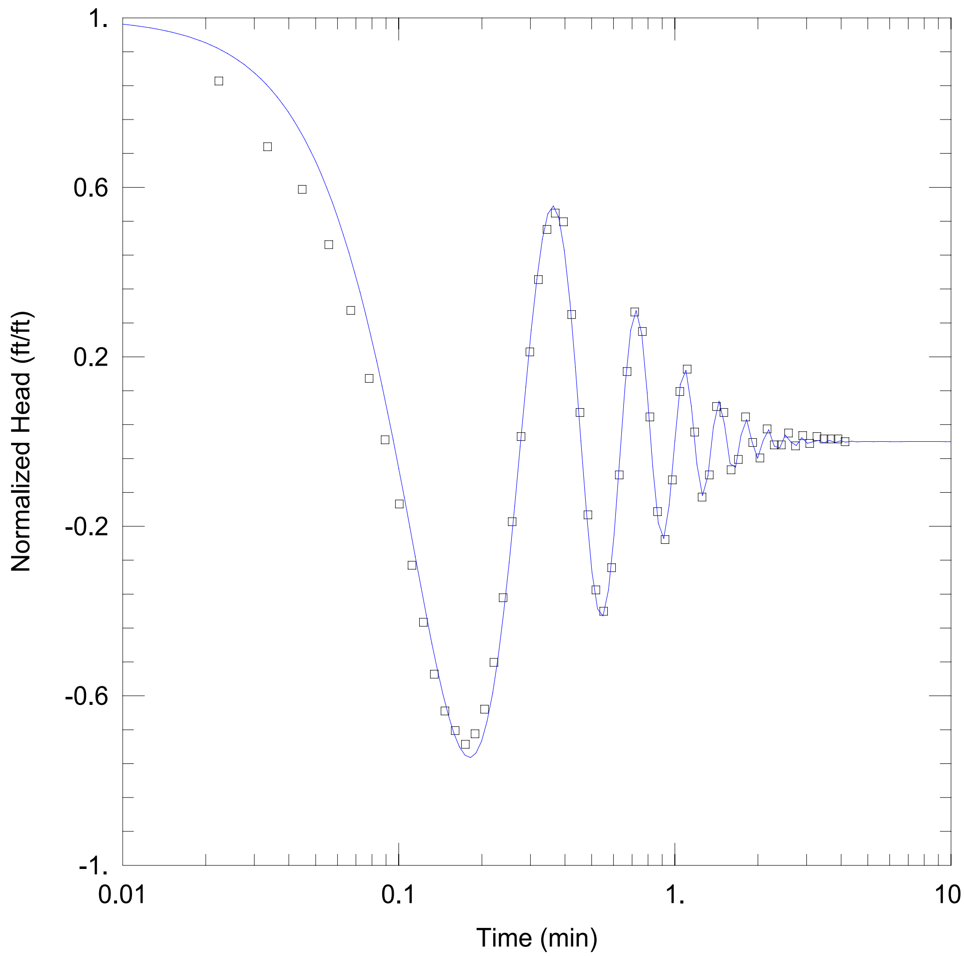
WELL DATA (21B_725-755)

Initial Displacement: 0.951 ft
Total Well Penetration Depth: 35. ft
Casing Radius: 0.06684 ft
Static Water Column Height: 660.8 ft
Screen Length: 30. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 196.3 ft/day
Le = 361.6 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT22A_790-810_Butler.aqt
Date: 07/29/10 Time: 07:41:57

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 03/17/2006

AQUIFER DATA

Saturated Thickness: 182. ft Anisotropy Ratio (Kz/Kr): 0.1

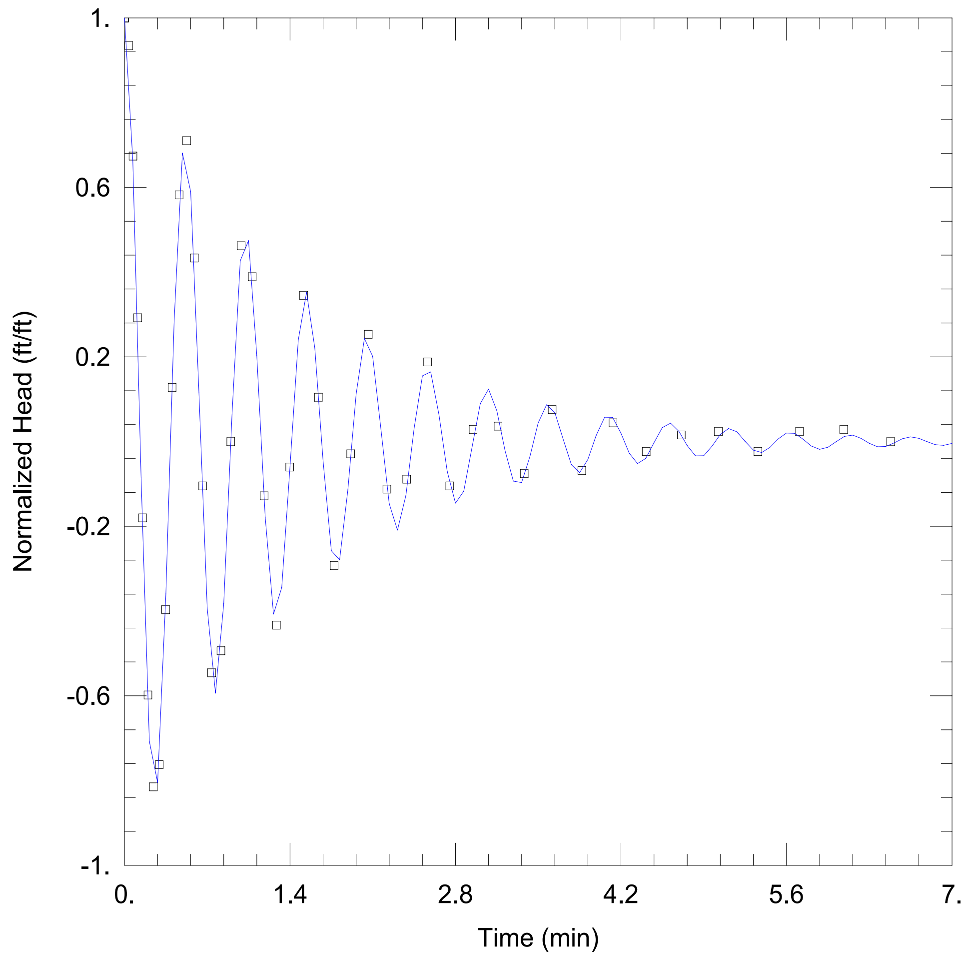
WELL DATA (22A_790-810)

Initial Displacement: 1.428 ft Static Water Column Height: 711.5 ft
Total Well Penetration Depth: 80. ft Screen Length: 20. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 226.5 ft/day Le = 380.2 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT23B_810-830_Butler.aqt
Date: 03/17/11 Time: 09:58:57

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 03/24/2006

AQUIFER DATA

Saturated Thickness: 182. ft Anisotropy Ratio (Kz/Kr): 0.1

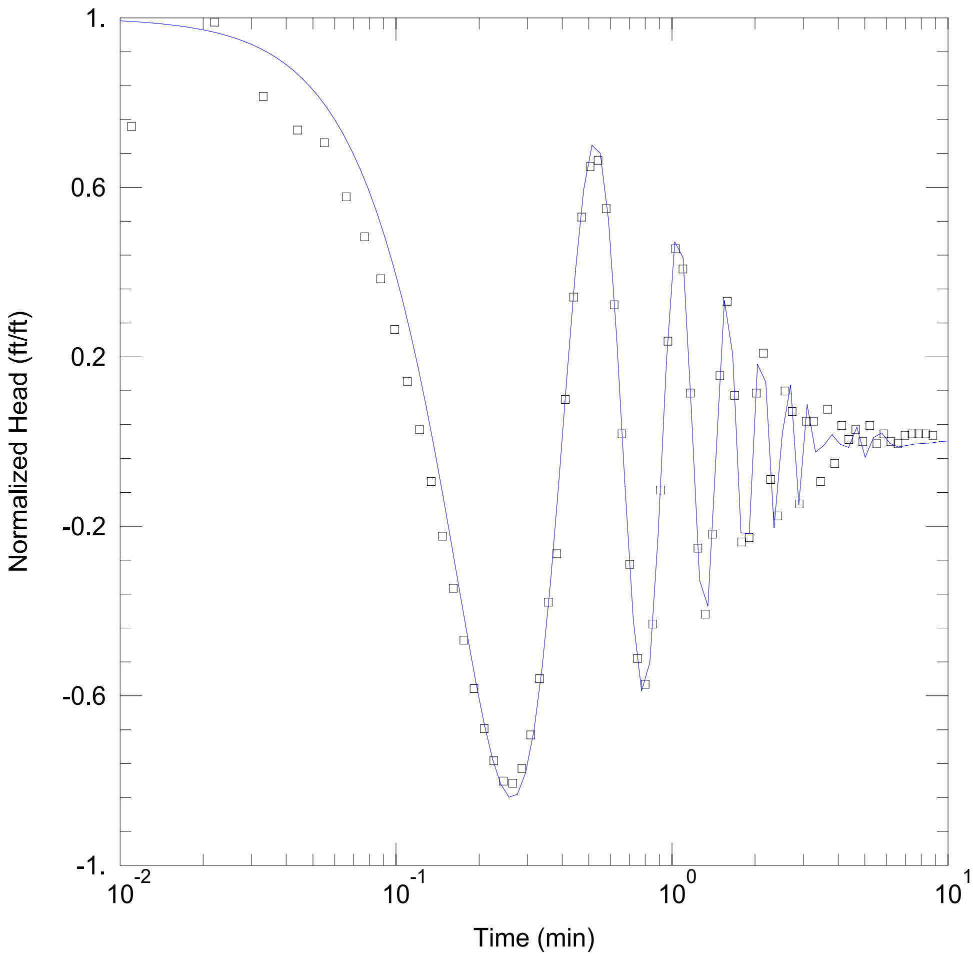
WELL DATA (23B_810-840)

Initial Displacement: 0.383 ft Static Water Column Height: 729.4 ft
Total Well Penetration Depth: 102. ft Screen Length: 20. ft
Casing Radius: 0.125 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 490.7 ft/day Le = 766.6 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT24B_850-880_Butler.aqt
Date: 03/17/11 Time: 10:01:28

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 04/04/2006

AQUIFER DATA

Saturated Thickness: 182. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (24B_850-880)

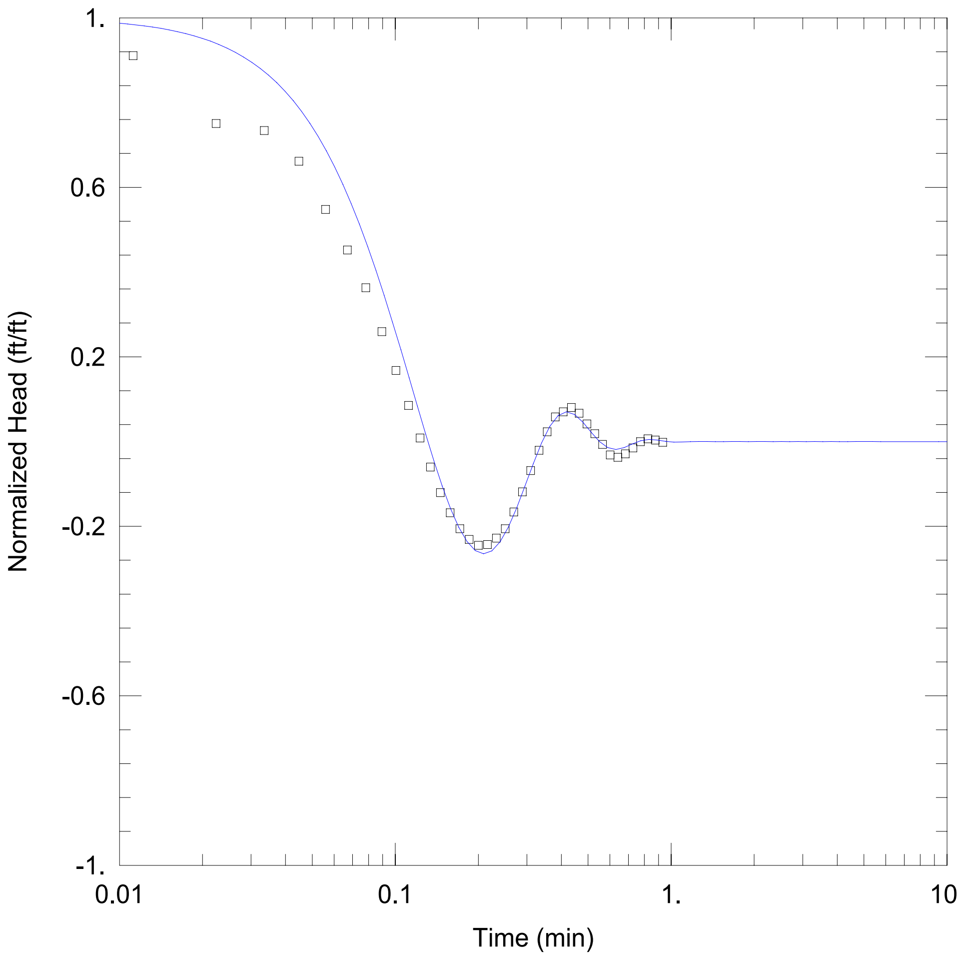
Initial Displacement: 0.604 ft
Total Well Penetration Depth: 62. ft
Casing Radius: 0.125 ft

Static Water Column Height: 776.9 ft
Screen Length: 30. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 344.2 ft/day Le = 809.6 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT25A_915-940_Butler.aqt
Date: 07/29/10 Time: 07:46:47

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 04/11/2006

AQUIFER DATA

Saturated Thickness: 387. ft Anisotropy Ratio (Kz/Kr): 0.1

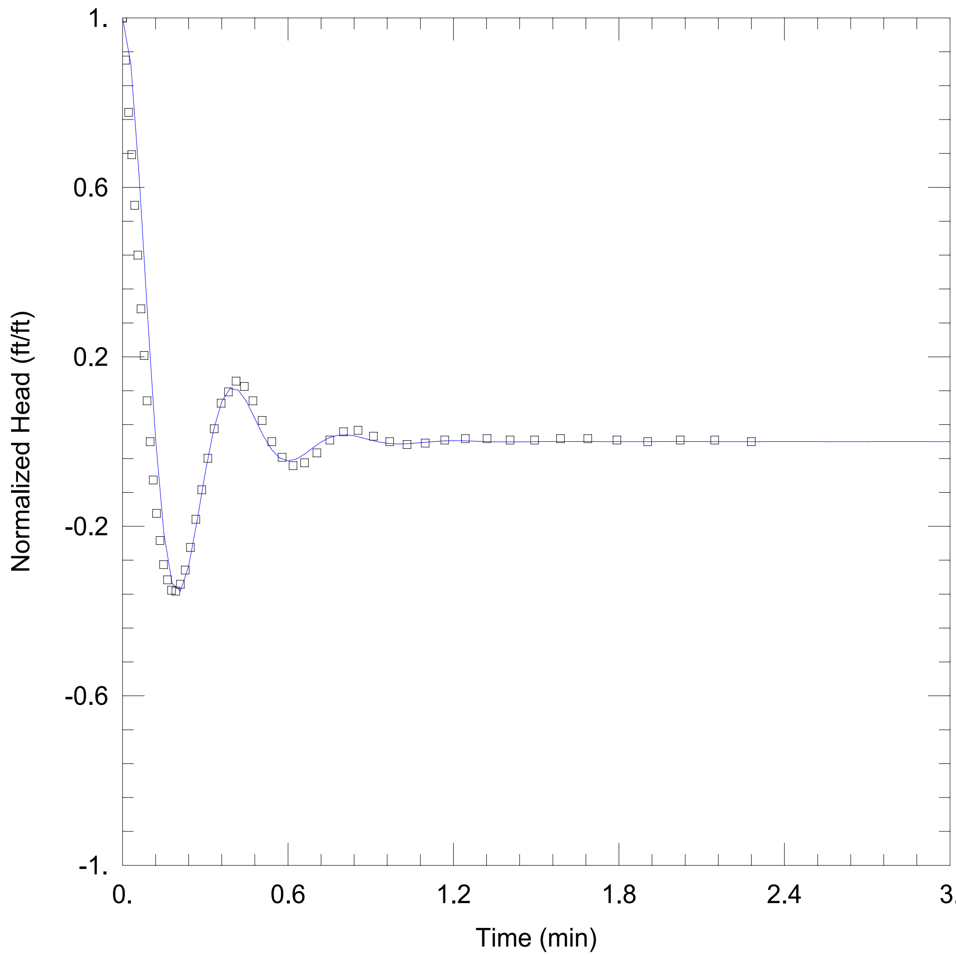
WELL DATA (25A_915-940)

Initial Displacement: 1.079 ft Static Water Column Height: 834.1 ft
Total Well Penetration Depth: 28. ft Screen Length: 25. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 17.34 ft/day Le = 435.8 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT26A_975-1000_Butler.aqt
Date: 07/29/10 Time: 07:47:35

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 04/14/2006

AQUIFER DATA

Saturated Thickness: 387. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (26A_975-1000)

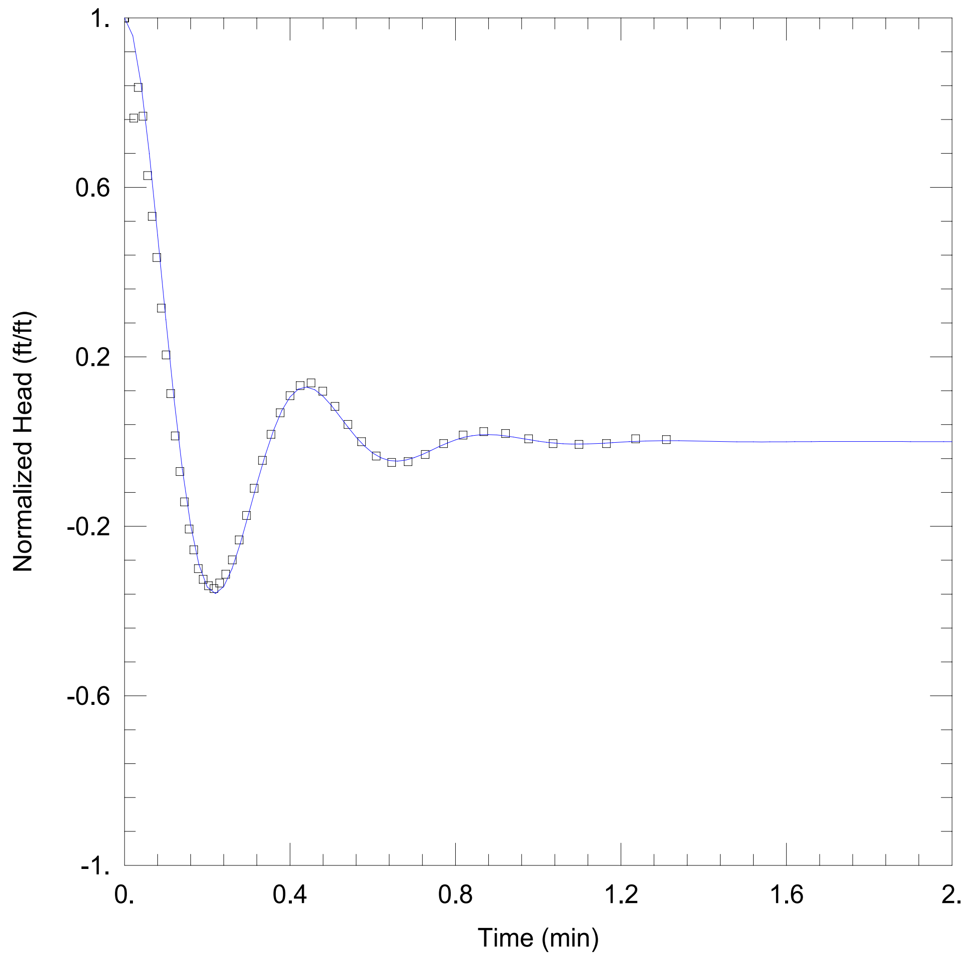
Initial Displacement: 0.861 ft
Total Well Penetration Depth: 88. ft
Casing Radius: 0.06684 ft

Static Water Column Height: 892.4 ft
Screen Length: 25. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 21.89 ft/day Le = 426.5 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT27G_1016-1040_Butler.aqt
Date: 07/29/10 Time: 07:52:14

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 04/18/2006

AQUIFER DATA

Saturated Thickness: 387. ft Anisotropy Ratio (Kz/Kr): 0.1

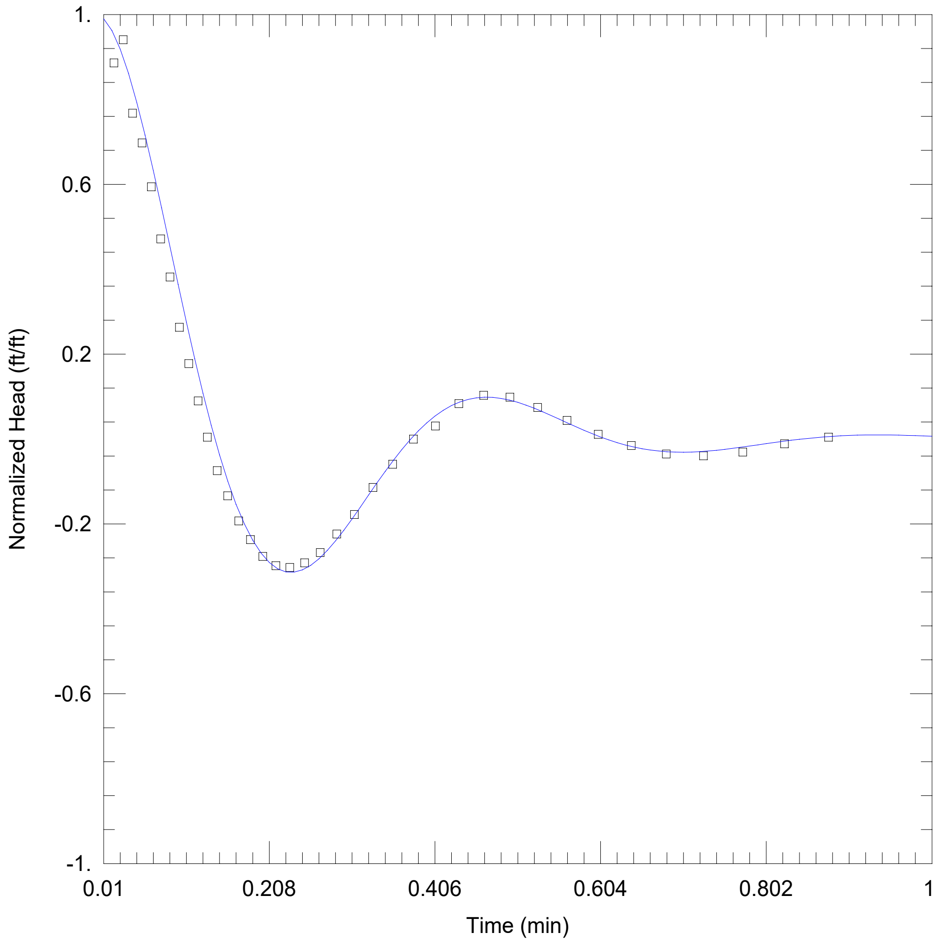
WELL DATA (26G_1016-40)

Initial Displacement: 1.061 ft
Total Well Penetration Depth: 128. ft
Casing Radius: 0.06684 ft
Static Water Column Height: 931.8 ft
Screen Length: 24. ft
Well Radius: 0.1263 ft

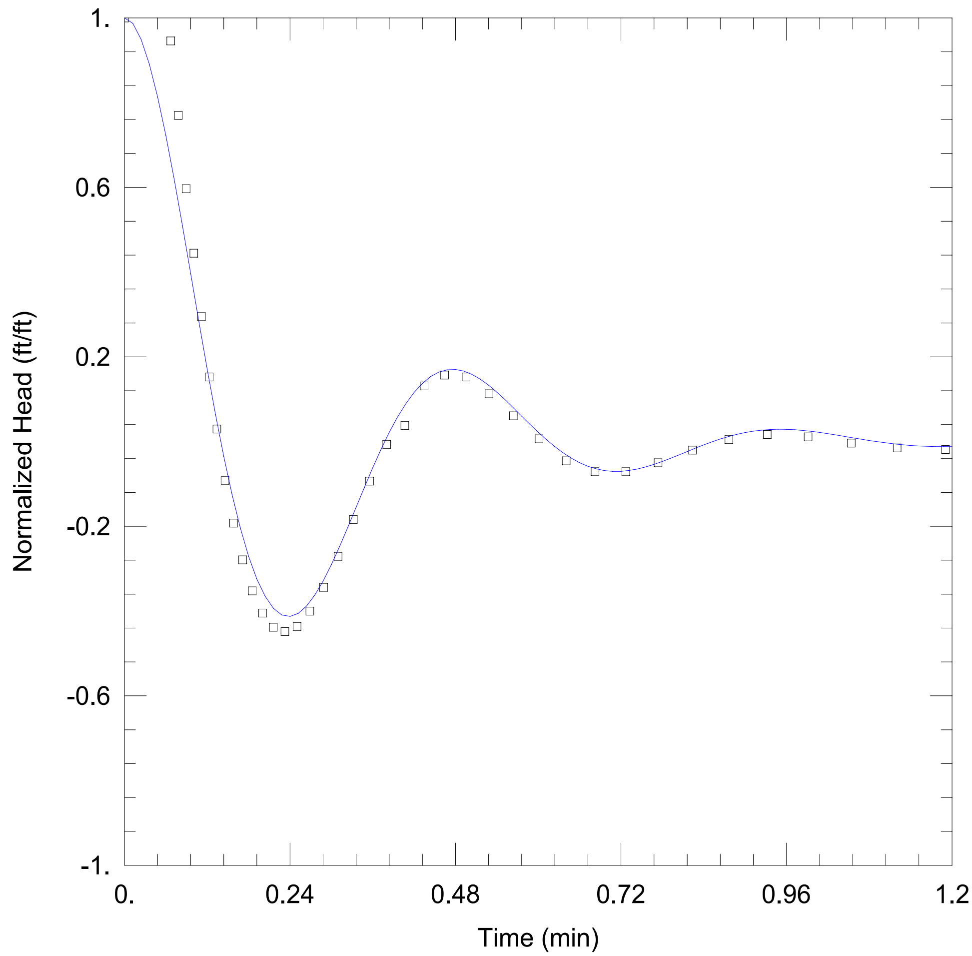
SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 20.85 ft/day
Le = 508.6 ft



SLUG TEST ANALYSIS	
Data Set: D:\...\LWPY_PT29B_1111-1140_Butler.aqt	
Date: 07/29/10	Time: 08:00:03
PROJECT INFORMATION	
Company: SWFWMD	
Project: ROMP 45.5	
Location: Polk County	
Test Well: CH-2	
Test Date: 05/08/2006	
AQUIFER DATA	
Saturated Thickness: 387. ft	Anisotropy Ratio (Kz/Kr): 0.1
WELL DATA (29B_1111-40)	
Initial Displacement: 0.456 ft	Static Water Column Height: 1026.1 ft
Total Well Penetration Depth: 188. ft	Screen Length: 29. ft
Casing Radius: 0.06684 ft	Well Radius: 0.1263 ft
SOLUTION	
Aquifer Model: Confined	Solution Method: Butler
K = 15.13 ft/day	Le = 564.4 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT31A_1218-1240_Butler.aqt
Date: 07/29/10 Time: 11:16:39

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 05/15/2006

AQUIFER DATA

Saturated Thickness: 387. ft Anisotropy Ratio (Kz/Kr): 0.1

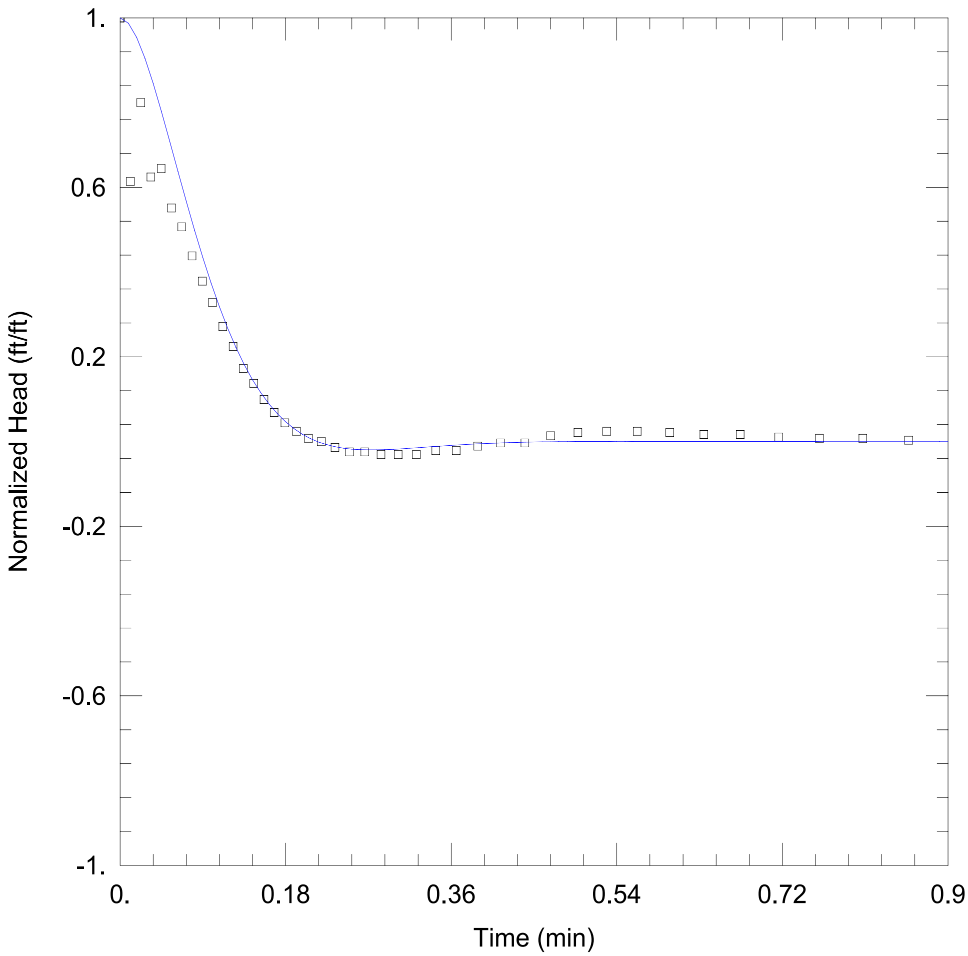
WELL DATA (31C_1218-40)

Initial Displacement: 1.082 ft Static Water Column Height: 1125.5 ft
Total Well Penetration Depth: 81. ft Screen Length: 22. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 23.37 ft/day Le = 614.3 ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT32B_1270-1300_Butler.aqt
Date: 07/29/10 Time: 08:04:30

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 05/22/2006

AQUIFER DATA

Saturated Thickness: 387. ft Anisotropy Ratio (Kz/Kr): 0.1

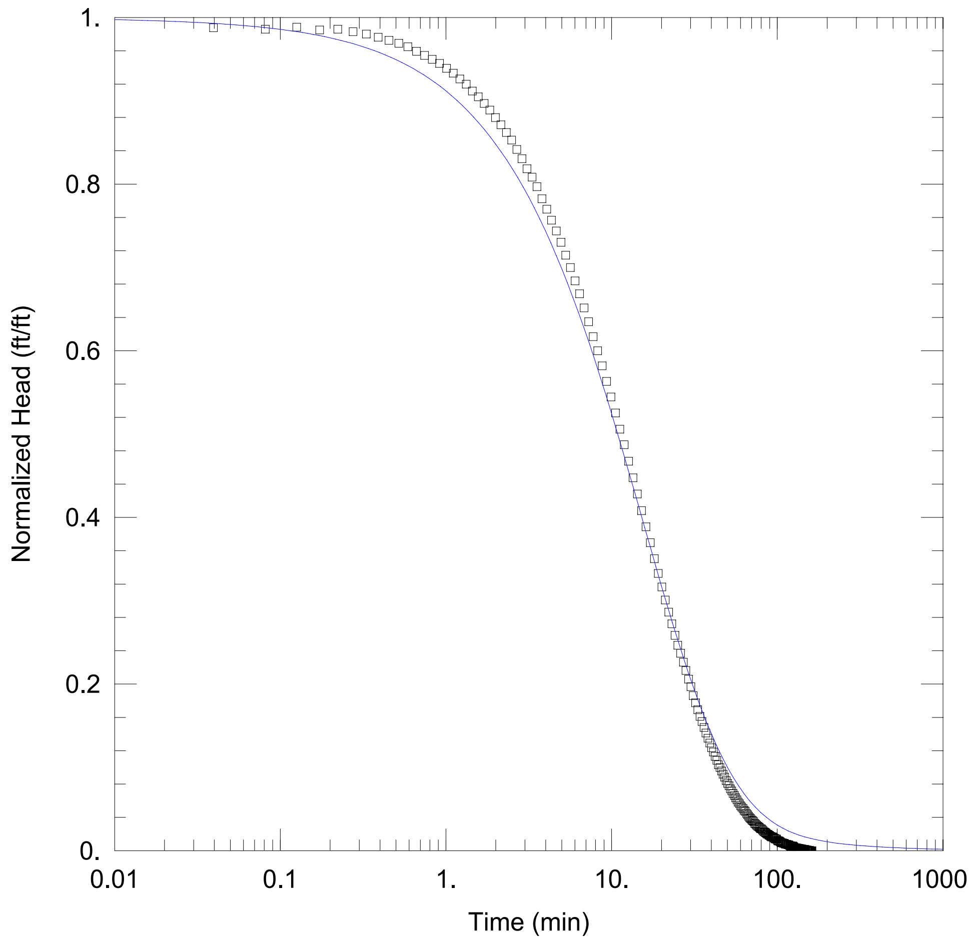
WELL DATA (32B_1270-1300)

Initial Displacement: 0.655 ft Static Water Column Height: 1185.2 ft
Total Well Penetration Depth: 31. ft Screen Length: 30. ft
Casing Radius: 0.06684 ft Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 8.371 ft/day Le = 341. ft



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT33A_1300-1480_KGS.aqt
Date: 07/29/10 Time: 08:05:21

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 06/21/2006

AQUIFER DATA

Saturated Thickness: 956. ft

WELL DATA (33A_1300-1480)

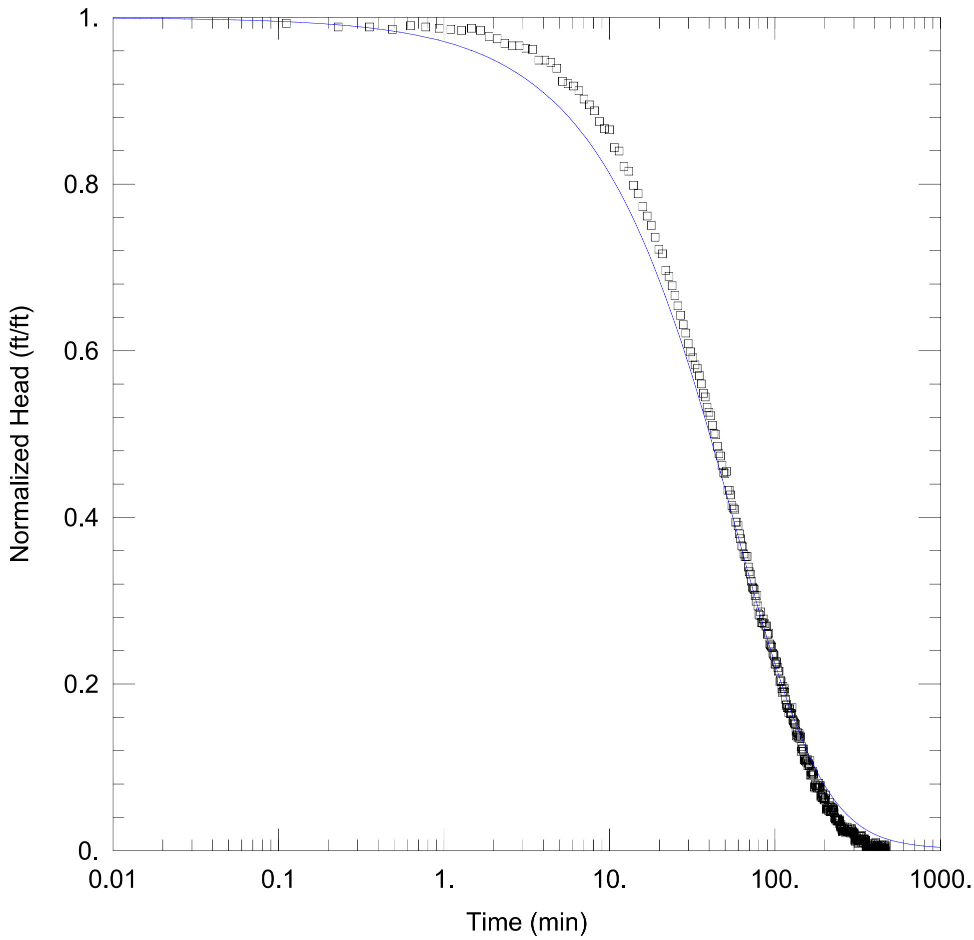
Initial Displacement: 34.63 ft
Total Well Penetration Depth: 181. ft
Casing Radius: 0.09514 ft

Static Water Column Height: 1374.2 ft
Screen Length: 180. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.01007 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT34A_1425-1480_KGS.aqt
Date: 12/07/10 Time: 08:09:50

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 06/23/2006

AQUIFER DATA

Saturated Thickness: 956. ft

WELL DATA (34A_1425-1480)

Initial Displacement: 10.12 ft
Total Well Penetration Depth: 181. ft
Casing Radius: 0.09514 ft

Static Water Column Height: 1370.4 ft
Screen Length: 55. ft
Well Radius: 0.1263 ft

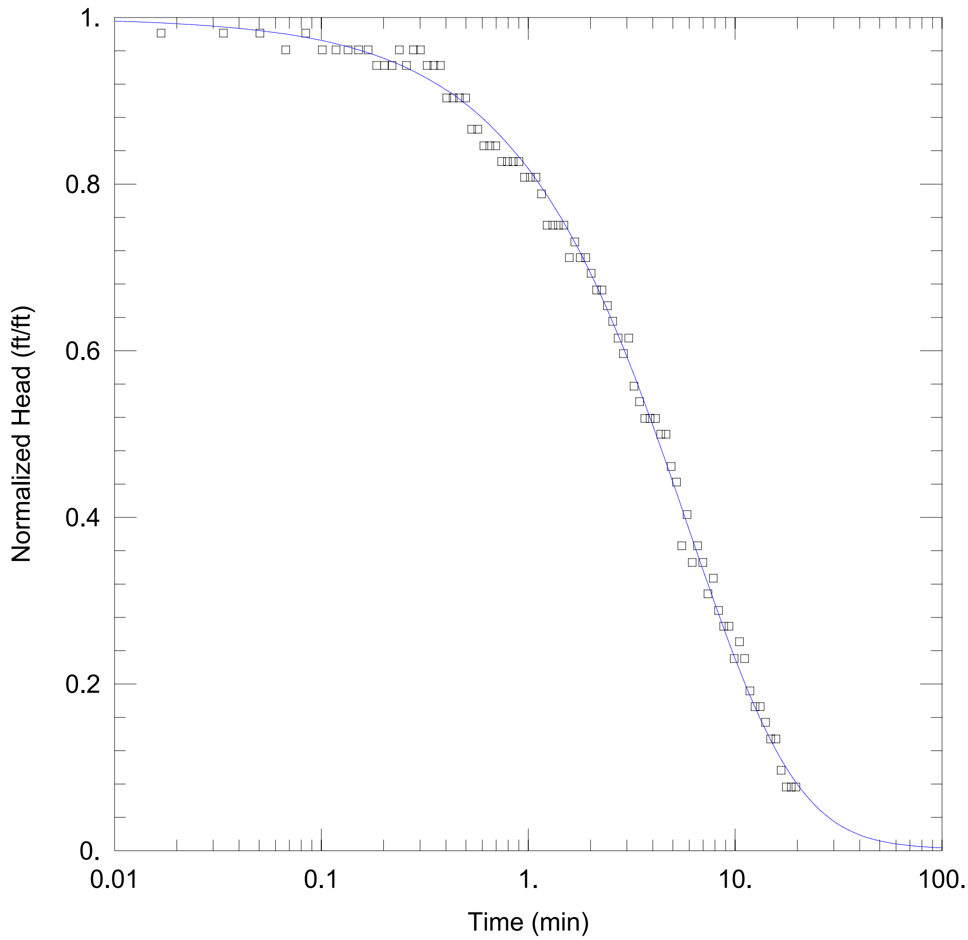
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.00982 ft/day
Kz/Kr = 0.1

Ss = 1.271E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\LWPY_PT36B_1698-1749_KGS.aqt
Date: 07/29/10 Time: 08:08:01

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-2
Test Date: 07/27/2006

AQUIFER DATA

Saturated Thickness: 956. ft

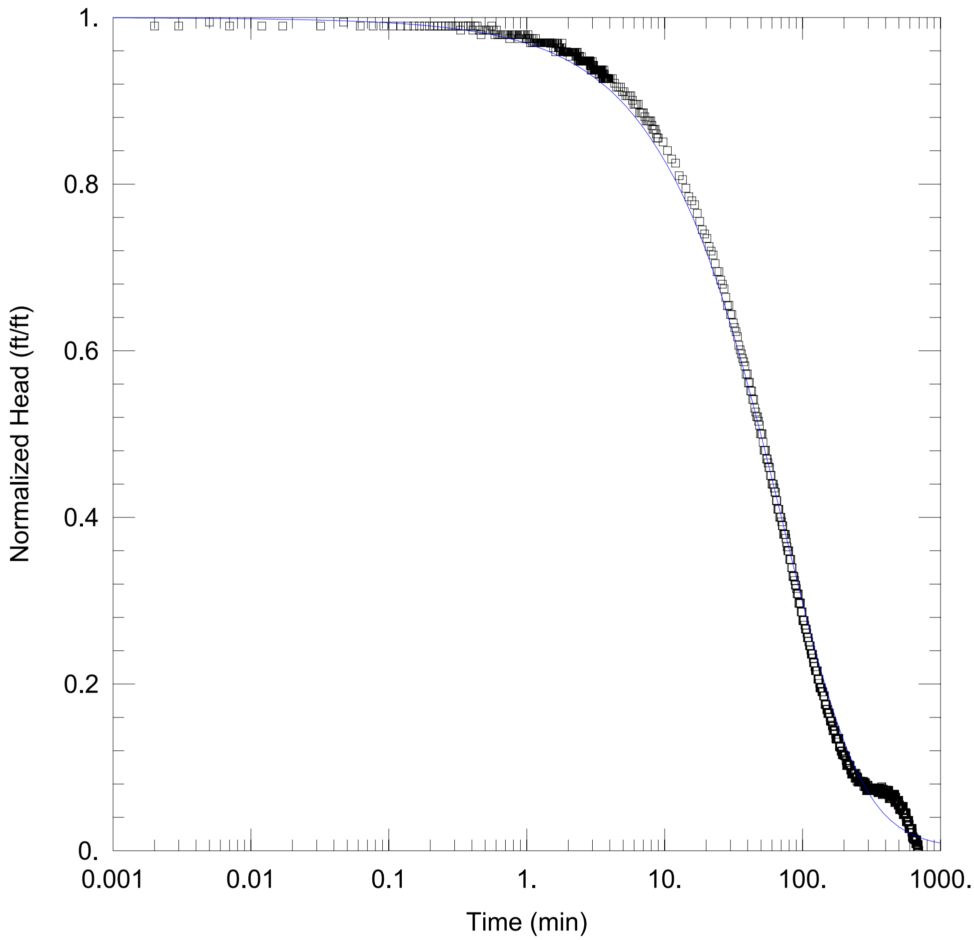
WELL DATA (36B_1698-1749)

Initial Displacement: 0.746 ft
Total Well Penetration Depth: 450. ft
Casing Radius: 0.09514 ft
Static Water Column Height: 1608.6 ft
Screen Length: 51. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: KGS Model

Kr = 0.1058 ft/day
Kz/Kr = 0.1
Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST38A_1650-1700_KGS.aqt
Date: 12/07/10 Time: 08:07:50

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 10/9/2007

AQUIFER DATA

Saturated Thickness: 956. ft

WELL DATA (38A_1650-1700)

Initial Displacement: 1.459 ft
Total Well Penetration Depth: 401. ft
Casing Radius: 0.3332 ft

Static Water Column Height: 1557.1 ft
Screen Length: 50. ft
Well Radius: 0.3333 ft

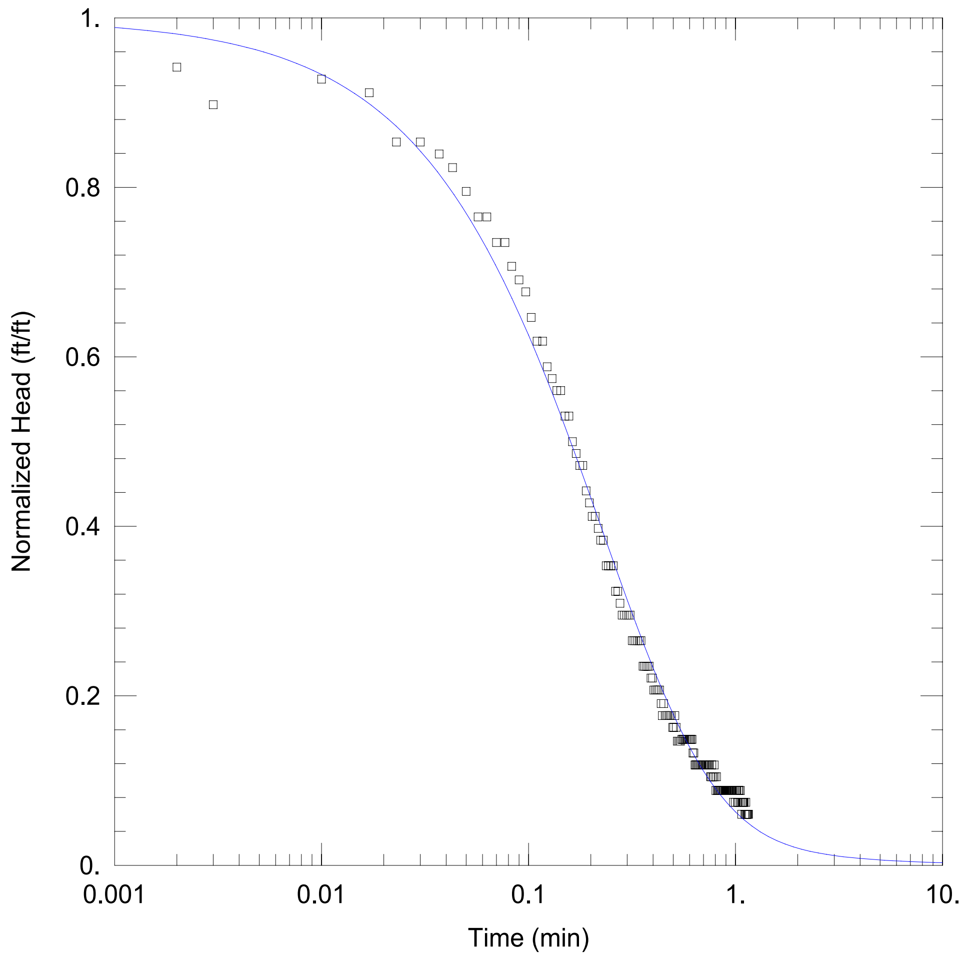
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.07767 ft/day
Kz/Kr = 0.1

Ss = 2.807E-5 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST40C_1751-1887_Cooper.aqt
Date: 12/07/10 Time: 08:11:09

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 11/8/2007

AQUIFER DATA

Saturated Thickness: 956. ft Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (34C1751-1887)

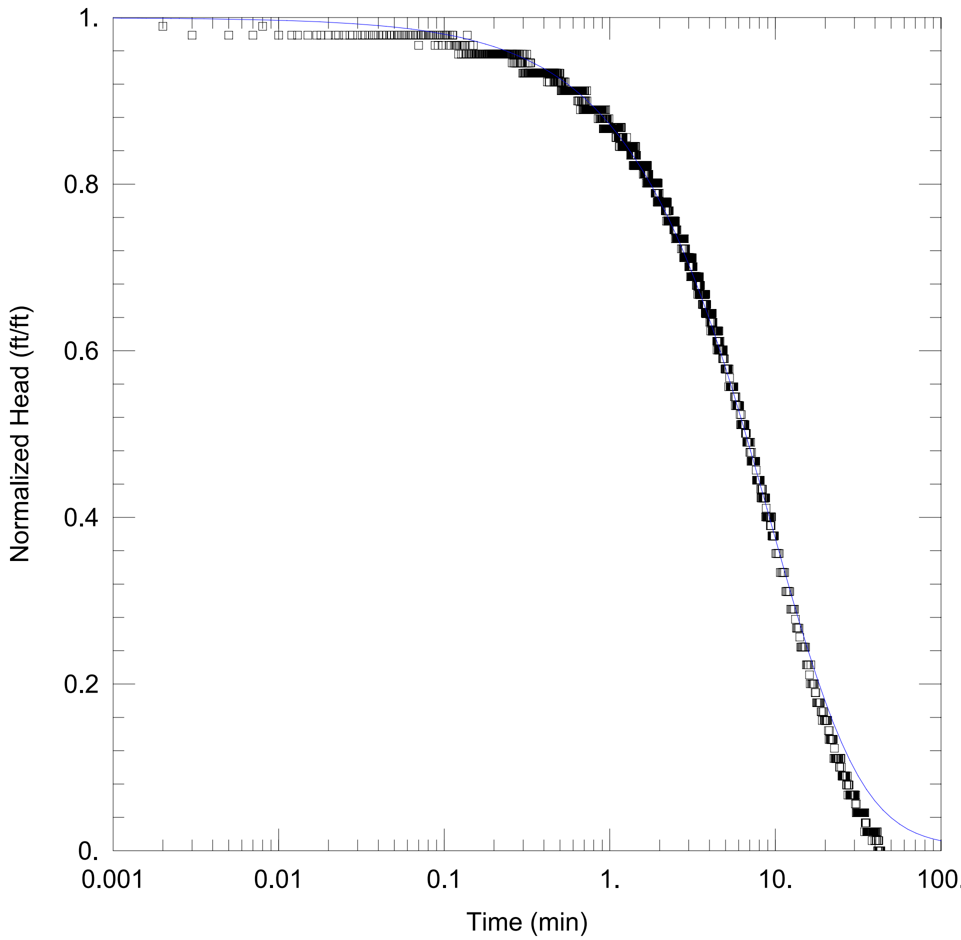
Initial Displacement: 0.498 ft
Total Well Penetration Depth: 504. ft
Casing Radius: 0.09494 ft

Static Water Column Height: 1749.3 ft
Screen Length: 136. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos

T = 116.4 ft^2/day
S = 0.0002931



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST41B_1927-2037_KGS.aqt
Date: 12/07/10 Time: 08:12:11

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 12/11/2007

AQUIFER DATA

Saturated Thickness: 956. ft

WELL DATA (41B_1927-2037)

Initial Displacement: -0.659 ft
Total Well Penetration Depth: 328. ft
Casing Radius: 0.09494 ft

Static Water Column Height: 1899.6 ft
Screen Length: 110. ft
Well Radius: 0.1263 ft

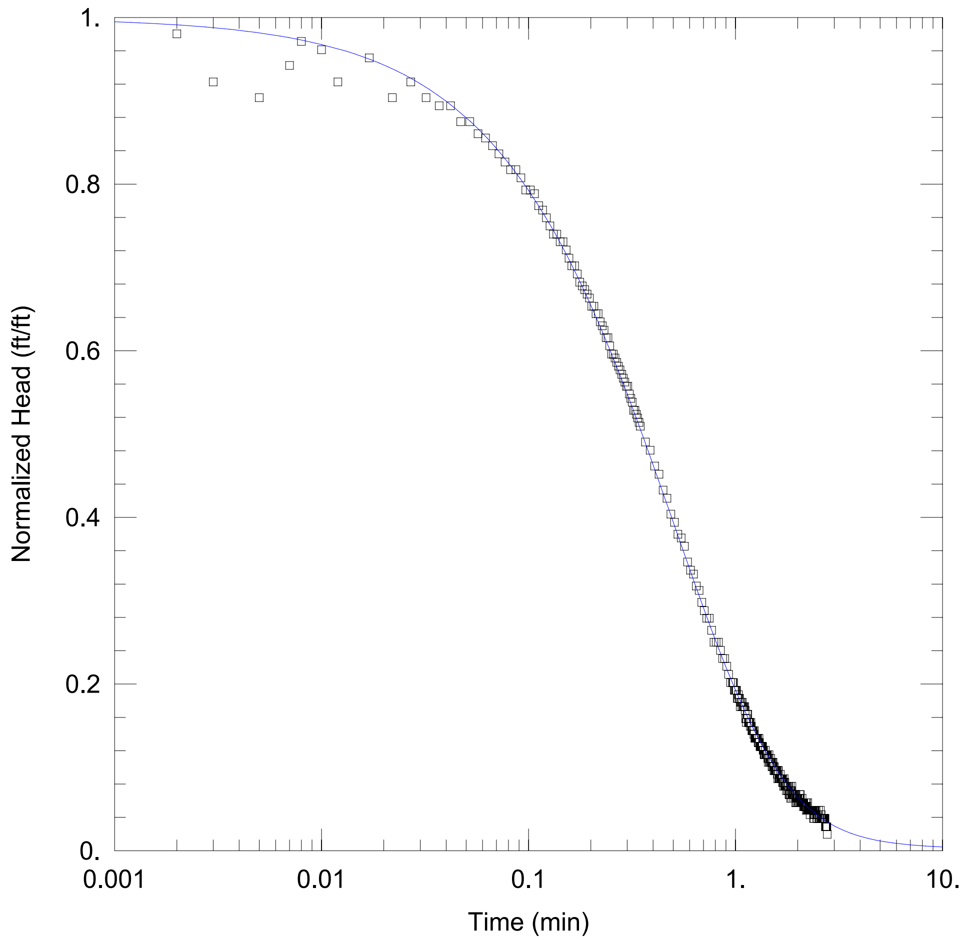
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.02853 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST42A_2151-2237_KGS.aqt
Date: 12/07/10 Time: 08:13:38

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 1/3/2008

AQUIFER DATA

Saturated Thickness: 956. ft

WELL DATA (42A_2151-2237)

Initial Displacement: 1.527 ft
Total Well Penetration Depth: 98. ft
Casing Radius: 0.09494 ft

Static Water Column Height: 2105.7 ft
Screen Length: 80. ft
Well Radius: 0.1263 ft

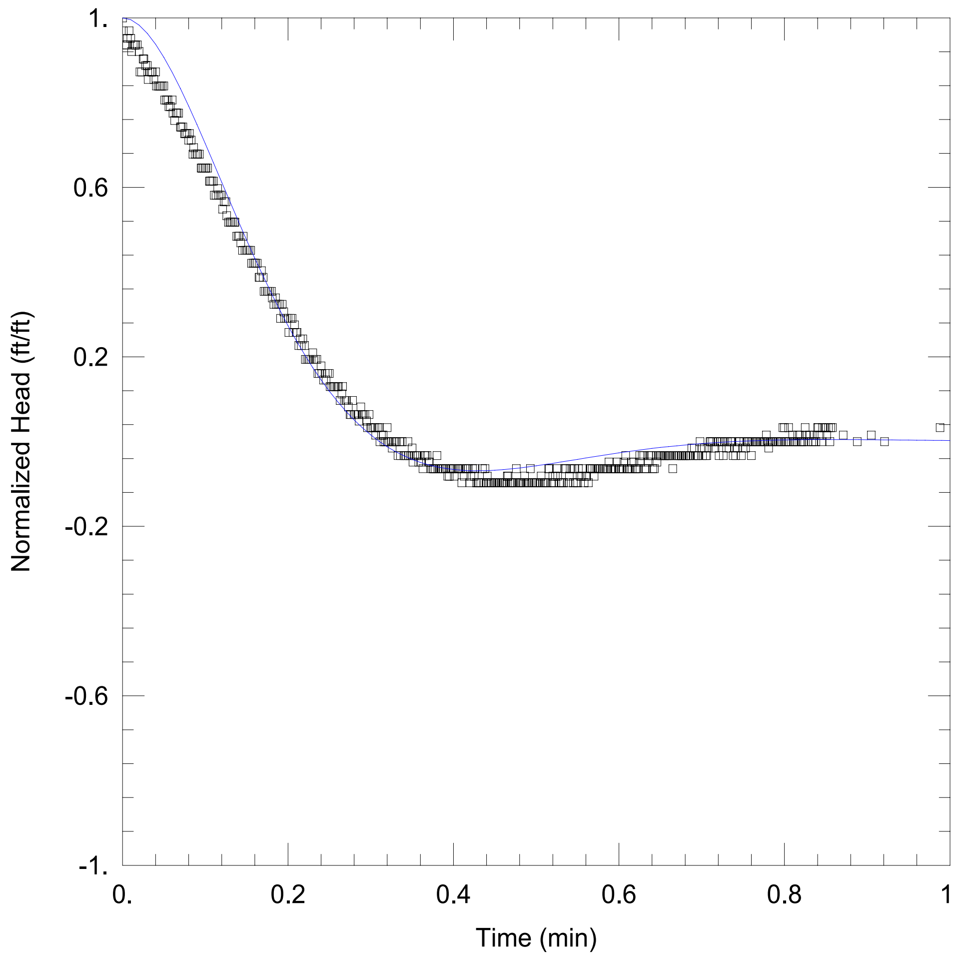
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.7574 ft/day
Kz/Kr = 0.1

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST43B_2267-2367_Butler.aqt
Date: 12/07/10 Time: 08:15:05

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 1/14/2008

AQUIFER DATA

Saturated Thickness: 139.8 ft Anisotropy Ratio (Kz/Kr): 0.5

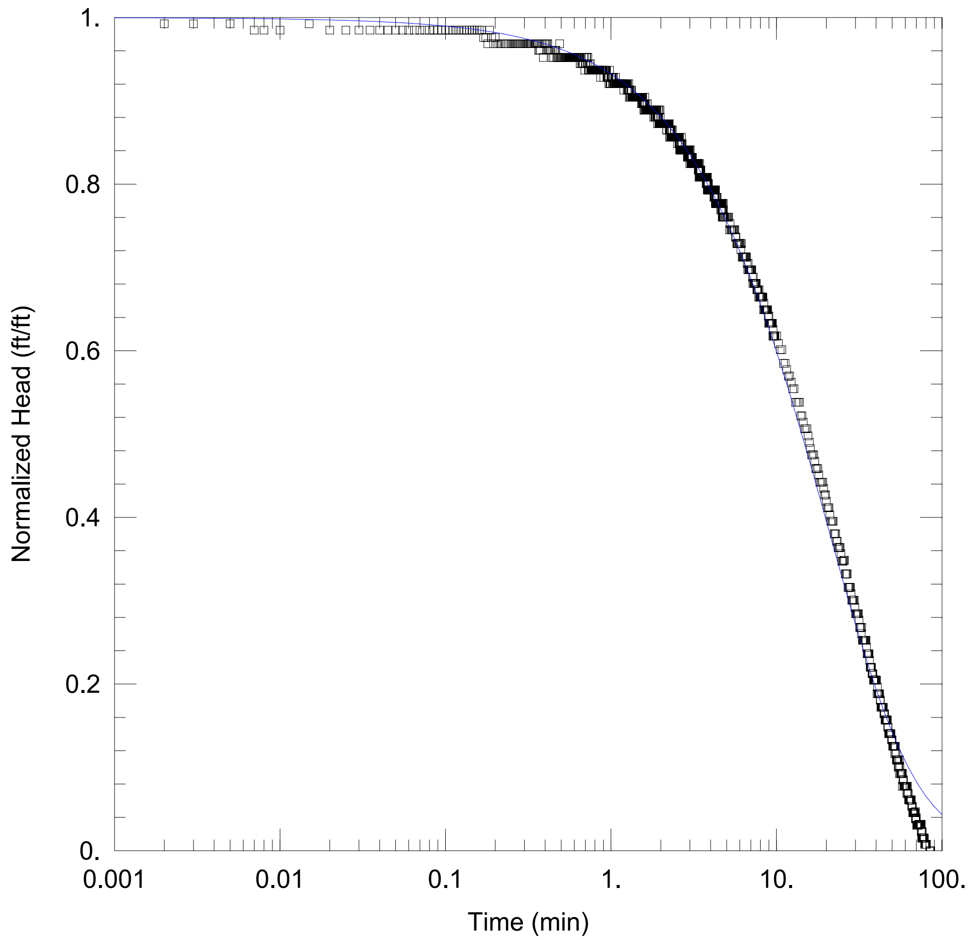
WELL DATA (43B_2267-2367)

Initial Displacement: -0.454 ft
Total Well Penetration Depth: 100. ft
Casing Radius: 0.09494 ft
Static Water Column Height: 2233.1 ft
Screen Length: 100. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 3.715 ft/day Le = 1250.9 ft



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST44B_2395-2467_KGS.aqt
Date: 12/07/10 Time: 08:15:45

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 1/22/2008

AQUIFER DATA

Saturated Thickness: 188.2 ft

WELL DATA (44B_2395-2467)

Initial Displacement: 0.918 ft
Total Well Penetration Depth: 72.2 ft
Casing Radius: 0.09494 ft

Static Water Column Height: 2330.8 ft
Screen Length: 72. ft
Well Radius: 0.1263 ft

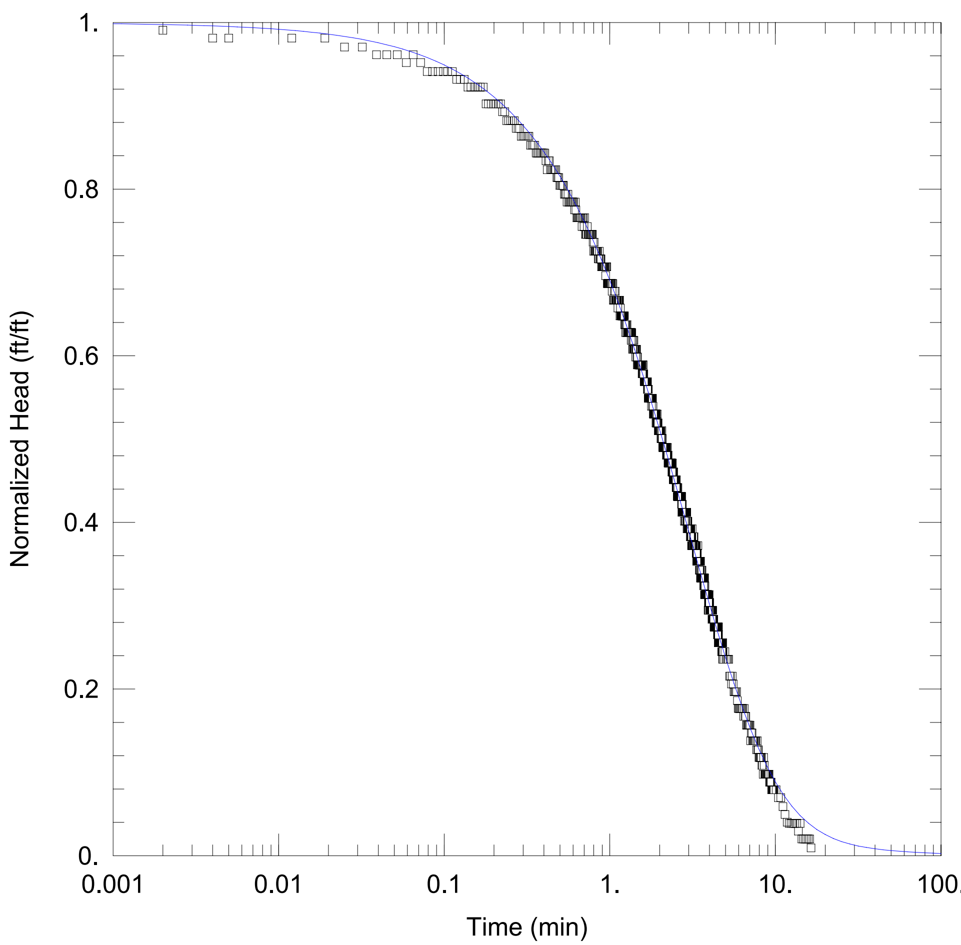
SOLUTION

Aquifer Model: Confined

Kr = 0.02134 ft/day
Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 1.0E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST45B_2467-2557_KGS.aqt
Date: 12/07/10 Time: 08:16:36

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 2/11/2008

AQUIFER DATA

Saturated Thickness: 188.2 ft

WELL DATA (45B_2467-2557)

Initial Displacement: -0.747 ft
Total Well Penetration Depth: 116. ft
Casing Radius: 0.09494 ft

Static Water Column Height: 2433.9 ft
Screen Length: 90. ft
Well Radius: 0.1263 ft

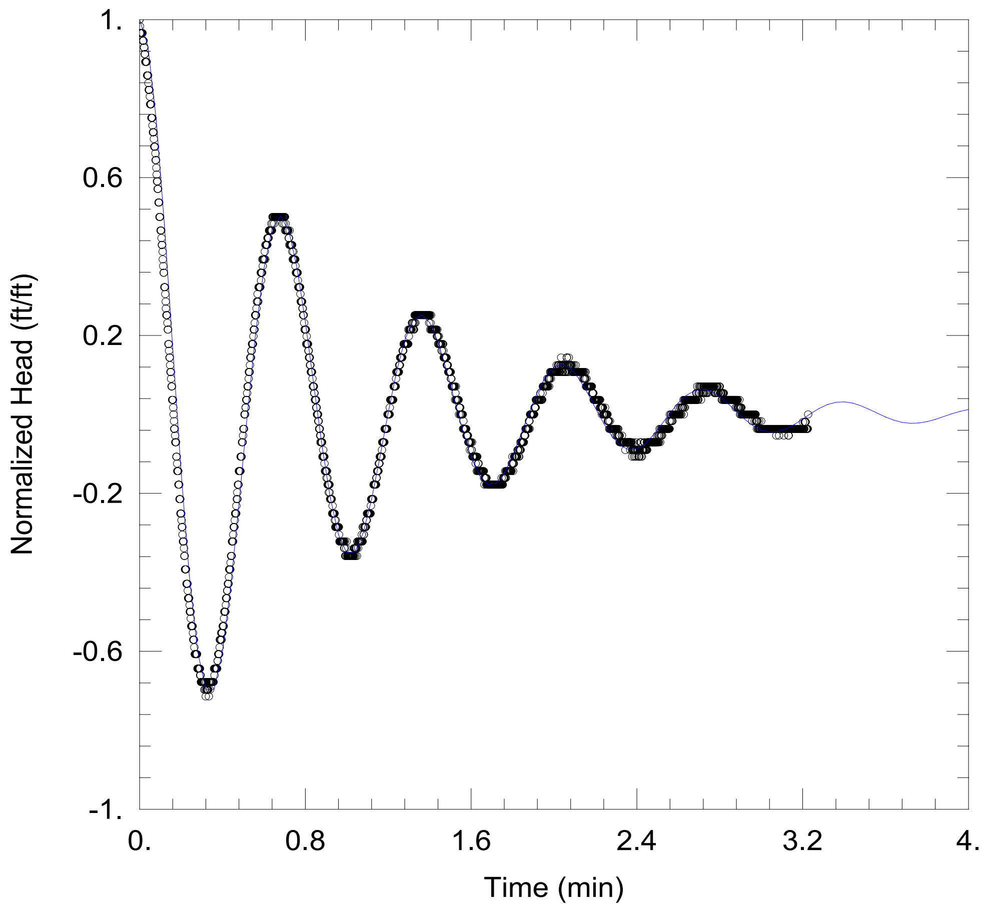
SOLUTION

Aquifer Model: Confined

Solution Method: KGS Model

Kr = 0.1098 ft/day
Kz/Kr = 0.1

Ss = 1.357E-6 ft^{-1}



SLUG TEST ANALYSIS

Data Set: D:\...\ROMP45.5_ST46_B_translated 1st peak.aqt
Date: 12/07/10 Time: 08:21:26

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 2/21/2008

AQUIFER DATA

Saturated Thickness: 44. ft Anisotropy Ratio (Kz/Kr): 0.1

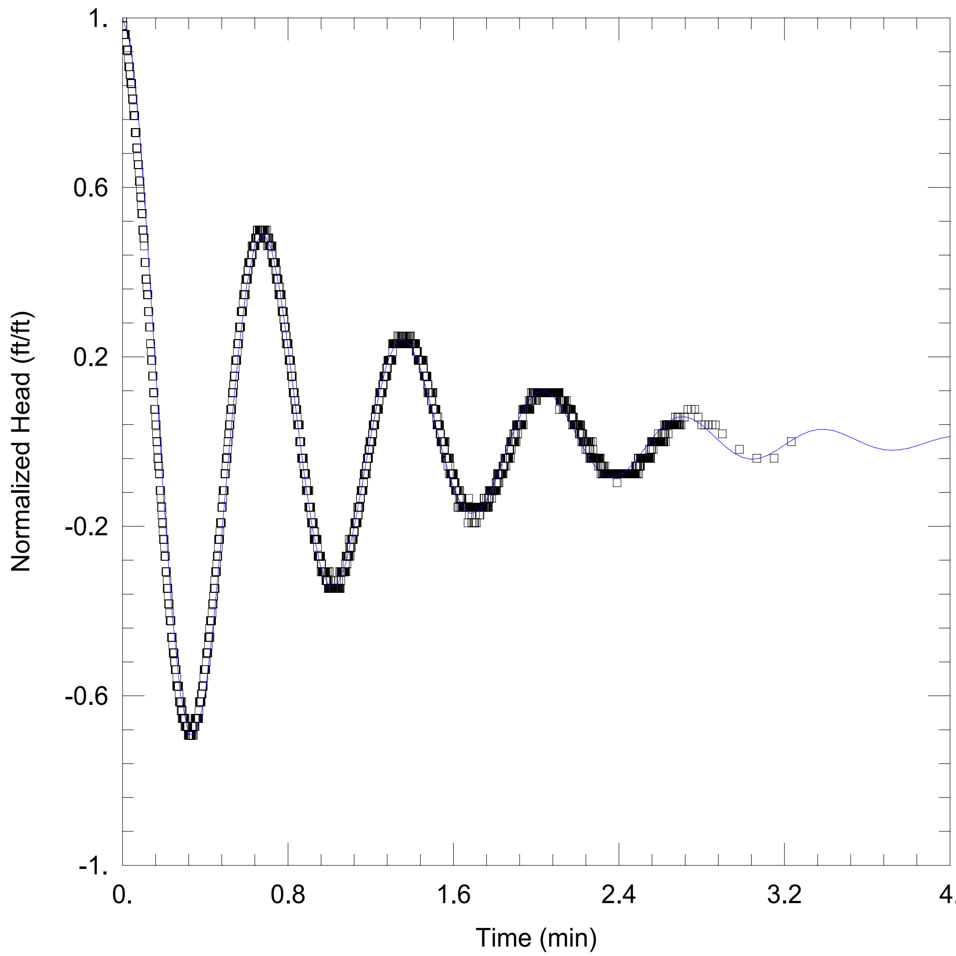
WELL DATA (46B_2583-2647)

Initial Displacement: 0.41 ft
Total Well Penetration Depth: 60. ft
Casing Radius: 0.06656 ft
Static Water Column Height: 2535.8 ft
Screen Length: 60. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 16.43 ft/day Le = 1333.4 ft



SLUG TEST ANALYSIS

Data Set: D:\...\R45.5_ST47B_2583-2697_Butler_translated_1st peak.aqt
Date: 12/07/10 Time: 08:22:37

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: CH-3
Test Date: 03/12/2008

AQUIFER DATA

Saturated Thickness: 80. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (47B_2583-2697)

Initial Displacement: 0.381 ft
Total Well Penetration Depth: 158. ft
Casing Radius: 0.06656 ft

Static Water Column Height: 2585.5 ft
Screen Length: 114. ft
Well Radius: 0.1263 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 8.831 ft/day Le = 1325.3 ft

Appendix H. Daily Water Levels for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

Appendix H. Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
9/26/2005	9:45	51	90	7.69	160.31	7.69	160.31	NR	NR	0	
9/27/2005	9:00	51	90	7.65	160.35	7.65	160.35	NR	NR	0	Packer set at 66-90 ft bls
9/28/2005	9:15	51	90	6.53	161.47	6.53	161.47	NR	NR	0.26	
9/29/2005	9:15	51	130	16.53	151.47	16.53	151.47	NR	NR	0	Packer set at 95-130 ft bls
9/30/2005	10:00	51	170	11.64	156.36	11.64	156.36	NR	NR	0	
10/3/2005	10:00	51	170	11.96	156.04	11.96	156.04	NR	NR	0	
10/4/2005	10:45	52	200	71.19	96.81	71.19	96.81	NR	NR	NR	Packer set at 175-200 ft bls
11/1/2005	10:00	172	172	28.13	139.87	71.64	96.36	5.58	162.42	2.85	Begin core hole 2
11/2/2005	9:30	173	190	70.79	97.21	71.58	96.42	3.30	164.70	1.15	
11/3/2005	9:15	173	190	71.11	96.89	71.60	96.40	4.56	163.44	0.035	
11/7/2005	10:30	173	210	71.14	96.86	71.51	96.49	5.16	162.84	0	
11/8/2005	10:15	173	215	71.16	96.84	71.53	96.47	5.32	162.68	0	
11/9/2005	13:00	173	215	71.21	96.79	71.55	96.45	5.43	162.57	0	Packer set at 195-215 ft bls
11/10/2005	10:00	173	215	71.22	96.78	71.59	96.41	5.49	162.51	0	
11/14/2005	9:30	173	235	71.25	96.75	71.61	96.39	5.95	162.05	0	
11/15/2005	9:30	173	245	71.28	96.72	NR	NR	NR	NR	0.03	
11/16/2005	8:50	173	245	71.76	96.24	71.68	96.32	6.02	161.98	0	
11/18/2005	10:10	173	245	NR	NR	71.71	96.29	6.32	161.68	0	
11/28/2005	11:30	245	245	NR	NR	71.60	96.40	6.57	161.43	0.23	
11/29/2005	10:15	245	265	71.50	96.50	71.67	96.33	6.59	161.41	0.26	Packer set at 247 ft bls
11/30/2005	9:25	245	265	71.05	96.95	71.67	96.33	6.39	161.61	0.24	Packer set at 247 ft bls

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
12/1/2005	9:30	245	315	72.33	95.67	71.77	96.23	6.29	161.71	0.035	Airline in hole
12/2/2005	9:15	245	315	73.36	94.64	71.83	96.17	6.31	161.69	0	
12/5/2005	9:30	245	355	74.67	93.33	71.77	96.23	6.44	161.56	0	Airline in hole
12/6/2005	9:15	245	375	89.51	78.49	71.86	96.14	6.44	161.56	0.09	Packer set at 340 ft bls
12/7/2005	8:45	245	375	86.16	81.84	72.07	95.93	6.49	161.51	0.02	
12/8/2005	9:50	NR	NR	NR	NR	71.82	96.18	6.40	161.60	0.7	HW & NQ rods tripped out
12/9/2005	8:45	289	375	89.52	78.48	71.76	96.24	6.12	161.88	0.05	
12/13/2005	9:00	289	415	89.30	78.70	71.56	96.44	6.01	161.99	0.04	Airline in hole
12/14/2005	9:15	289	415	89.16	78.84	71.58	96.42	6.08	161.92	0	
12/15/2005	9:35	289	435	89.06	78.94	71.53	96.47	6.10	161.90	0	Airline in hole
12/16/2005	9:30	289	435	89.20	78.80	71.54	96.46	6.13	161.87	0	
12/19/2005	10:00	289	435	89.40	78.60	71.48	96.52	6.24	161.76	0.7	
12/20/2005	9:00	289	475	87.70	80.30	71.51	96.49	6.24	161.76	0.07	
12/21/2005	10:00	289	475	89.48	78.52	71.53	96.47	NR	NR	0.025	Packer set
12/22/2005	9:30	289	475	89.51	78.49	71.58	96.42	6.33	161.67	0	
12/27/2005	9:45	289	475	89.01	78.99	71.12	96.88	6.56	161.44	0.09	
12/29/2005	9:00	289	495	88.76	79.24	71.22	96.78	6.54	161.46	0	
12/30/2005	9:45	289	515	87.07	80.93	71.36	96.64	6.61	161.39	0	Packer set at 495-515 ft bls; HW possibly leaking, wl higher
1/3/2006	10:20	289	515	87.59	80.41	71.31	96.69	6.70	161.30	0.15	Packer set at 495-515 ft bls
1/4/2006	9:25	289	515	74.43	93.57	71.39	96.61	6.71	161.29	0.015	
1/5/2006	9:30	289	555	77.63	90.40	71.54	96.46	6.72	161.28	0	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
1/6/2006	9:45	289	555	89.66	78.34	71.58	96.42	6.70	161.30	0	Packer set at 520-555 ft bls
1/17/2006	10:30	289	555	76.46	91.54	72.39	95.61	6.99	161.01	0	
1/18/2006	9:00	289	575	81.97	86.03	72.73	95.27	7.04	160.96	0.34	Airline in hole
1/19/2006	9:40	289	595	91.99	76.01	72.85	95.15	7.09	160.91	0.01	Packer set at 565-595 ft bls
1/20/2006	10:25	289	595	81.83	86.17	72.91	95.09	7.05	160.95	0	
1/23/2006	9:40	289	615	80.15	87.85	73.22	94.78	7.06	160.94	0	Airline in hole
1/30/2006	9:50	289	615	83.21	84.79	73.89	94.11	7.11	160.89	0.07	
1/31/2006	9:50	289	615	83.9	84.1	74.03	93.97	7.10	160.90	0.035	Airline in hole
2/1/2006	9:15	289	625	NR	NR	73.84	94.16	7.15	160.85	0	NQ tripped; Pump test near site may be causing dropping wl fts
2/3/2006	9:55	423	625	NR	NR	73.97	94.03	7.15	160.85	0	NQ tripped out and HW being advanced
2/6/2006	9:45	555	625	NR	NR	74.04	93.96	6.09	161.91	1.55	NQ tripped out and HW being advanced
2/7/2006	10:50	607	625	93.49	74.51	74.01	93.99	6.2	161.8	0.03	Airline in hole
2/8/2006	10:25	607	645	93.25	74.75	74.07	93.93	6.23	161.77	0	Airline in hole
2/10/2006	9:15	607	665	92.95	75.05	74.1	93.9	6.3	161.7	0	Airline in hole
2/13/2006	8:50	607	665	92.79	75.21	73.97	94.03	6.35	161.65	0.18	
2/14/2006	9:15	607	665	NR	NR	74.08	93.92	6.44	161.56	0.015	NQ tripped out to recover packer
2/15/2006	9:10	607	665	95.36	72.64	74.19	93.81	6.48	161.52	0	Airline in hole

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
2/16/2006	8:45	607	665	94.95	73.05	74.29	93.71	6.52	161.48	0	Airline in hole
2/17/2006	8:55	607	665	94.73	73.27	74.36	93.64	6.52	161.48	0	
2/20/2006	11:30	607	665	NR	NR	74.49	93.51	6.6	161.4	0	NQ tripped out to recover packer
2/21/2006	9:30	605	665	94.45	73.55	74.53	93.47	6.61	161.39	0	Airline in hole
2/22/2006	8:40	605	665.6	94.2	73.8	74.57	93.43	6.61	161.39	0	
2/23/2006	9:00	605	685	95.11	72.89	74.7	93.3	6.64	161.36	0	Airline in hole
2/24/2006	10:30	605	705	94.94	73.06	74.78	93.22	6.67	161.33	0	Airline in hole
2/27/2006	9:00	605	705	94.61	73.39	74.82	93.18	6.73	161.27	0.03	
2/28/2006	7:20	605	745	94.34	73.66	74.86	93.14	6.74	161.26	0	Airline in hole
3/1/2006	7:00	605	755	94.24	73.76	74.84	93.16	6.76	161.24	0	
3/2/2006	7:30	605	755	94.24	73.76	74.82	93.18	6.76	161.24	0	Packer set
3/3/2006	7:30	605	755	94.43	73.57	74.82	93.18	6.78	161.22	0	Airline in hole
3/6/2006	7:30	605	760	94.89	73.11	74.92	93.08	6.93	161.07	0	
3/7/2006	7:30	605	770	97.18	70.82	74.95	93.05	6.91	161.09	0	
3/8/2006	7:30	605	780	95.74	72.26	75.1	92.9	6.93	161.07	0	Airline in hole
3/9/2006	7:30	605	785	97.05	70.95	75.18	92.82	6.91	161.09	0	Airline in hole
3/10/2006	7:30	605	790	96.52	71.48	75.22	92.78	6.87	161.13	0	
3/13/2006	7:30	605	796	96.72	71.28	75.44	92.56	6.89	161.11	0	
3/14/2006	7:30	605	796	97.36	70.64	75.53	92.47	6.89	161.11	0	
3/15/2006	7:30	605	805	NR	NR	75.75	92.25	6.97	161.03	0	NQ rods tripped out of hole
3/16/2006	7:30	605	810	97.18	70.82	75.92	92.08	7.02	160.98	0	
3/17/2006	7:30	605	810	98.53	69.47	76.02	91.98	7	161	0	Packer set at 790-810 ft bls
3/20/2006	7:30	605	810	98.83	69.17	76.37	91.63	7.10	160.90	0	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
3/21/2006	7:30	605	810	NR	NR	76.53	91.47	7.11	160.89	0	3/22/06 - set 3" NW casing to 850 ft bls
3/23/2006	8:00	605	820	101.76	66.24	77.03	90.97	7.21	160.79	0	Can no longer measure HW water level because NW was set
3/24/2006	8:00	810	830	100.57	67.43	77.18	90.82	7.22	160.78	0.3	
3/27/2006	8:00	810	830	100.36	67.64	77.62	90.38	7.37	160.63	0.02	
3/28/2006	8:00	810	850	100.55	67.45	77.83	90.17	7.42	160.58	0	
3/29/2006	7:30	810	850	100.73	67.27	77.89	90.11	7.44	160.56	0	
3/31/2006	7:30	850	850	101.72	66.28	78.21	89.79	7.47	160.53	0	
4/3/2006	8:00	850	880	101.95	66.05	78.49	89.51	7.49	160.51	0	
4/4/2006	8:00	850	880	102.74	65.26	78.69	89.31	7.50	160.50	0	
4/5/2006	8:00	850	880	103.25	64.75	78.86	89.14	7.52	160.48	0	
4/6/2006	8:00	850	885	103.28	64.72	79.06	88.94	7.56	160.44	0	
4/7/2006	6:45	850	900	105.23	62.77	79.28	88.72	7.57	160.43	0	
4/10/2006	8:00	850	910	NR	NR	79.75	88.25	7.65	160.35	0.06	
4/11/2006	6:45	850	940	105.95	62.05	80.00	88.00	7.71	160.29	0	
4/12/2006	9:15	850	940	106.37	61.63	NR	NR	NR	NR	0	Packer set at 915-940 ft bls
4/13/2006	9:15	850	980	106.62	61.38	80.45	87.55	7.76	160.24	0	
4/14/2006	6:45	850	1,000	106.91	61.09	80.60	87.40	7.79	160.21	0	
4/17/2006	7:00	850	1,000	107.50	60.50	80.91	87.09	7.80	160.20	0	
4/18/2006	6:45	850	1,040	107.79	60.21	81.14	86.86	7.81	160.19	0	
4/19/2006	7:00	850	1,040	108.34	59.66	81.34	86.66	7.85	160.15	0	Packer set at 1,016-1,040 ft bls
4/20/2006	6:45	850	1,060	108.57	59.43	81.56	86.44	7.84	160.16	0	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
4/21/2006	6:45	850	1,100	107.92	60.08	81.83	86.17	7.89	160.11	0	
4/24/2006	7:00	850	1,100	110.08	57.92	82.32	85.68	7.98	160.02	0	
4/25/2006	10:00	850	1,100	110.65	57.35	82.58	85.42	7.99	160.01	0	
4/26/2006	6:30	850	1,120	110.33	57.67	82.73	85.27	7.99	160.01	0	
5/5/2006	8:30	850	1,140	113.53	54.47	84.29	83.71	8.27	159.73	0	
5/8/2006	8:30	850	1,140	113.87	54.13	84.91	83.09	8.34	159.66	0	Packer set at 1,111-1,140 ft bls
5/9/2006	8:30	850	1,140	115.4	52.6	85.06	82.94	8.35	159.65	0	
5/10/2006	8:00	850	1,170	112.86	55.14	85.28	82.72	8.35	159.65	0.8	
5/11/2006	6:45	850	1,200	114.04	53.96	85.48	82.52	8.35	159.65	0	
5/15/2006	7:00	850	1,240	114.24	53.76	86.02	81.98	8.43	159.57	0	
5/16/2006	9:45	850	1,240	114.56	53.44	86.16	81.84	8.44	159.56	0	Packer set at 1,218-1,240 ft bls
5/17/2006	8:30	850	1,260	114.35	53.65	86.19	81.81	8.43	159.57	0.64	
5/18/2006	9:30	850	1,300	112.85	55.15	86.37	81.63	8.46	159.54	0	
5/22/2006	9:00	850	1,300	114.41	53.59	86.57	81.43	8.58	159.42	0	Packer set at 1,270 ft-1,300 ft bls
5/23/2006	8:00	850	1,300	115.17	52.83	86.60	81.40	8.59	159.41	0	
5/24/2006	8:30	850	1,300	114.79	53.21	86.71	81.29	8.61	159.39	0	
5/25/2006	8:35	850	1,328	112.53	55.47	86.80	81.20	8.62	159.38	0	
5/30/2006	8:40	850	1,335	114.42	53.58	86.98	81.02	8.63	159.37	0.71	
5/31/2006	9:00	850	1,340	112.85	168.00	86.05	81.95	7.63	160.37	0	Packer set at 1,323-1,340 ft bls
6/1/2006	9:30	850	1,340	NR	NR	87.08	80.92	8.63	159.37	0	Packer set at 1,323 ft bls, cannot measure NQ wl

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
6/2/2006	9:00	850	1,340	NR	NR	87.13	80.87	8.65	159.35	0.22	Packer set at 1,323 ft bls, cannot measure NQ wl
6/5/2006	9:40	850	1,340	114.29	53.71	87.16	80.84	8.66	159.34	0.06	
6/8/2006	9:30	850	1,380	114.37	53.63	87.36	80.64	8.76	159.24	0	
6/14/2006	9:00	850	1,400	NR	NR	87.25	80.75	5.98	162.02	5.65	
6/15/2006	9:00	850	1,405	110.05	57.95	87.25	80.75	6.32	161.68	0.41	
6/16/2006	6:45	850	1,420	111.16	56.84	87.19	80.81	6.65	161.35	0	
6/19/2006	9:30	850	1,440	106.98	61.02	86.61	81.39	6.81	161.19	0	
6/20/2006	8:30	850	1,460	106.77	61.23	86.44	81.56	6.82	161.18	0	
6/21/2006	9:00	850	1,480	105.83	62.17	86.63	81.37	6.87	161.13	0	Packer set at 1,300-1,480 ft bls
6/26/2006	9:15	850	1,480	109.45	58.55	85.69	82.31	7.03	160.97	0.6	Packer set at 1,425 ft-1,480 ft bls
6/27/2006	9:00	850	1,480	112.51	55.49	85.62	82.38	7.05	160.95	0	Packer set at 1,425 ft-1,480 ft bls
6/28/2006	9:15	850	1,490	104.44	63.56	85.59	82.41	7.13	160.87	0	
6/29/2006	9:00	850	1,520	107.46	60.54	85.48	82.52	7.16	160.84	0	
7/6/2006	9:00	850	1,560	106.93	61.07	84.63	83.37	7.17	160.83	0	
7/7/2006	9:00	850	1,575	102.78	65.22	84.56	83.44	7.21	160.79	0.8	
7/10/2006	9:15	850	1,600	104.65	63.35	84.16	83.84	7.06	160.94	1	
7/11/2006	9:05	850	1,600	114.01	53.99	84.05	83.95	7.05	160.95	0	Packer set at 1,545-1,600 ft bls, airline in hole
7/12/2006	8:20	850	1,620	104.63	63.37	83.98	84.02	6.77	161.23	1	
7/13/2006	9:15	850	1,645	104.32	63.68	83.91	84.09	6.77	161.23	0.3	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
7/14/2006	10:30	850	1,655	101.73	66.27	83.76	84.24	5.71	162.29	0.5	
7/17/2006	8:30	850	1,665	104.01	63.99	83.34	84.66	6.37	161.63	0.03	
7/18/2006	9:00	850	1,689	100.82	67.18	83.25	84.75	6.41	161.59	0	
7/19/2006	9:45	850	1,700	102.9	65.1	83.13	84.87	6.47	161.53	0	
7/20/2006	9:30	850	1,715	100.6	67.4	83.11	84.89	6.53	161.47	0.03	
7/21/2006	9:00	850	1,740	100.69	67.31	83.03	84.97	4.91	163.09	1.25	
7/24/2006	9:30	850	1,749	100.05	67.95	82.57	85.43	5.96	162.04	0.15	
7/25/2006	9:10	850	1,749	104.4	63.6	82.46	85.54	6.09	161.91	0.02	Packer set at 1,698-1,749 ft bls
7/26/2006	8:40	850	1,749	NR	NR	82.31	85.69	6.18	161.82	0.16	Packer set at 1698-1749 ft bls & NQ sealed
7/27/2006	9:00	850	1,749	132.54	35.46	82.21	85.79	6.25	161.75	0	Packer set at 1,698-1,749 ft bls
7/28/2006	8:40	850	1,749	140.44	27.56	82.1	85.9	6.34	161.66	0.03	Packer set at 1,698-1,749 ft bls
7/31/2006	9:00	850	1,749	131.05	36.95	81.68	86.32	6.33	161.67	0.5	
8/1/2006	8:40	850	1,770	109.52	58.48	81.66	86.34	6.42	161.58	0	
8/2/2006	8:30	850	1,780	NR	NR	81.57	86.43	6.5	161.5	0	Packer set at 1,750-1,780 ft bls and NQ sealed
8/3/2006	8:30	850	1,780	133.3	34.7	81.55	86.45	6.59	161.41	0	Packer set at 1,750-1,780 ft bls
10/1/2007	10:00	1,700	1,700	144.27	25.29	80.85	87.54	6.58	161.81	NR	Begin core hole 3
10/2/2007	10:15	1,700	1,700	143.40	26.16	NR	NR	NR	NR	NR	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
10/4/2007	10:20	1,700	1,700	142.87	26.69	NR	NR	NR	NR	NR	
10/8/2007	10:25	1,700	1,700	142.90	26.66	NR	NR	NR	NR	NR	
10/9/2007	9:10	1,700	1,700	142.87	26.69	80.25	88.14	1.79	166.6	NR	
10/10/2007	10:00	1,700	1,700	143.75	25.81	NR	NR	NR	NR	0	packer set
10/16/2007	9:10	1,707	1,707	NR	NR	80.15	88.24	4.33	164.06	0	
10/23/2007	10:30	1,717	1,717	NR	NR	NR	NR	NR	NR	0.42	NQ tripped out
10/25/2007	9:30	1,717	1,767	131.90	37.66	NR	NR	NR	NR	0.04	
10/26/2007	10:00	1,717	1,787	136.26	33.30	80.2	88.19	3.2	165.19	0	
10/29/2007	9:20	1,717	1,817	136.24	33.32	80.29	88.1	4.29	164.1	0.02	
10/30/2007	10:20	1,717	1,837	134.00	35.56	NR	NR	NR	NR	0.16	
11/2/2007	9:00	1,717	1,857	130.10	39.46	NR	NR	NR	NR	0	
11/6/2007	12:20	1,717	1,866	124.45	45.11	80.12	88.27	5.62	162.77	0	
11/7/2007	8:00	1,717	1,887	123.89	45.67	NR	NR	NR	NR	0	
11/8/2007	10:30	1,717	1,887	138.39	31.17	NR	NR	NR	NR	0	packer set
11/9/2007	9:35	1,717	1,887	137.69	31.87	NR	NR	NR	NR	0	packer set
11/13/2007	10:00	1,717	1,887	NR	NR	80.18	88.21	6.36	162.03	0	
11/27/2007	9:10	1,717	1,887	137.34	32.22	80.95	87.44	6.94	161.45	0.13	
11/29/2007	9:00	1,717	1,947	134.43	35.13	NR	NR	NR	NR	0	
11/30/2007	9:00	1,717	1,967	134.29	35.27	NR	NR	NR	NR	0	
12/7/2007	9:00	1,717	2,007	134.83	34.73	NR	NR	NR	NR	0	
12/10/2007	9:15	1,717	2,027	NR	NR	82.14	86.25	7.1	161.29	0	
12/11/2007	9:35	1,717	2,037	138.56	31.00	NR	NR	NR	NR	0	packer set
12/14/2007	8:25	1,717	2,057	135.13	34.43	NR	NR	NR	NR	0	
12/17/2007	9:40	1,717	2,077	134.34	35.22	83.19	85.2	6.82	161.57	0.9	
12/18/2007	8:30	1,717	2,117	134.25	35.31	NR	NR	NR	NR	0.03	
12/19/2007	8:00	1,717	2,157	134.21	35.35	NR	NR	NR	NR	0	
12/20/2007	8:00	1,717	2,197	127.76	41.80	NR	NR	NR	NR	0	
1/2/2008	8:00	1,717	2,237	124.04	45.52	83.62	84.77	6.98	161.41	0	

Appendix H. (Continued) Daily water levels recorded during exploratory core drilling and testing at the ROMP 45.5 - Progress Energy well site

[bls, below land surface; ft, feet; CH, core hole; wl, water level; NR, not recorded; NGVD 29, National Geodetic Vertical Datum of 1929]

Date MM/DD/YYYY	Time HH:MM	Deepest Casing Depth (ft bls)	Core hole Total Depth (ft bls)	Core hole Static Water Level (ft bls)	Core hole Static Water Level (ft NGVD 29)	L ARCA OB TEMP/Water Supply (CH 1) Static Water Level (ft bls)	L ARCA OB TEMP/Drilling Water Supply (CH 1) Static Water Level (ft NGVD 29)	Surficial Static Water Level (ft bls)	Surficial Static Water Level (ft NGVD 29)	Rain Gauge (inches)	Comments
1/3/2008	8:25	1,717	2,237	131.26	38.30	NR	NR	NR	NR	0	packer set
1/7/2008	8:00	1,717	2,257	120.99	48.57	NR	NR	NR	NR	0	
1/8/2008	8:15	1,717	2,297	115.96	53.60	NR	NR	NR	NR	0	
1/9/2008	9:25	1,717	2,337	118.50	51.06	NR	NR	NR	NR	0	
1/10/2008	8:00	1,717	2,347	118.92	50.64	NR	NR	NR	NR	0	
1/11/2008	9:45	1,717	2,367	NR	NR	84.22	84.17	6.85	161.54	0	
1/14/2008	8:25	1,717	2,367	133.93	35.63	NR	NR	NR	NR	0.03	packer set
1/15/2008	8:25	1,717	2,377	116.81	52.75	NR	NR	NR	NR	0	
1/16/2008	8:00	1,717	2,407	120.98	48.58	NR	NR	NR	NR	0	
1/17/2008	8:00	1,717	2,427	117.21	52.35	NR	NR	NR	NR	0.82	
1/18/2008	8:30	1,717	2,457	116.25	53.31	84.59	83.8	-0.09	168.48	0.52	
1/22/2008	8:20	1,717	2,467	136.15	33.41	NR	NR	NR	NR	1	packer set
1/23/2008	9:40	1,717	2,467	NR	NR	NR	NR	NR	NR	0.75	
1/24/2008	8:30	1,717	2,467	NR	NR	84.28	84.11	0.65	167.74	0.03	
1/25/2008	9:20	1,717	2,497	125.02	44.54	NR	NR	NR	NR	0	
1/29/2008	9:00	1,717	2,507	121.66	47.90	NR	NR	NR	NR	0	
1/31/2008	8:00	1,717	2,517	119.99	49.57	NR	NR	NR	NR	0	
2/4/2008	7:30	1,717	2,527	122.48	47.08	NR	NR	NR	NR	0	
2/5/2008	7:30	1,717	2,547	117.54	52.02	NR	NR	NR	NR	0	
2/6/2008	7:30	1,717	2,557	115.7	53.86	NR	NR	NR	NR	0	
2/11/2008	9:40	1,717	2,557	123.12	46.44	NR	NR	NR	NR	0	packer set
2/14/2008	7:30	1,717	2,577	136.96	32.60	NR	NR	NR	NR	0.48	
2/15/2008	7:30	1,717	2,595	117.92	51.64	NR	NR	NR	NR	0	
2/18/2008	7:30	1,717	2,607	111.15	58.41	NR	NR	NR	NR	0	
2/19/2008	14:25	1,717	2,627	110.08	59.48	NR	NR	NR	NR	NR	
2/21/2008	8:30	1,717	2,647	111.23	58.33	83.11	85.28	3.23	165.16	NR	packer set
2/25/2008	7:45	1,717	2,667	111.44	58.12	NR	NR	NR	NR	1.05	
2/26/2008	7:30	1,717	2,667	111.11	58.45	NR	NR	NR	NR	0.02	
3/12/2008	8:30	1,717	2,697	111.51	58.05	NR	NR	NR	NR	1.9	packer set

Appendix I. Aquifer Pumping Test Data Acquisition Sheets for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

ROMP 45.5 FIELD DATA ACQUISITION SHEET

page 1 of 2

General Information:

Site Name:	ROMP 45.5	Preformed by:	T.Dawson
Reporting Code:	LWPY	Date:	9/2/2008
County:	POLK		
Pumped Well:	L ARC AQ MONITOR		

Setup Information:

Datalogger:	CR1000 (Donatello)	Readings	Time Start:	10:46 AM
Datalogger SN:	11463	Manual (ft bls)	Time Datum:	Nextel
Program Name:	ROMP45.5lArcAPT.cr1	Datalogger (ft H_2O)	Logging Schedule:	1min - 5min - 15min
Orifice Plate Size:	3-inch		APT phase:	Drawdown
Pump type:	6-inch submersible		Test Rate/Duration:	~172 gpm/72 hrs
Pump set depth:	suction is at 138 ft btoc			

Datalogger Channel:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8
Well Name:	L ARCA AQ MONITOR	L ARCA AQ OB TEMP	PCRV AQ MONITOR	U ARC AQ MONITOR	AVPK PZ MONITOR	U FLDN AQ MONITOR (SWNN)	SURF AQ MONITOR	
Sensor Type	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (10 psi)	4-inch flowmeter
Sensor Serial Number	6473	5907	6483	6493	6813	7176	7039	NA
Reading in air:	0.00	0.00	-0.09	-0.07	0.02	-0.10	-0.10	0.2
Output Variable Name	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	FlowMeter (GPM)
TOC elev (ft NGVD 29)	172.15	171.46	171.83	172.56	172.5	172.07	171.26	
static water level (ft btoc):	84.80	87.38	10.83	23.66	107.91	107.55	2.82	
PXD depth (ft btoc)	120	102	40	51	128	128	8	
PXD elev (ft NGVD 29)	52.15	69.46	131.83	121.56	44.5	44.07	163.26	
PXD submergence (ft H_2O)	35.16	14.66	28.82	27.06	20.09	20.50	5.14	
PXD submergence (wl tape)	35.20	14.62	29.17	27.34	20.09	20.45	5.18	
submergence difference %	0.11	-0.27	1.20	1.02	0.00	-0.24	0.77	

Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM	Data logger battery voltage (volts)	Totalizer (g x 100)	Comments
9/2/2008	09:20	41.83	21.05	30.44	28.69	28.75	32.23	3.91				datalogger
9/2/2008	09:05	78.36	80.97	9.31	22	99.34	96.56	4.09			13735	tape/manual
9/2/2008	12:00	24.5	16.65	30.45	28.72	28.69	32.21	3.89	172.55	13	13873	
9/2/2008	12:00	95.88	85.51	9.3	21.97	99.41	96.56	4.12	170-180			
9/2/2008	14:00	23.64	15.73	30.41	28.72	28.64	32.21	3.84	172.3	13.04		
9/2/2008	14:00	96.69	86.39	9.32	21.97	99.45	96.57	4.16	170-180		14087	
9/2/2008	16:00	23.13	15.14	30.44	28.72	28.66	32.24	3.81	171.93	13.04		
9/2/2008	16:00	97.23	86.98	9.31	21.96	99.44	96.56	4.18	170-180		14340	
9/2/2008	18:00	22.89	14.86	30.44	28.74	28.71	32.26	3.8	171.43	13.05		
9/2/2008	18:00	97.48	87.3	9.31	21.97	99.38	96.54	4.21	170-180		14510	
9/2/2008	20:00	22.59	14.56	30.42	28.73	28.71	32.27	3.78	171.34	13.07		
9/2/2008	20:00	97.78	87.56	9.31	21.98	99.38	96.54	4.22	170-180		14728	
9/2/2008	22:00	22.37	14.31	30.4	28.73	28.7	32.25	3.75	171.62	13.08		
9/2/2008	22:00	98.01	87.81	9.35	21.97	99.41	96.59	4.32	170-180		14935	
9/3/2008	00:00	22.18	14.09	30.39	28.73	28.69	34.24	3.71	169.42	13.11		
9/3/2008	00:00	98.22	88.03	9.36	21.99			4.36	170		15159	
9/3/2008	02:00	22.02	13.95	30.38	28.73	28.72	32.25	3.7	170.87			
9/3/2008	02:00	98.38	88.18						170		15356	
9/3/2008	04:00	21.87	13.82	30.4	28.76	28.76	32.28	3.7	171.18			
9/3/2008	04:00	98.5	88.31						170		15586	
9/3/2008	06:00	21.81	13.71	30.39	28.75	28.83	32.32	3.68	168.98	13.14		
9/3/2008	06:00	98.59	88.42	9.38	21.98	99.29	96.54	4.31	170		155815	
9/3/2008	08:00	21.74	13.63	30.38	28.74	28.85	32.34	3.66	169.12	13.13		
9/3/2008	08:00	98.66	88.47	9.38	21.96	99.25	96.47	4.33	170		15970	
9/3/2008	10:00	21.72	13.55	30.37	28.74	28.87	32.35	3.64	169.08	13.12		
9/3/2008	10:00	98.72	88.55	9.38	21.96	99.23	96.46	4.36	170		16169	
9/3/2008	12:00	21.7	13.46	30.36	28.75	28.85	32.36	3.61	168.8	13.11		
9/3/2008	12:00	98.77	88.63	9.38	21.95	99.24	96.45	4.39	170		16381	
9/3/2008	14:00	21.7	13.4	30.34	28.74	28.86	32.38	3.61	168.45	13.07		
9/3/2008	14:00	98.79	88.68	9.39	21.95	99.21	96.45	4.4	170		16584	
9/3/2008	16:00	21.69	13.37	30.34	28.74	28.89	32.42	3.56	168.96	13.05		
9/3/2008	16:00	98.82	88.73	9.38	21.94	99.17	96.39	4.42	170		16788	

ROMP 45.5 FIELD DATA ACQUISITION SHEET

Datalogger: CR1000 (Donatello)

Datalogger Channel:		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	Data logger battery voltage (volts)	Totalizer (g x 100)	Comments
Well Name:		L ARCA AQ MONITOR	L ARCA AQ OB TEMP	PCRV AQ MONITOR	U ARC AQ MONITOR	AVPK PZ MONITOR	U FLDN AQ MONITOR (SWNN)	SURF AQ MONITOR				
Sensor Type		pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (10 psi)	4-inch flowmeter			
Sensor Serial Number		6473	5907	6483	6493	6813	7176	7039	NA			
Reading in air:		0.00	0.00	-0.09	-0.07	0.02	-0.10	-0.10	0.2			
Output Variable Name		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	FlowMeter (GPM)			
static water level (ft btoc):		84.80	87.38	10.83	23.66	107.91	107.55	2.82				
PXD depth (ft btoc)		120	102	40	51	128	128	8				
PXD submergence (ft H_2O)		35.16	14.66	28.82	27.06	20.09	20.50	5.14				
PXD submergence (wl tape)		35.2	14.62	29.17	27.34	20.09	20.45	5.18				
Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM			
9/3/2008	18:00	21.64	13.32	30.35	28.76	28.93	32.44	3.55	167.26	13.05		datalogger
9/3/2008	18:00	98.91	88.72	9.41	21.95	99.17	96.41	4.45	170		16788	tape/manual
9/3/2008	20:00	21.55	13.26	30.35	28.76	28.95	32.47	3.53	168.87	13.05		
9/3/2008	20:00	98.98	88.86	9.41	21.98	99.15	96.34	4.49	170		17018	
9/3/2008	22:00	21.48	13.19	30.33	28.75	28.96	32.48	3.5	169.2	13.04		
9/3/2008	22:00	99.09	88.91	9.46	21.96	99.16	96.39	4.51	170		17215	
9/3/2008	00:00	21.32	13.12	30.32	28.74	28.97	32.48	3.46	169.08	13.09		
9/3/2008	00:00	99.18	88.99						170		17423	
9/4/2008	02:00	21.31	13.07	30.3	28.74	28.98	32.49	3.45	168.43			
9/4/2008	02:00	99.25	89.06						170		17649	
9/4/2008	04:00	21.24	13.03	30.32	28.73	29.01	32.52	3.44	168.88			
9/4/2008	04:00	99.3	89.1						170		17835	
9/4/2008	06:00	21.25	13	30.31	28.76	29.05	32.55	3.42	168.3	13.14		.10' rain @730
9/4/2008	06:00	99.31	89.11						170		18058	
9/4/2008	08:00	21.23	12.98	30.3	28.75	29.07	32.57	3.41	168.06	13.13		
9/4/2008	08:00	99.3	89.13	9.45	21.95	99.04	96.26	4.6	170		18269	
9/4/2008	10:00	21.24	12.96	30.3	28.76	29.07	32.58	3.38	169.08	13.13		
9/4/2008	10:00	99.28	89.15	9.46	21.94	99.02	96.25	4.61	170		18459	
9/4/2008	12:00	21.23	12.93	30.28	28.76	29.06	32.59	3.39	169.01	13.1		
9/4/2008	12:00	99.3	89.16	9.46	21.94	99.03	96.24	4.61	170		18657	
9/4/2008	14:00	21.24	12.92	30.27	28.74	29.05	32.61	3.37	168.62	13.08		
9/4/2008	14:00	99.28	89.16	9.46	21.95	99.03	96.21	4.61	170		18862	
9/4/2008	16:00	21.17	12.92	30.3	28.78	29.11	32.65	3.39	168.79	13.04		
9/4/2008	16:00	99.33	89.17	9.44	21.92	98.97	96.18	4.6	170		19074	
9/4/2008	18:00	21.15	12.98	30.3	28.77	29.15	32.68	3.38	169.3	13.07		
9/4/2008	18:00	99.39	89.223	9.46	21.94	98.5	96.18	4.61	170		19270	
9/4/2008	20:00	21.11	12.88	30.3	28.78	29.18	32.7	3.38	169.02	13.09		
9/4/2008	20:00	99.45	89.26	9.48	21.91	98.94	96.16	4.61	170		19508	
9/4/2008	22:00	21.08	12.85	30.29	28.78	29.19	32.71	3.35	169.08	13.11		
9/4/2008	22:00	99.48	89.29	9.49	21.94	98.94	96.18	4.68	170		19683	
9/4/2008	00:00	21.07	12.82	30.3	28.78	29.21	32.73	3.32	168.74	13.11		
9/4/2008	00:00	99.49	89.31	9.46	21.95	98.91	96.14	4.7	170		19885	
9/5/2008	02:00		12.81	30.31	28.78	29.24	32.78	3.31	170.11			
9/5/2008	02:00		89.32						170		20102	
9/5/2008	04:00											
9/5/2008	04:00										20338	
9/5/2008	06:00	21.03	12.8	30.32	28.8	29.34	32.84	3.3	169.49			
9/5/2008	06:00	99.53	89.34	9.41	21.91	98.78	96.01	4.71	170		20741	
9/5/2008	08:00	21.04	12.79	30.32	28.8	29.35	32.86	3.3	169.47			
9/5/2008	08:00	99.5	89.31								20935	.08" rain @ 8 - 930
9/5/2008	09:15											
9/5/2008	09:15	99.51										

ROMP 45.5 FIELD DATA ACQUISITION SHEET

page 1 of 2

General Information:

Site Name: ROMP 45.5
Reporting Code: LWPY
County: POLK
Pumped Well: L ARC AQ MONITOR

Performed by: T.Dawson/K.Anderson
Date: 9/2/2008

Setup Information:

Datalogger: CR1000 (Michaelangelo)
Program Name: ROMP45.5lArcAPT.cr1
Orifice Plate Size: 3-inch
Pump type: 6-inch submersible
Pump set depth: suction is at 138 ft bls

Readings
Manual (ft bls)
Datalogger (ft H_2O)

Time Start: 10:46
Time Datum: Nextel
Logging Sched 1min - 5min - 15min
APT phase: Drawdown (Recovery start 9:11 am)
Test Rate/Duration: ~172 gpm/72 hrs

Datalogger Channel:		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	Data logger battery voltage (volts)	Totalizer (g x 100)	Comments
Well Name:		L ARCA AQ MONITOR	L ARCA AQ OB TEMP	PCRV AQ MONITOR	U ARC AQ MONITOR	AVPK PZ MONITOR	U FLDN AQ MONITOR (SWNN)	SURF AQ MONITOR				
Sensor Type		pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (15 psi)	NA			
Sensor Serial Number		6496	6325	6292	6534	6868	6477	9772	NA			
Reading in air:		0.00	-0.01	0.02	0.01	-0.02	0.01	0.01				
Output Variable Name		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	NA			
TOC elev (ft NGVD 29)		172.15	171.46	171.83	172.56	172.5	172.07	NA				
static water level (ft btoc):		84.80	87.38	10.83	23.66	102.65	100.00	NA				
PXD depth (ft btoc)		120	102	40	51	128	128	NA				
PXD elev (ft NGVD 29)		52.15	69.46	131.83	121.56	44.5	44.07	NA				
PXD submergence (ft H_2O)		35.29	14.67	28.87	27.12	25.26	28.06	NA				
PXD submergence (wl tape)		35.20	14.62	29.17	27.34	25.35	28.00	NA				
deviation %		-0.26	-0.34	1.03	0.80	0.36	-0.21	NA				
Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM			
9/2/2008	9:18	41.85	21	30.44	28.78	28.7	31.8	0.01		13.2		datalogger
9/2/2008	9:18							0				see Donatello
9/2/2008	12:00	24.52	16.62	30.45	28.79	28.63	31.79	2.18		13.18		field sheets for
9/2/2008	12:00							2.28				manual
9/2/2008	14:00	23.64	15.67	30.44	28.81	28.59	31.8	2.15		13.17		readings
9/2/2008	14:00							2.28				
9/2/2008	16:00	23.16	15.1	30.44	28.82	28.62	31.82	2.12		13.15		
9/2/2008	16:00							2.28				
9/2/2008	18:00	22.92	14.8	30.44	28.82	28.67	31.85	2.14		13.16		
9/2/2008	18:00							2.28				
9/2/2008	20:00	22.62	14.52	30.45	28.83	28.68	31.85	2.15		13.17		
9/2/2008	20:00							2.28				
9/2/2008	22:00	22.38	14.27	30.43	28.81	28.66	31.84	2.12		13.18		
9/2/2008	22:00							2.28				
9/3/2008	00:00	22.2	14.06	30.4	28.81	28.64	31.82	2.15		13.21		
9/3/2008	00:00							2.26				
9/3/2008	02:00	22.06	13.97	30.4	28.82	28.67	31.84	2.12				
9/3/2008	02:00							2.28				
9/3/2008	04:00	21.92	13.79	30.41	28.83	28.71	31.84	2.11				
9/3/2008	04:00							2.28				
9/3/2008	06:00	21.85	13.67	30.41	28.83	28.77	31.87	2.12		13.24		
9/3/2008	06:00							2.25				
9/3/2008	08:00	21.81	13.6	30.39	28.83	28.8	31.9	2.12		13.23		
9/3/2008	08:00							2.25				
9/3/2008	10:00	21.73	13.52	30.37	28.84	28.82	31.92	2.11		13.22		
9/3/2008	10:00							2.26				
9/3/2008	12:00	21.69	13.42	30.34	28.81	28.79	31.94	2.1		13.21		
9/3/2008	12:00							2.27				
9/3/2008	14:00	21.69	13.38	30.35	28.81	28.81	31.94	2.1		13.18		
9/3/2008	14:00							2.24				
9/3/2008	16:00	21.65	13.35	30.36	28.83	28.85	31.95	2.07				
9/3/2008	16:00							2.25				

ROMP 45.5 FIELD DATA ACQUISITION SHEET

Datalogger: CR1000 (Michaelangelo)

	Datalogger Channel:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	Data logger battery voltage (volts)	Totalizer (g x 100)	Comments
	Well Name:	lower Arcadia aquifer pumped	lower Arcadia aquifer OB	Peace River aquifer pumped	upper Arcadia aquifer pumped	Avon Park pumped	Suwannee pumped	Suwannee OB				
	Sensor Type	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	NA			
	Sensor Serial Number	6496	6325	6292	6534	6868	6477	9772	NA			
	Reading in air:	0.00	-0.01	0.02	0.01	-0.02	0.01	0.01				
	Output Variable Name	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	FlowMeter (GPM)			
	static water level (ft btoc):	84.80	87.38	10.83	23.66	102.65	100.00	101.65				
	PXD depth (ft btoc)	120	102	40	51	128	128	112				
	PXD submergence (PXD)	35.29	14.67	28.87	27.12	25.26	28.06	11.10				
	PXD submergence (wl tape)	35.2	14.62	29.17	27.34	25.35	28.00	10.35				
Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM			
9/3/2008	18:00	21.6	13.29	30.36	28.84	28.88	32.03	2.13		13.16		datalogger
9/3/2008	18:00							2.22				tape/manual
9/3/2008	20:00	21.53	13.24	30.36	28.84	28.92	32.05	2.13				
9/3/2008	20:00							2.26				
9/3/2008	22:00											
9/3/2008	22:00							2.26				
9/3/2008	00:00	21.35	13.1	30.32	28.83	28.92	32.06	2.08				
9/3/2008	00:00							2.27				
9/4/2008	02:00	21.27	13.05	30.32	28.82	28.94	32.07	2.1				
9/4/2008	02:00							2.27				
9/4/2008	04:00	21.21	13.01	30.32	28.83	28.96	32.09	2.13				
9/4/2008	04:00							2.28				
9/4/2008	06:00	21.19	12.99	30.32	28.84	29.01	32.13	2.1				
9/4/2008	06:00							2.26				
9/4/2008	08:00	21.19	12.97	30.31	28.83	29.03	32.14	2.11		13.23		
9/4/2008	08:00							2.26				
9/4/2008	10:00	21.18	12.94	30.3	28.82	29.01	32.16	2.11		13.22		
9/4/2008	10:00							2.26				
9/4/2008	12:00	21.21	12.93	30.29	28.85	29.02	32.18	2.1		13.21		
9/4/2008	12:00							2.24				
9/4/2008	14:00	21.21	12.92	30.32	28.88	29.05	32.21	2.08		13.19		
9/4/2008	14:00							2.25				
9/4/2008	16:00	21.2	12.9	30.31	28.86	29.06	32.23	2.08		13.15		
9/4/2008	16:00							2.24				
9/4/2008	18:00	21.17	12.88	30.32	28.86	29.11	32.26	2.11		13.18		
9/4/2008	18:00							2.24				
9/4/2008	20:00	21.14	12.88	30.32	28.88	29.13	32.29	2.11		13.2		
9/4/2008	20:00							2.24				
9/4/2008	22:00	21.12	12.84	30.32	28.86	29.13	32.29	2.08		13.21		
9/4/2008	22:00							2.23				
9/4/2008	00:00	21.08	12.81	30.3	8.86	29.16	32.32	2.14		13.22		
9/4/2008	00:00							2.24				
9/5/2008	02:00	21.04	12.8	30.32	28.87	29.2	32.34	2.11				
9/5/2008	02:00							2.26				
9/5/2008	04:00											
9/5/2008	04:00											
9/5/2008	06:00	20.89	12.8	30.34	28.89	29.3	34.42	2.12		13.24		
9/5/2008	06:00							2.24				
9/5/2008	08:00	21.01	12.78	30.34	28.89	29.3	32.44	2.12		13.24		
9/5/2008	08:00							2.24				

ROMP 45.5 FIELD DATA ACQUISITION SHEET

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General Information:

Site Name:	ROMP 45.5	Preformed by:	T.Dawson
Reporting Code:	LWPY	Date:	9/15/2008
County:	POLK		
Pumped Well:	U FLDN AQ MONITOR (SWNN)		

Setup Information:

Datalogger:	CR1000 (Donatello)	Readings	Time Start:	12:00 PM
Datalogger SN:	11463	Manual (ft bls)	Time Datum:	Nextel
Program Name:	ROMP45.5lArcAPT.cr1	Datalogger (ft H_2O)	Logging Schedule:	1min - 5min - 15min
Orifice Plate Size:	6-inch (8-inch pipe)		APT phase:	Drawdown
Pump type:	30 hp submersible		Test Rate/Duration:	400 gpm/24 hrs
Pump set depth:	suction is at 138 ft btoc			

Datalogger Channel:	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	Data logger battery voltage (volts)	Totalizer (g x 1000)	Comments
Well Name:	L ARCA AQ MONITOR	U FLDN AQ OB TEMP (SWNN)	AVPK PZ OB TEMP	U ARCA AQ MONITOR	AVPK PZ MONITOR	U FLDN AQ MONITOR (SWNN)	SURF AQ MONITOR				
Sensor Type	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (100 psi)	pressure transducer (10 psi)	6-inch flowmeter			
Sensor Serial Number	6473	5907	7182	6493	6813	6147	7039	NA			
Reading in air:	0.00	0.00	-0.09	-0.07	0.02	-0.10	-0.10	not working			
Output Variable Name	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	FlowMeter (GPM)			
TOC elev (ft NGVD 29)	172.15	171.27	171.76	172.56	172.5	172.07	NA				
static water level (ft btoc):	84.80	97.83	98.23	23.66	107.91	96.75	2.82				
PXD depth (ft btoc)	120	112	110	51	128	160	8				
PXD elev (ft NGVD 29)	52.15	59.27	61.76	121.56	44.5	12.07	NA				
PXD submergence (ft H_2O)	35.16	14.17	11.75	27.06	20.09	63.15	5.14				
PXD submergence (wl tape)	35.20	14.17	11.77	27.34	20.09	63.25	5.18				
submergence difference %	0.11	0.00	0.17	1.02	0.00	0.16	0.77				

Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM			
9/15/2008	1159		98.59				96.75				13798	man=.55"
												full moon
												during test
9/15/2008	1510										13873	avg gpm=393
			No readings were manually recorded									
9/16/2008	945											man=.56"
9/16/2008											14371.72	

ROMP 45.5 APT FIELD DATA ACQUISITION SHEET

page 1 of 1

General Information:

Site Name:	ROMP 45.5	Preformed by:	T.Dawson
Reporting Code:	LWPY	Date:	9/29/2008
County:	POLK		
Pumped Well:	AVPK PZ MONITOR		

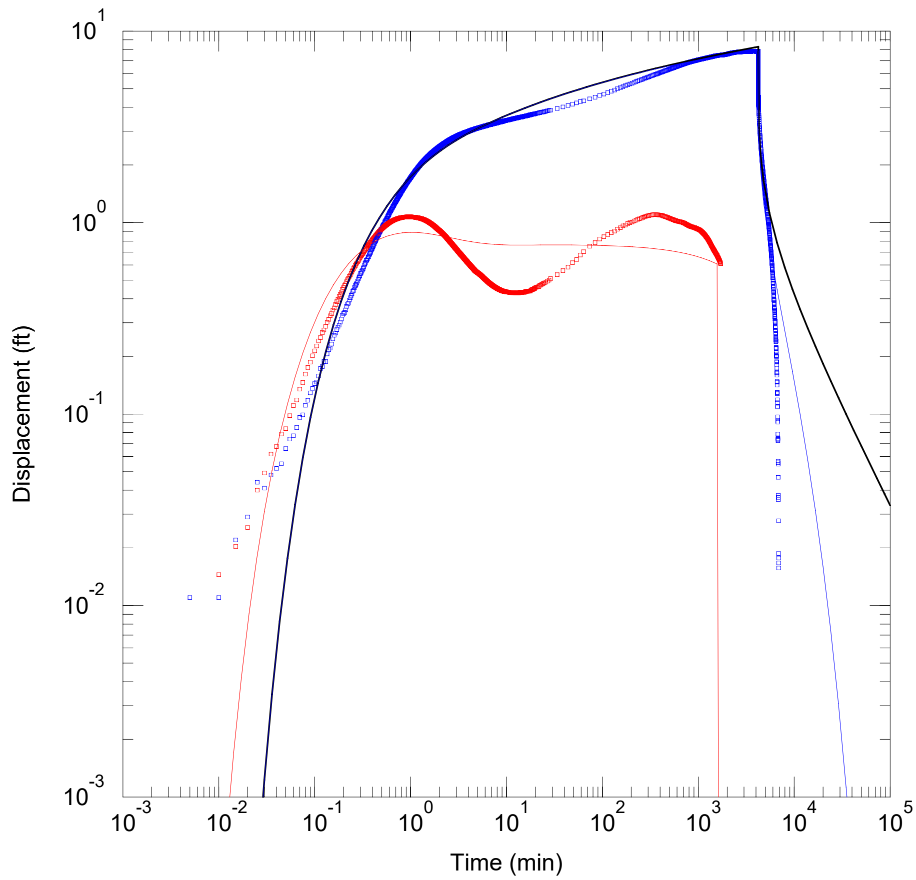
Setup Information:

Datalogger:	CR1000 (Donatello)	Readings	Time Start:	10:08 AM
Datalogger SN:	11463	Manual (ft bls)	Time Datum:	Nextel
Program Name:	ROMP45.5lArcAPT.cr1	Datalogger (ft H_2O)	Logging Schedule:	1min - 5min - 15min
Orifice Plate Size:	10-inch (16-inch pipe)		APT phase:	Drawdown
Pump type:	10-inch Turbine		Proposed Test Rate/Duration:	3000 gpm/24-48 hrs
Pump set depth:	suction is at 178 ft btoc			

Datalogger Channel:		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	CH 8	Data logger battery voltage (volts)	Totalizer (g x 1000)	Comments
Well Name:		L ARCA AQ MONITOR	U FLDN AQ OB TEMP (SWNN)	AVPK PZ OB TEMP	U ARCA AQ MONITOR	AVPK PZ MONITOR	U FLDN AQ MONITOR	SURF AQ MONITOR				
Sensor Type		pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (20 psi)	pressure transducer (100 psi)	pressure transducer (10 psi)	10-inch flowmeter			
Sensor Serial Number		6473	5907	7182	6493	6813	6147	7039				
Reading in air:		0.00	0.00	-0.09	-0.07	0.02	-0.10	-0.10	4.15			
Output Variable Name		CH 1	CH 2	CH 3	CH 4	CH 5	CH 6	CH 7	FlowMeter (GPM)			
TOC elev (ft NGVD 29)		172.15	171.27	171.76	172.56	172.5	172.07	NA				
static water level (ft btoc):		77.56	100.41	100.61	21.92	98.58	98.60	7.85				
PXD depth (ft btoc)		120	112	110	51	120	160	8				
PXD elev (ft NGVD 29)		52.15	59.27	61.76	121.56	52.5	12.07	NA				
PXD submergence (ft H_2O)		42.69	11.78	9.55	28.78	21.58	61.33	0.20				
PXD submergence (wl tape)		42.44	11.59	9.39	29.08	21.42	61.40	0.15				
submergence difference %		0.59	1.64	1.70	-1.03	0.75	-0.11	33.33				
Date	Time	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	Submergence	GPM			
9/29/2008	09:20	77.56	100.41	100.61	21.92	98.58	98.6	7.85			107118.5	Pump RPMs
9/29/2008	09:30	42.69	11.78	9.55	28.78	21.58	61.33	0.2				
9/29/2008	10:15									4.7		
9/29/2008	12:00	42.66	11.44	9.21	28.78	12.04	61.17	0.18	3044.92	4.672		
9/29/2008	12:00			101.2		108.18	98.73			4.65	107458	
9/29/2008	14:00	42.67	11.31	9.07	28.78	11.96	61.1	0.17				
9/29/2008	14:00			101.31		108.2	98.81			4.62	107802	
9/29/2008	16:00	42.69	11.33	9.09	28.79	12.1	61.07	0.16				
9/29/2008	16:00			101.31		108.23	98.85			4.6	108116	
9/29/2008	18:00	42.7	11.38	9.14	28.8	12.09	61.05	0.15				
9/29/2008	18:00			101.25		108.23	98.86			4.6	108487	
9/29/2008	20:00	42.68	11.39	9.15	28.8	11.9	61.02	0.13	3033.75	4.702		
9/29/2008	20:00					108.18				4.64	108829	no drawdown
9/29/2008	22:00	42.66	11.38	9.14	28.79	12	60.95	0.12	3029.28			in OB well
9/29/2008	22:00			101.2		108.22						
9/30/2008	00:00	42.64	11.38	9.13	28.78	11.97	60.93	0.1	3031.89			
9/30/2008	00:00					108.18						1720 RPM
9/30/2008	02:00	42.64	11.41	9.17	28.79	12.02	60.9	0.1	3040.45			
9/30/2008	02:00											1717 RPM
9/30/2008	04:20	42.67	11.49	9.25	28.81	12.42	60.95	0.09	3026.3	4.599		
9/30/2008	04:20			101.15		108	98.94			4.6		
9/30/2008	06:00	42.7	11.55	9.3	28.84	12.6	61	0.08	3039.71			
9/30/2008	06:00											
9/30/2008	08:00	42.69	11.55	9.3	28.82	11.99	60.97	0.06	3033.01	4.62		
9/30/2008	08:20									4.62	111008	
9/30/2008	09:47	42.66	11.47	9.22	28.82	11.97	60.97	0.05	3028.91			
9/30/2008	10:05										111306	
											total gallons	
											withdrawn =	
											4187500	

TEST INVALID

Appendix J. Aquifer Pumping Test Curve-Match Analyses for the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida



ROMP 45.5 - PROGRESS ENERGY L ARCA AQ MONITOR

Data Set: D:\...\lower arcadia apt dd rec hantush final 2.aqt
Date: 12/21/10 Time: 16:25:08

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5 - Progress Energy
Location: Polk County
Test Well: L ARCA AQ MONITOR
Test Date: 9/2/2008

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
L ARCA AQ MONITOR	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ L ARCA AQ OB TEMP	60	0

SOLUTION

Aquifer Model: Leaky

Solution Method: Hantush-Jacob

T = 2.547E+4 ft^2/day

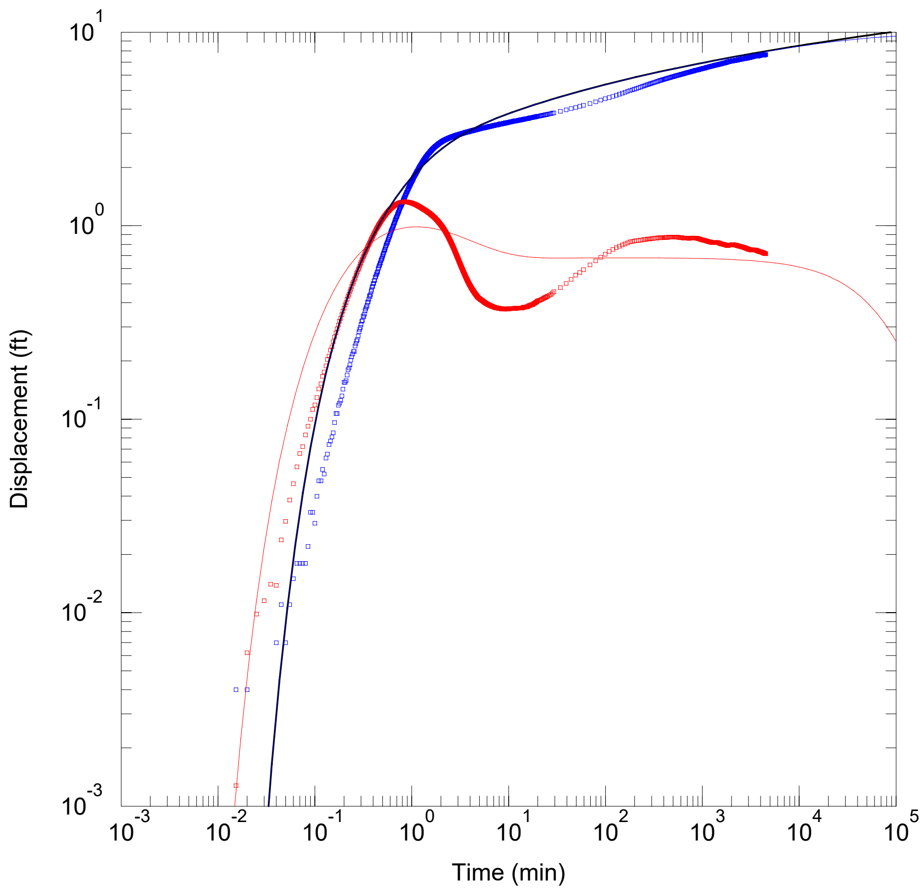
S = 0.003047

r/B = 0.009247

Kz/Kr = 0.1

b = 94.43 ft

Figure J1. AQTESOLV© curve match solution using drawdown and recovery data collected from the Lower Arcadia aquifer observation well during the Lower Arcadia aquifer pumping test at the ROMP 45.5 - Progress Energy well site in Polk County, Florida.



ROMP 45.5 - PROGRESS ENERGY L ARCA AQ MONITOR

Data Set: D:\...\lower arcadia apt hantush rec final.aqt
Date: 12/21/10 Time: 16:19:56

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5 - Progress Energy
Location: Polk County
Test Well: L ARCA AQ MONITOR
Test Date: 9/2/2008

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
L ARCA AQ MONITOR	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ L ARCA AQ OB TEMP	60	0

SOLUTION

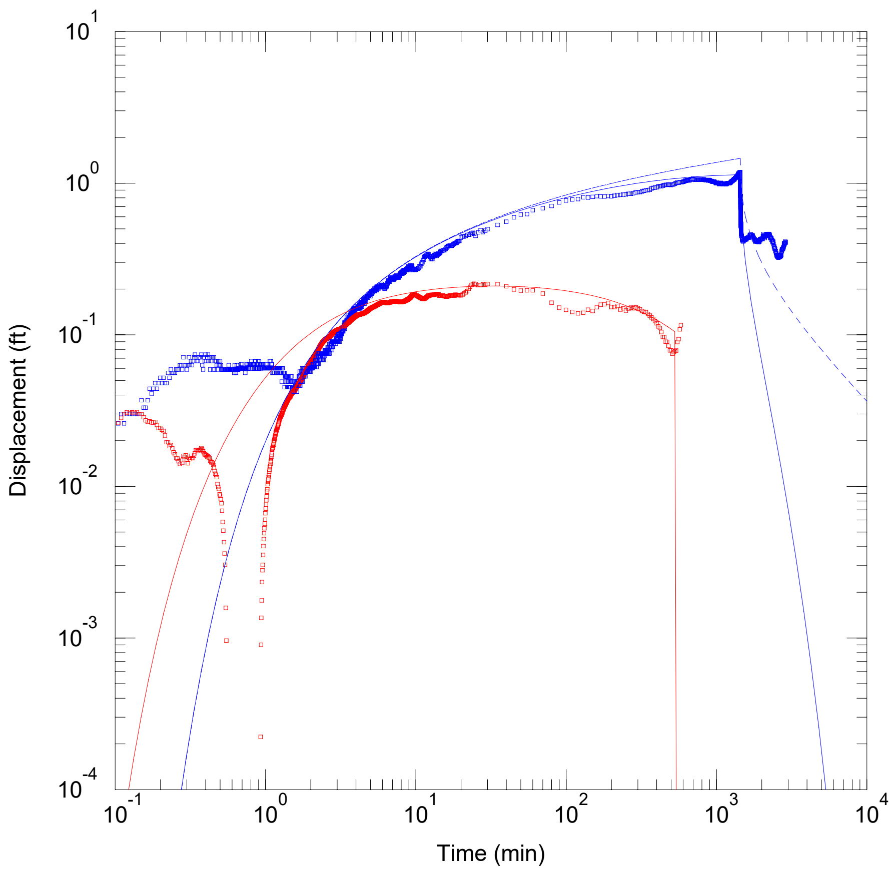
Aquifer Model: Leaky

Solution Method: Hantush-Jacob

T = 2.875E+4 ft^2/day
r/B = 0.002692
b = 119. ft

S = 0.004009
Kz/Kr = 0.1

Figure J2. AQTESOLV© curve match solution using recovery data collected from the Lower Arcadia aquifer observation well during the Lower Arcadia aquifer pumping test at the ROMP 45.5 - Progress Energy well site in Polk County, Florida.



UPPER FLORIDAN AQUIFER (SUWANNEE LIMESTONE PORTION) APT

Data Set: D:\My Documents\ROMP 45 5\APTs\Suwannee\SWNN DD RCHantush minus trend.aqt
Date: 03/02/11 Time: 13:56:49

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: U FLDN AQ MONITOR
Test Date: 9/15/2008

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
U FLDN AQ MONITOR	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ U FLDN AQ OB TEMP	185	0

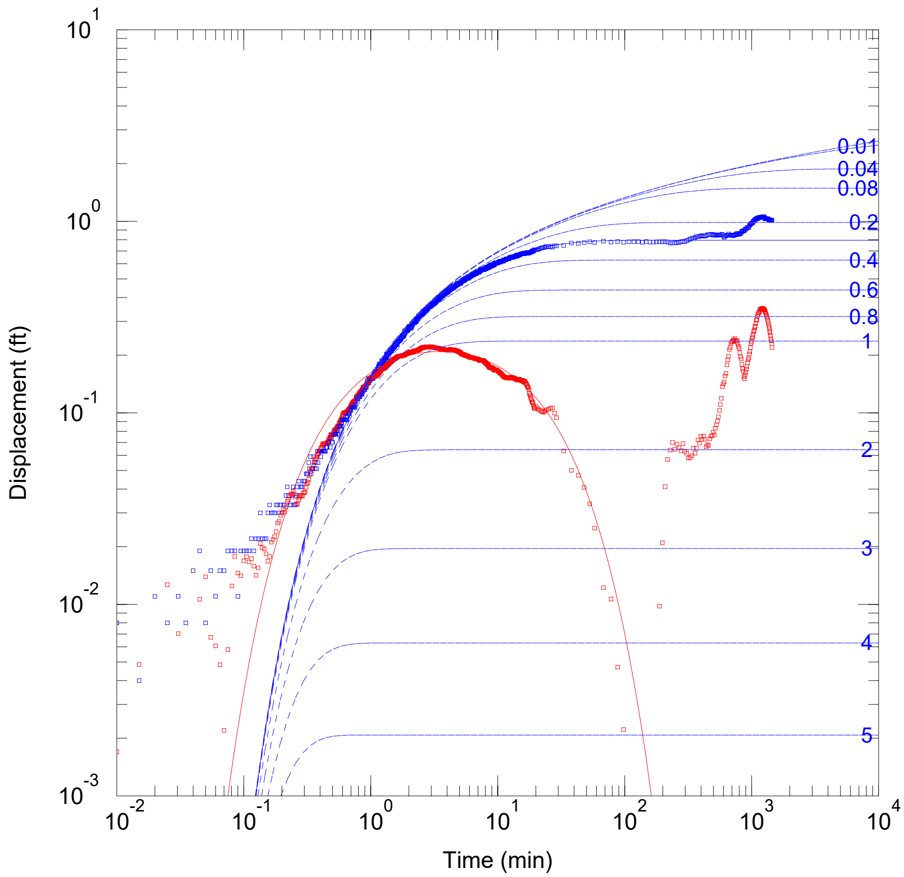
SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 2.57E+4 ft^2/day
r/B = 0.09772
b = 112. ft

S = 0.003368
Kz/Kr = 0.1

Figure J3. AQTESOLV© curve match solution using drawdown and recovery data collected from the Upper Floridan aquifer observation well during the Upper Floridan aquifer pumping test within the Suwannee Limestone at the ROMP 45.5 - Progress Energy well site in Polk County, Florida.



UPPER FLORIDAN AQUIFER (SUWANNEE LIMESTONE PORTION) APT RECOVERY PHASE

Data Set: D:\My Documents\ROMP 45 5\APTs\Suwannee\for report\SWNN RECOVERY.aqt
Date: 02/08/11 Time: 08:41:12

PROJECT INFORMATION

Company: SWFWMD
Project: ROMP 45.5
Location: Polk County
Test Well: U FLDN AQ MONITOR
Test Date: 9/15/2008

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
U FLDN AQ MONITOR	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
▫ U FLDN AQ OB TEMP	185	0

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 2.14E+4 ft^2/day
S = 0.0008689
r/B = 0.2864
Kz/Kr = 0.1
b = 112. ft

Figure J4. AQTESOLV© curve match solution using recovery data collected from the Upper Floridan aquifer observation well during the Upper Floridan aquifer pumping test within the Suwannee Limestone at the ROMP 45.5 - Progress Energy well site in Polk County, Florida.

Appendix K. Field and Laboratory Data for the Water Quality Samples Collected at the ROMP 45.5 – Progress Energy Well Site in Polk County, Florida

Appendix K1. Field analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (ºC), degrees Celsius; NM, not measured]

Water Quality Sample No.	Monitor Well SID No.	Date MM/DD/YYYY	Time (HH:MM)	Sample Interval (ft bls)	Temperature (ºC)	pH (SU)	Specific Conductance (µmhos/cm)	MAJOR ANIONS Cl^{1-} (mg/L)	MAJOR ANIONS SO_4^{2-} (mg/L)	Sample Collection Method/Remarks
2	24807 (CH 1 DRILLING WATER SUPPLY)	09/27/2005	17:00	66-90	25.78	6.96	590	16.5	0	Off-bottom, retrievable bailer sample.
3	24807 (CH 1 DRILLING WATER SUPPLY)	09/29/2005	14:00	95-130	26.2	8.20	574	7.4	0	Airlift discharge sample - sent to lab.
4	24807 (CH 1 DRILLING WATER SUPPLY)	09/30/2005	15:00	140-170	25.5	7.40	575	16	0	Off-bottom, retrievable bailer sample. No slug test performed due to tight formation.
5	24807 (CH 1 DRILLING WATER SUPPLY)	10/04/2005	11:30	175-200	24.7	8.25	565	13.5	0	Airlift discharge sample.
7	24806 (CH 2)	11/09/2005	14:30	195-215	25.6	7.75	571	12.5	6	Airlift discharge sample.
8	24806 (CH 2)	11/15/2005	14:30	218-245	24.3	NM	508	NM	NM	Airlift discharge sample.
10	24806 (CH 2)	12/01/2005	14:30	289-315	23.4	8.20	534	13.5	1	Airlift discharge sample.
11	24806 (CH 2)	12/06/2005	10:00	340-375	24.1	8.25	561	13	0	Airlift discharge sample.
12	24806 (CH 2)	12/13/2005	13:00	396-415	23.5	8.30	584	30	12	Airlift discharge sample.
13	24806 (CH 2)	12/15/2005	13:45	415-435	25	8.30	566	26.5	0	Airlift discharge sample.
14	24806 (CH 2)	12/20/2005	16:40	440-475	21.9	8.30	547	25.5	5	Airlift discharge sample.
15	24806 (CH 2)	01/03/2006	15:00	495-515	25.1	8.30	519	32	0	Airlift discharge sample.
16	24806 (CH 2)	01/05/2006	16:00	520-555	22.5	NM	510	NM	NM	Airlift discharge sample.
17	24806 (CH 2)	01/18/2006	16:20	565-595	22.1	8.30	461	19	0	Airlift discharge sample.
18	24806 (CH 2)	02/10/2006	12:45	625-665	22.4	8.0	327	2.8	7	Packer Test 18 & 19. 19 is a redo of 18. Airlift discharge sample.
20	24806 (CH 2)	02/24/2006	17:00	676-705	22.4	8.10	359	4.2	49	Airlift discharge sample.
21	24806 (CH 2)	03/02/2006	15:00	725-755	25.2	7.80	398	7.9	53	Airlift discharge sample.
22	24806 (CH 2)	03/17/2006	15:00	790-810	24.7	8.10	679	6.7	190	Airlift discharge sample.
23	24806 (CH 2)	03/24/2006	11:45	810-830	24.5	8.0	688	7.2	155	Airlift discharge sample.

Appendix K1. (Continued) Field analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; ummhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (oC), degrees Celsius; NM, not measured]

Water Quality Sample No.	Monitor Well SID No.	Date MM/DD/YYYY	Time (HH:MM)	Sample Interval (ft bls)	Temperature (°C)	pH (SU)	Specific Conductance (µmhos/cm)	MAJOR ANIONS Cl^{1-} (mg/L)	MAJOR ANIONS SO_4^{2-} (mg/L)	Sample Collection Method/Remarks
24	24806 (CH 2)	04/05/2006	14:30	868-880	25.4	7.85	746	7.4	240	Airlift discharge sample.
25	24806 (CH 2)	04/12/2006	10:30	915-940	24.7	7.95	2,300	11	1,898	Airlift discharge sample.
26	24806 (CH 2)	04/14/2006	14:15	975-1,000	26.1	8.00	2,300	9.2	1,902	Airlift discharge sample.
27	24806 (CH 2)	04/19/2006	11:40	1,016-1,040	25.9	7.95	2,380	9.2	1,832	Airlift discharge sample.
28	24806 (CH 2)	04/21/2006	12:10	1,080-1,100	26.1	7.95	2,510	8.6	1,972	Airlift discharge sample.
29	24806 (CH 2)	05/08/2006	15:00	1,111-1,140	27.1	7.95	2,430	13.5	2,191	Airlift discharge sample.
30	24806 (CH 2)	05/11/2006	11:00	1,165-1,200	26.4	7.90	2,320	10.5	1,906	Airlift discharge sample.
31	24806 (CH 2)	05/16/2006	12:00	1,218-1,240	25.1	7.90	2,560	23.5	1,906	Airlift discharge sample.
32	24806 (CH 2)	05/18/2006	14:30	1,270-1,300	25.9	7.85	3,100	36	2,735	Airlift discharge sample.
34	24806 (CH 2)	06/27/2006	10:30	1,425-1,480	26.6	6.80	5,400	30	3,100	Nested bailer sample. Flushed water column twice, then grabbed sample because purge time too long.
35	24806 (CH 2)	07/11/2006	10:00	1,545-1,600	25.6	7.27	3,253	167.2	2,027	Nested bailer sample. Air-lifted to allow interval water to fill bailer as purge time too long. Believe check valve malfunctioned due to water quality results. Did not use in analyses.
36	24806 (CH 2)	07/26/2006	12:00	1,698-1,749	27.2	8.25	34,700	14,080	5,260	Airlift discharge sample. Compared nested bailer against airlift discharge. Bailer water much fresher.
37	24806 (CH 2)	08/02/2006	14:00	1,750-1,780	26.5	8.15	31,100	868	5,800	No slug test. Airlift discharge sample.
38	670743 (CH 3)	10/09/2007	13:00	1,650-1,700	24.8	7.13	43,310	418	3,881	Nested bailer sample.
39	670743 (CH 3)	10/16/2007	16:00	1,650-1,700	24.8	7.12	42,360	434	6,410	No slug test. Nested bailer sample.

Appendix K1. (Continued) Field analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; ummhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (oC), degrees Celsius; NM, not measured]

Water Quality Sample No.	Monitor Well SID No.	Date MM/DD/YYYY	Time (HH:MM)	Sample Interval (ft bls)	Temperature (°C)	pH (SU)	Specific Conductance (µmhos/cm)	MAJOR ANIONS		Sample Collection Method/Remarks
								Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	
40	670743 (CH 3)	11/08/2007	13:00	1,751-1,887	26.4	8.24	35,230	500	7,204	Airlift discharge sample.
41	670743 (CH 3)	12/11/2007	14:45	1,927-2,037	24.4	7.12	22,850	7,360	7,472	Nested bailer sample.
42	670743 (CH 3)	01/03/2008	16:00	2,151-2,237	20.9	8.12	12,020	NM	NM	Nested bailer sample.
43	670743 (CH 3)	01/14/2008	17:00	2,267-2,367	22.5	7.32	22,940	NM	NM	Nested bailer sample.
44	670743 (CH 3)	01/22/2008	16:45	2,395-2,467	24.7	7.09	33,240	6,080	4,500	Nested bailer sample.
45	670743 (CH 3)	02/11/2008	15:00	2,467-2,557	23.2	7.52	13,160	3,680	7,440	Nested bailer sample.
46	670743 (CH 3)	02/21/2008	15:30	2,583-2,647	24.3	7.52	7,700	1,240	3,520	Nested bailer sample.
47	670743 (CH 3)	03/12/2008	13:30	2,583-2,697	26.3	7.99	7,740	876	4,352	Airlift discharge sample.

Appendix K2. Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (°C), degrees Celsius; NM, not measured; Spec. Cond., specific conductance]

							MAJOR ANIONS		MAJOR CATIONS					
Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	pH[Q] (SU)	Spec. Cond. (µmhos/cm)	Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^+ (mg/L)	K^+ (mg/L)	Fe^{2+} (µg/L)	Sr^{2+} (mg/L)
2	24807 (CH 1 DRILLING WATER SUPPLY)	09/27/2005	17:00	66-90	8.30	580	18.6	11.8	57.7	33.6	19.7	1.07	118	0.25[U]
3	24807 (CH 1 DRILLING WATER SUPPLY)	09/29/2005	14:00	95-130	8.77	564	16.3	13.6	57.9	34.9	16.1	0.57[I]	12.5[U]	0.25[U]
4	24807 (CH 1 DRILLING WATER SUPPLY)	09/30/2005	15:00	140-170	7.88	561	23.0	5.8	56.8	32.9	14.7	0.43[I]	2290	0.25[U]
5	24807 (CH 1 DRILLING WATER SUPPLY)	10/04/2005	11:30	175-200	8.32	562	22.7	7.0	58.4	33.1	16.7	0.56[I]	12.5[U]	0.25[U]
7	24806 (CH 2)	11/09/2005	14:30	195-215	7.97	567	21.9	8.9	54.4	32.1	21	1.08	83	0.25[U]
8	24806 (CH 2)	11/15/2005	14:30	218-245	8.42	515	25.0	2.6	39.4	25	35.1	2.47	22[I]	0.46[I]

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

[Q] Sample was held beyond holding time. Field pH is used in analyses due to a 15 minute holding time.

[I] Value is between the method detection limit and the practical quantitation limit, which is four times the detection limit.

Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (°C), degrees Celsius; NM, not measured; Spec. Cond., specific conductance]

							MAJOR ANIONS		MAJOR CATIONS					
Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	pH[Q] (SU)	Spec. Cond. (µmhos/cm)	Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^{+} (mg/L)	K^{+} (mg/L)	Fe^{2+} (µg/L)	Sr^{2+} (mg/L)
10	24806 (CH 2)	12/01/2005	14:30	289-315	8.39	522	26.5	8.2	38.1	24.8	35.9	3.04	12.5[U]	0.59[I]
11	24806 (CH 2)	12/06/2005	10:00	340-375	8.30	561[Q]	36.3	8.6	45.3	27	35.9	2.42	16.2[I]	0.58[I]
12	24806 (CH 2)	12/13/2005	13:00	396-415	8.38	573	45.8	10.7	47	26.9	36.1	2.52	12.5[U]	0.48[I]
13	24806 (CH 2)	12/15/2005	13:45	415-435	8.39	544	47.1	11.2	42.6	26.2	37.3	2.47	12.9[I]	0.51[I]
14	24806 (CH 2)	12/20/2005	16:40	440-475	8.50	542	41.0[Q]	15.4	42.1	26.3	33.6	2.79	12.5[U]	0.49[I]
15	24806 (CH 2)	01/03/2006	15:00	495-515	8.50	509	37.1	14.6	37.4	26	34.5	2.69	12.5[U]	0.57[I]
16	24806 (CH 2)	01/05/2006	16:00	520-555	8.50	510	24.8	4.9	38.9	25.2	34.5	2.53	12.5[U]	0.46[I]
17	24806 (CH 2)	01/18/2006	16:20	565-595	8.46	460	23.4	18.2	38.4	23.4	25.7	2.06	12.5[U]	0.48[I]
18	24806 (CH 2)	02/10/2006	12:45	625-665	8.18	325	8.1	27.6	39.2	13.6	6.29	0.86	12.5[U]	0.79[I]
20	24806 (CH 2)	02/24/2006	17:00	676-705	8.26	343	7.7	41.4	38.3	16.2	5.62	0.93	12.5[U]	0.92
21	24806 (CH 2)	03/02/2006	15:00	725-755	8.24	397	8.3	63.0	50.2	15.2	6.11	0.82	12.5[U]	0.81
22	24806 (CH 2)	03/17/2006	15:00	790-810	8.18	691	12.6	151	95.9	27.9	11.8	1.18	61.5	1.88
23	24806 (CH 2)	03/24/2006	11:45	810-830	8.09	702	12.5	167	95.5	27.1	11.8	1.13	166	1.96

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

[Q] Sample was held beyond holding time. Field pH is used in analyses due to a 15 minute holding time.

[I] Value is between the method detection limit and the practical quantitation limit, which is four times the detection limit.

Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (°C), degrees Celsius; NM, not measured; Spec. Cond., specific conductance]

							MAJOR ANIONS		MAJOR CATIONS					
Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	pH[Q] (SU)	Spec. Cond. (µmhos/cm)	Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^{+} (mg/L)	K^{+} (mg/L)	Fe^{2+} (µg/L)	Sr^{2+} (mg/L)
24	24806 (CH 2)	04/05/2006	14:30	868-880	8.20	777	13.2	208	106	31.2	12.2	1.22	97.2	2.22
25	24806 (CH 2)	04/12/2006	10:30	915-940	8.0	2,540	18.6	1,550	482	132	12.8	2.53	54.2	10.6
26	24806 (CH 2)	04/14/2006	14:15	975-1,000	8.0	2,640	19.1	1,680[Q]	492	151	13.3	2.83	260	11.1
27	24806 (CH 2)	04/19/2006	11:40	1,016-1,040	8.01	2,780	20.2	1,800	538	148	14.3	2.88	279	11.3
28	24806 (CH 2)	04/21/2006	12:10	1,080-1,100	8.06	2,750[Q]	19.8	1,780	541	151	13.2	3.06	49.9	11.3
29	24806 (CH 2)	05/08/2006	15:00	1,111-1,140	7.96	2,780	19.0	1,780	536	146	12.6	3.02	87.7	10.7
30	24806 (CH 2)	05/11/2006	11:00	1,165-1,200	7.92	2,670	28.3	1,630	508	139	17.7	2.99	394	10.9
31	24806 (CH 2)	05/16/2006	12:00	1,218-1,240	7.95	2,920	54.7	1,790	533	148	30.3	3.51	300	10.8
32	24806 (CH 2)	05/18/2006	14:30	1,270-1,300	7.97	3,430	170	1,980	592	163	107	5.46	185	11.1
34	24806 (CH 2)	06/27/2006	10:30	1,425-1,480	7.26	6,680	917.80	2,870[Q]	589	261	653	28	4,370	10.2
35	24806 (CH 2)	07/11/2006	10:00	1,545-1,600	7.31	3,350	168.32	1,636.10[Q]	601	104	127	6.25	10,800	8.97
36	24806 (CH 2)	07/26/2006	12:00	1,698-1,749	8.07	42,300	15,613.75	2,260[Q]	1,180	918	7,520	295	459	17.2
37	24806 (CH 2)	08/02/2006	14:00	1,750-1,780	8.15	37,000	11,968.09	4,828.38[Q]	1,140	871	6,330	235	1,070	16.9

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

[Q] Sample was held beyond holding time. Field pH is used in analyses due to a 15 minute holding time.

[I] Value is between the method detection limit and the practical quantitation limit, which is four times the detection limit.

Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (°C), degrees Celsius; NM, not measured; Spec. Cond., specific conductance]

							MAJOR ANIONS		MAJOR CATIONS					
Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	pH[Q] (SU)	Spec. Cond. (µmhos/cm)	Cl^{1-} (mg/L)	SO_4^{2-} (mg/L)	Ca^{2+} (mg/L)	Mg^{2+} (mg/L)	Na^{+} (mg/L)	K^{+} (mg/L)	Fe^{2+} (µg/L)	Sr^{2+} (mg/L)
38	670743 (CH 3)	10/10/2007	13:00	1,650-1,700	7.40	43,600	15,100	4,680[Q]	1,200	971	8,390	321	1,630	18.8
39	670743 (CH 3)	10/16/2007	16:00	1,650-1,700	7.68	42,400	14,400	4,470	1,180	944	8,080	310	530	19.5
40	670743 (CH 3)	11/13/2007	13:00	1,751-1,887	8.06	36,600	11,500	4,550	1,130	866	6,350	255	11,500	18.6
41	670743 (CH 3)	12/12/2007	14:45	1,927-2,037	8.03	23,100	5,590	3,750	933	653	3,580	164	197	13.6
42	670743 (CH 3)	1/3/2008	16:00	2,151-2,237	8.28	12,200	2,510	3,260	766	487	1,560	81.3	115	11.9
43	670743 (CH 3)	01/14/2008	17:00	2,267-2,367	7.94	23,600	6,520	3,760	930	627	3,870[Q]	192[Q]	207[Q]	15.5[Q]
44	670743 (CH 3)	1/22/2008	16:45	2,395-2,467	8.01	36,200	10,900	4,410	1,100	835	7,520	289	180	18.1
45	670743 (CH 3)	02/11/2008	15:00	2,467-2,557	7.86	13,800	3,220	2,680	846	353	1,970	92.2	177	13.6
46	670743 (CH 3)	2/21/2008	15:30	2,583-2,647	7.62	7,690	1,400[Q]	2,170[Q]	802	189	852	47.0	303	14.4
47	670743 (CH 3)	03/13/2008	13:30	2,583-2,697	8.27	7,810	1450	2,190	800	183	860	46.9	12.5[U]	13.4

[U] The ion was analyzed for but not detected. Value is reported as the method detection limit.

[Q] Sample was held beyond holding time. Field pH is used in analyses due to a 15 minute holding time.

[I] Value is between the method detection limit and the practical quantitation limit, which is four times the detection limit.

Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

[No., number; bls, below land surface; ft, feet; CH, core hole; SU, standard units; SID, site identification; µmmhos/cm, micromhos per centimeter; mg/L, milligrams per Liter; (°C), degrees Celsius; NM, not measured; Spec. Cond., specific conductance]

Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	Si as SiO_2 (mg/L)	Total Dissolved Solids (mg/L)	Total Alkalinity CaCO3 (mg/L)	Sample Collection Method/Remarks
2	24807 (CH 1 DRILLING WATER SUPPLY)	09/27/2005	17:00	66-90	42.7	352	280.9	Off-bottom, retrievable bailer sample.
3	24807 (CH 1 DRILLING WATER SUPPLY)	09/29/2005	14:00	95-130	40.6	346	284.3	Airlift discharge sample - sent to lab.
4	24807 (CH 1 DRILLING WATER SUPPLY)	09/30/2005	15:00	140-170	44.6	341	269.7	Off-bottom, retrievable bailer sample. No slug test performed due to tight formation.
5	24807 (CH 1 DRILLING WATER SUPPLY)	10/04/2005	11:30	175-200	46.8	353	274.4	Airlift discharge sample.
7	24806 (CH 2)	11/09/2005	14:30	195-215	49.0[Q]	348	262.5	Airlift discharge sample.
8	24806 (CH 2)	11/15/2005	14:30	218-245	38.8	307	231.2	Airlift discharge sample.
10	24806 (CH 2)	12/01/2005	14:30	289-315	38.1	312	224.8	Airlift discharge sample.
11	24806 (CH 2)	12/06/2005	10:00	340-375	40.4	329	233.4	Airlift discharge sample.

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[Q] Sample was held beyond holding time. Field pH is used in analyses due to a 15 minute holding time.

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Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

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Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	Si as SiO_2 (mg/L)	Total Dissolved Solids (mg/L)	Total Alkalinity CaCO3 (mg/L)	Sample Collection Method/Remarks
12	24806 (CH 2)	12/13/2005	13:00	396-415	41.7	343	221.0[Q]	Airlift discharge sample.
13	24806 (CH 2)	12/15/2005	13:45	415-435	37.6	342	201.0[Q]	Airlift discharge sample.
14	24806 (CH 2)	12/20/2005	16:40	440-475	35.5	327	205.0[Q]	Airlift discharge sample.
15	24806 (CH 2)	01/03/2006	15:00	495-515	32.3	294	194.8	Airlift discharge sample.
16	24806 (CH 2)	01/05/2006	16:00	520-555	36.4	306	225.1	Airlift discharge sample.
17	24806 (CH 2)	01/18/2006	16:20	565-595	30.5	292	182.0[Q]	Airlift discharge sample.
18	24806 (CH 2)	02/10/2006	12:45	625-665	15.9	194	120.6[Q]	Packer Test 18 & 19. 19 is a redo of 18. Airlift discharge sample.
20	24806 (CH 2)	02/24/2006	17:00	676-705	15.6	205	117.5[Q]	Airlift discharge sample.
21	24806 (CH 2)	03/02/2006	15:00	725-755	14.6	239	123.6[Q]	Airlift discharge sample.
22	24806 (CH 2)	03/17/2006	15:00	790-810	17.2	457	171.4	Airlift discharge sample.
23	24806 (CH 2)	03/24/2006	11:45	810-830	17.1[Q]	458	169.2	Airlift discharge sample.
24	24806 (CH 2)	04/05/2006	14:30	868-880	18.3[Q]	549	178.5	Airlift discharge sample.
25	24806 (CH 2)	04/12/2006	10:30	915-940	21.1	2,491	156.4	Airlift discharge sample.
26	24806 (CH 2)	04/14/2006	14:15	975-1,000	20.9	2,586	146.2[Q]	Airlift discharge sample.
27	24806 (CH 2)	04/19/2006	11:40	1,016-1,040	20.3	2,726	151.2	Airlift discharge sample.
28	24806 (CH 2)	04/21/2006	12:10	1,080-1,100	21.4	2,764	132.9[Q]	Airlift discharge sample.
29	24806 (CH 2)	05/08/2006	15:00	1,111-1,140	19.5012	2,737	131.4[Q]	Airlift discharge sample.
30	24806 (CH 2)	05/11/2006	11:00	1,165-1,200	21.519	2,596	145.1[Q]	Airlift discharge sample.
31	24806 (CH 2)	05/16/2006	12:00	1,218-1,240	18.5944	2,854	125.7[Q]	Airlift discharge sample.
32	24806 (CH 2)	05/18/2006	14:30	1,270-1,300	18.3157	3,331	122.9[Q]	Airlift discharge sample.
34	24806 (CH 2)	06/27/2006	10:30	1,425-1,480	15.8052[Q]	2,767	125.5	Nested bailer sample. Flushed water column twice, then grabbed sample because purge time too long.

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Appendix K2. (Continued) Laboratory analyses results of the water quality samples collected during exploratory core drilling operations at ROMP 45.5 - Progress Energy well site in Polk County, Florida

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Water Quality Sample No.	Monitor Well SID No.	Date (MM/DD/YYYY)	Time (HH:MM)	Sample Interval (ft bls)	Si as SiO_2 (mg/L)	Total Dissolved Solids (mg/L)	Total Alkalinity CaCO3 (mg/L)	Sample Collection Method/Remarks
35	24806 (CH 2)	07/11/2006	10:00	1,545-1,600	23.0437	3,114	150.8	Nested bailer sample. Airlifted to allow interval water to fill bailer as purge time too long. Believe check valve malfunctioned due to water quality results. Did not use in analyses.
36	24806 (CH 2)	07/26/2006	12:00	1,698-1,749	19.9523	29,130	245.0[Q]	Airlift discharge sample. Compared nested bailer against airlift discharge. Bailer water much fresher.
37	24806 (CH 2)	08/02/2006	14:00	1,750-1,780	15.7733	25,750	225.2	No slug test. Airlift discharge sample.
38	670743 (CH 3)	10/10/2007	13:00	1,650-1,700	25.0	31,900	273.4[Q]	Nested bailer sample.
39	670743 (CH 3)	10/16/2007	16:00	1,650-1,700	21.8	30,300	303.1	No slug test. Nested bailer sample.
40	670743 (CH 3)	11/13/2007	13:00	1,751-1,887	10.8	25,500	238.1[Q]	Airlift discharge sample.
41	670743 (CH 3)	12/12/2007	14:45	1,927-2,037	16.5	16,800	199.9[Q]	Nested bailer sample.
42	670743 (CH 3)	1/3/2008	16:00	2,151-2,237	19.4	9,610	116.4	Nested bailer sample.
43	670743 (CH 3)	01/14/2008	17:00	2,267-2,367	18.2[Q]	16,800	194.2[Q]	Nested bailer sample.
44	670743 (CH 3)	1/22/2008	16:45	2,395-2,467	14.1	25,500	243.1[Q]	Nested bailer sample.
45	670743 (CH 3)	02/11/2008	15:00	2,467-2,557	19.6	9,890	149.4	Nested bailer sample.
46	670743 (CH 3)	2/21/2008	15:30	2,583-2,647	20.1	5,980	132.2	Nested bailer sample.
47	670743 (CH 3)	03/13/2008	13:30	2,583-2,697	19.3	3,090	136.7[Q]	Airlift discharge sample. Lab ran analysis on TDS twice to verify result.

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Southwest Florida
Water Management District