FINAL REPORT – WELL OVERSIGHT
R.D. KEENE PARK
ORANGE COUNTY, FLORIDA

UES Project No. 12666-001-01
Report No. 308107
Date: September 2003

UNIVERSAL
ENGINEERING SCIENCES

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UES Project No. 12666-001-01
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Prepared For:

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, Florida 33406

Prepared By:

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Senior Geologist
Florida License No. 0002091

9-26-03

STATE OF FLORIDA GEOLOGIST

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1.0 WORK SCOPE

Universal Engineering Sciences, Inc. (UES) was contracted by the South Florida Water Management District (SFWMD) to provide hydrogeologic services as described in Request For Quotes (RFQ) Number 03-017. A copy of RFQ No.03-017 is included in Appendix A. Services provided included general oversight during drilling, construction and testing of Floridan test/monitor wells at R.D. Keene Park located in Orange County, Florida. The SFWMD contracted directly with Diversified Drilling Corporation (DDC) to provide well installation services for the project. The ultimate goal of the project was to gather information to better address the uncertainty of the future water use in Orange, Osceola, and Polk Counties and its impact to existing wetlands within the portion of the SFWMD located north of Lake Okeechobee.

2.0 SITE LOCATION

The SFWMD selected R.D. Keene Park as the location to obtain additional information regarding the interaction between the surficial, intermediate, and upper Floridan Aquifers. R.D. Keene Park is owned and operated by Orange County, and is located near the Town of Windermere. The site is located within Section 20, Range 28 East, Township 23 South, and is identified on a portion of the "Windermere, Florida" U.S.G.S. Quadrangle Map included in Appendix B

2.0 DRILLING AND CONSTRUCTION SUMMARY

Prior to mobilization to the site, the SFWMD provided UES and DDC with a revised Drilling and Construction Summary (Appendix C). The summary outlines the drilling methods and the construction of one 14-inch diameter Florida aquifer-test-production well (Well No. 1), one six-inch diameter Floridan aquifer monitor well (Well No. 2), one six-inch diameter Hawthorn confining unit monitor well (Well No. 3), one six-inch diameter Shallow aquifer monitor well (Well No. 4), and two optional wells. The SFWMD opted to install one additional two-inch diameter Shallow aquifer monitor well (Well No. 5). GPS coordinates for Well Nos. 1 through 5 were obtained by the SFWMD and are included in Appendix C

3.0 SUBMITTALS

Prior to commencement of well installation activities at the site, project submittals were transmitted to the SFWMD for review. Submittals provided by UES consisted of a Daily Log form, a Drilling Information form, and a Field Log of Boring form. Submittals provided by DDC consisted of a Construction Schedule, contact information, welder certifications, Type I Cement design mix information, and drilling mud design mix information. Copies of the submittal documents are included in Appendix D.

4.0 PROGRESS REPORTS

Weekly progress reports were submitted to the SFWMD on a weekly basis. The progress reports summarized well installation, geophysical logging, and/or pump test activities. Daily tasks completed by UES included measuring drilling mud density and viscosity, measuring casing, water quality testing, and describing formation samples using the Dunham, 1962-classification scheme. Copies of the weekly progress reports beginning March 17, 2003 through June 6, 2003 and copies of the Field Log of Borings are included in Appendix E. Formation samples from Well No. 1 were previously provided to the SFWMD.

5.0 GEOPHYSICAL LOGGING

Geophysical logging was conducted by Southern Resource Exploration (SRE) as contracted by DDC. On March 26, 2003, SRE ran a geophysical log on the 12-inch diameter pilot hole from land surface to approximately 202' bls. On March 28, 2003, SRE ran caliper and natural gamma logs on the 20-inch diameter borehole. On April 10, 2003, SRE ran geophysical logs on the pilot hole from the base of the 14-inch diameter casing to approximately 656' bls. Hard copies of the geophysical logs as provided to UES by SRE are included in Appendix F. UES previously submitted electronic copies of the geophysical logs to the SFWMD.

6.0 AQUIFER TEST INFORMATION

On April 16, 2003, UES conducted a step-drawdown/specific capacity test on the 14-inch diameter Florida aquifer-test-production well (Well No. 1). The test was conducted utilizing a Hermit 3000. The step test was conducted by pumping 750-gallons per minute for the first hour, 1,000-gallons per minute for the second hour, 1,500-gallons per minute for the third hour, 2,000-gallons per minute for the fourth hour, 2,450-gallons per minute for the fifth hour, and then monitoring recharge for one additional hour. The SFWMD utilized the results from the step-drawdown/specific capacity test to determine placement of Well Nos. 2 through 5.

UES and the SFWMD conducted a 96 hour constant rate pump test at the site. The pumping portion of the test began at approximately 10:25 a.m. on June 16, 2003, and the pump was shut down at approximately 1:00 p.m. on June 19, 2003. The pumping rate utilized during the pump test was 2,765 gallons per minute.

Water level information was obtained manually during the pump tests as a backup in case of mechanical failure. Copies of the field documentation are included in Appendix G. An electronic copy of the data from the April 16, 2003 pump test was submitted to the SFWMD on April 16, 2003. The 96-hour constant rate pump test was conducted utilizing SFWMD equipment; electronic results were not provided to UES.

APPENDIX A

SOUTH FLORIDA WATER MANAGEMENT District
REQUEST FOR QUOTES (RFQ)

Quotes May Be Submitted To The Following Address:	**Number: 03-017**
South Florida Water Management District Attn: Procurement Department B-1 Building, 2nd Floor West 3301 Gun Club Road West Palm Beach, FL 33406 Or faxed to: 561-681-6275	**Issue Date: January 23, 2003**

Title: HYDROGEOLOGICAL SERVICES

Purpose: The purpose of this RFQ is to solicit quotes from qualified respondents for the services of an experienced hydrogeologist or groundwater technician to provide general oversight during drilling, construction and testing of a Floridan test/monitor well in Orange County, Florida.

A more complete description of the technical specifications can be found in Part 4 of this RFQ.

Inquiry Period:	**Direct All Inquires to:**	
January 23, 2003 to February 13, 2003	Procurement:	Lois Begnoche, Sr. Purchasing Agent
Inquiries may be made between the hours of 8:00 A.M. and 5:00 P.M. weekdays.	Telephone No:	(561) 682-6389
	E-Mail:	lbegnoch@District.gov
	Fax No:	(561) 681-6275

Note: All technical inquiries must be submitted in writing via Fax or E-Mail.

Deadline For Quote Submission:

February 20, 2003 - 3:00 p.m.

Confirmation of timely receipt, quote results and official award information may be obtained by calling (561) 682-6390

This RFQ is Comprised of 4 Parts:	**Attachments:**
Part 1. General Guidelines and Information	1. Insurance Requirements
Part 2. Instructions for Preparing Responses	2. Statement of No Response
Part 3. Quote Form	3 Purchase Order
Part 4 Statement of Work/Specifications	4. Exhibit A – well construction specifications (C-13372)

PART 1
GENERAL GUIDELINES AND INFORMATION

1.1 DEFINITIONS

"RFQ". A Request For Quotes, which is a written request for written or faxed responses in which cost is the main selection criteria.

"Respondent". All suppliers, vendors, contractors, consultants, respondents, organizations, firms, or other entities submitting a response to this RFQ.

"Quote" or "Response". The proposer's written response to this RFQ offering to provide the specified commodities and/or services. It shall be considered as a binding offer.

"Contract." A binding written agreement, including purchase orders, containing terms and obligations governing the relationship between the District and the other party.

"District." The South Florida Water Management District.

1.2 POINTS OF CONTACT AND TIMETABLE FOR INQUIRIES

Respondents may contact the District to discuss this RFQ. Points of contact for both technical and administrative inquiries are specified on the cover page. All respondent's verbal inquiries should be confirmed in writing either through the mail or via facsimile transmission. Inquiries will not be entertained beyond the cut-off date indicated on the cover page in order that answers to substantive questions, in the form of written addenda, may be distributed to all who requested the RFQ.

1.3 STATEMENT OF NO RESPONSE

Respondents not responding to this RFQ should complete the attached Statement of No Response form and return it to the District by the deadline for response submission in an envelope plainly marked with the RFQ number and the reference: "No Response." Failure to return this form on three RFQs may result in your firm being removed from notification of future RFQs. The form may be submitted via facsimile transmission to number (561) 681-6275.

1.4 RESPONSE SUBMISSION

The District shall accept quotes submitted via facsimile transmission at (561) 681-6275. The District will not accept responses delivered after the established deadline. Receipt of a response by any District office, receptionist or personnel other than the Division of Procurement and Contract Administration does not constitute "delivery" as required by this RFQ.

1.5 DISCLOSURE

Upon receipt, responses become "public records" and shall be subject to public disclosure consistent with Chapter 119, Florida Statutes. Respondents must invoke the exemptions to disclosure provided by law, in the response to the RFQ, by providing the specific statutory authority for the claimed exemption, identifying the data or other materials to be protected, and stating the reasons why such exclusion from public disclosure is necessary.

1.6 REJECTION OF RESPONSES

REJECTION: Pursuant to Rule 40E-7.301, Florida Administrative Code, the District reserves the right to reject any and all responses (1) when such rejection is in the interests of the District; (2) if such response is non-responsive or non-responsible or (3) if the response contains any material irregularities. The District reserves the right to waive any minor irregularities and to accept the most responsive and responsible quote as determined by the District. The District's basis for rejecting all quotes shall not be arbitrary or capricious.

1.7 AWARD

The District anticipates issuing a purchase order to the respondent who submits the lowest quote meeting the technical specifications and requirement. The District encourages the offer of early payment discounts as an enhancement to the contractor's cash flow and a cost savings to the taxpayer. The District will consider and actively attempt to earn all discounts offered by the respondent. The District anticipates award of one purchase order, but reserves the right to award more than one purchase order, or not make any award, if to do so is in the interest of the District.

1.8 TAX EXEMPT STATUS

The District is exempt from Florida Sales and Federal Excise taxes on direct purchase of tangible property.

1.9 EQUAL OPPORTUNITY/M/WBE PARTICIPATION

The District recognizes fair and open competition as a basic tenet of public procurement. Respondents doing business with the District are prohibited from discriminating on the basis of race, color, creed, national origin, handicap, age or sex. The District encourages participation by minority business enterprises (M/WBE's) at both the prime and subcontractor levels. The District may establish participation goals and may provide incentives to increase the utilization of minority and woman-owned businesses as both prime contractors and subcontractors. For further information on certification as an MBE, respondents may contact the District's MBE Office at (561) 687-6446.

PART 2
INSTRUCTIONS FOR PREPARING RESPONSES

2.1 RULES

Each response by an individual or firm shall state the name and address of all persons or entities having an interest in the response. Responses shall be signed by an authorized person or member of the firm making the response. In no case may a response be transferred or assigned by a respondent.

2.2 INSURANCE

The respondent, if awarded a contract, shall maintain insurance coverage reflecting, at a minimum, the amounts and conditions as specified within the District's Certificate of Insurance, attached to this RFQ. Evidence of appropriate insurance coverage shall be provided as an attachment to the response. Respondents may fulfill this requirement by having their insurance agent either (1) complete and sign the District's Certificate of Insurance, or (2) issue a letter on the insurance agency's stationary stating that the respondent qualifies for the required insurance coverage levels and that the District's Certificate of Insurance will be submitted before final execution or issuance of the contract. All insurers must be qualified to lawfully conduct business in the State of Florida. Failure of the District to notify the respondent that the certificate of insurance provided does not meet the contract requirements, shall not constitute a waiver of the respondent's responsibility to meet the stated requirements. In addition, receipt and acceptance of the certificate of insurance by the District shall not constitute approval of the amounts or types of coverage listed on the certificate.

If the respondent is a self-insured entity, the respondent may contact the District's Contract Administrator or Purchasing Agent, identified on the cover page, and request the District's self-insurance package.

Misrepresentation of any material fact, whether intentional or not, regarding the respondent's insurance coverage, policies or capabilities, may be grounds for rejection of the response and recision of any ensuing contract.

2.3 RESPONSE FORMAT

Responses shall be submitted on the quote form furnished or upon a copy thereof, and must be signed by the respondent's authorized representative. Respondents must quote on all items listed and failure to do so may render the quote non-responsive.

2.4 IRREGULARITIES

Quotes will be considered irregular if, for example, they show omissions, unauthorized alterations of form, additions not called for, conditional or unauthorized alternate quotes, or other irregularities of any kind. Unbalanced unit prices, either in excess of or below the reasonable cost analysis values, or incomplete unit price be rejected by the District.

2.5 ATTACHMENTS

The following attachments shall be provided with the response:

A. Signed receipts for each addendum issued by the District (if applicable).

B. Evidence of current levels of insurance.

C. Current Professional Geologist/Engineer license

PART 3
QUOTE FORM

The South Florida Water Management District
Attn: Procurement Department
B-1 Building, 2nd Floor West
3301 Gun Club Road
West Palm Beach, Florida 33406

1. The undersigned, as respondent, hereby declares that: (a) the only person(s) interested in the Quote as principal or principals is or are named herein and not other person than herein mentioned has interest in this Quote or in the contract to be entered into; (b) that this Quote is made without connection with any other person, company or parties making a Quote; and (c) that it is in all respects fair and in good faith without collusion or fraud.

2. The respondent further declares that respondent has examined the specifications for the work and all of the contractual documents relative thereto, and has read all the provisions furnished prior to the opening of the Quotes; and that the respondent has satisfied itself relative to all services to be performed and/or items to be provided.

3. If this Quote is accepted, it is understood that the terms and conditions of the Quote provisions and documents relative thereto shall be binding upon the parties; however, the undersigned respondent agrees, upon acceptance, to execute a contract with the District as a written memorial and formalization of said Quote provisions and matters relative thereto; to furnish all necessary evidence of required insurance and bonds, and provide the specified services and/or items within the time frame specified in this RFQ.

4. The respondent has attached the following:

   (a) Signed receipts for each addendum issued by the District, if applicable.
   (b) Certificate of insurance listing the required coverages.
   (c) Current Professional Geologist/Engineer license

5. The respondent understands that this Quote does not constitute a contract or purchase order with the District. An official contract or purchase order is not binding until (a) Quotes are reviewed and accepted by appointed staff; (b) the contract or purchase order has been approved by the appropriate level of authority within the District; and (c) the contract has been executed by the parties or the purchase order has been issued to the respondent.

6. Quotes will not be accepted from firms in arrears or in default to the District. The respondent certifies by signing the Quote that no principals or corporate officers of its firm were principals or corporate officers in any other firm which may have been suspended from doing business with the District within the last three years, unless so noted in the Quote.

STATEMENT OF WORK
HYDROGEOLOGICAL SERVICES
RFQ 03-017

I. BACKGROUND

The Kissimmee Basin Water Supply Plan (KBWSP) examined the long-term water use conditions for areas in the South Florida Water Management District (District) located north of Lake Okeechobee. The findings of the KBWSP suggest that the ground-water supplies in portions of Orange, Osceola and Polk Counties may not be sufficient to meet the 2020 (1-in-10 drought year) water supply needs. In the Orange, Osceola, and Polk County area, the continued use of the Floridan Aquifer has been projected to contribute to possible reduction of wetlands, reduction in spring flow and may be a factor to the formation of sinkholes. However, these conclusions were predicated on a limited amount of geologic and hydrologic information in the region. In particular, information regarding the interactions between surface water, the surficial aquifer and upper Floridan Aquifer is limited. A priority recommendation in the KBWSP was to gather additional hydrologic information to better address the uncertainty of the future water use and its impact to existing wetlands. The site selected to acquire additional information is located in western Orange County within the R.D. Keene Park (owned and operated by Orange Co). As part of this effort, a qualified hydrogeologist or groundwater technician (Contractor) is required to oversee drilling, well construction and testing activities and to ensure compliance with District specifications and contract documents.

II. OBJECTIVE

The objective is to obtain the services of an experienced hydrogeologist or groundwater technician. The Contractor shall be registered Professional Geologist/Engineer in the State of Florida or persons working under the direct supervision of the licensed Professional Geologist/Engineer. The Contractor will provide general oversight during drilling, construction, and testing of a Floridan test/monitor well in accordance with construction specifications. In addition, the Contractor shall be responsible for the collection and documentation of geologic, hydrologic, and water quality data generated during drilling and testing operations.

III. SCOPE OF WORK

The scope of work covers the technical services necessary to oversee and properly document the drilling, construction and testing of two (2) wells in the upper Floridan Aquifer System (FAS), and two (2) shallow monitor wells (see Exhibit A, well construction specifications). The Contractor shall provide general services for a period of four (4) months in support of the drilling and hydrogeologic testing, and reporting of these data plus well construction oversight. The individual services shall include:

A. Site Duties:

1. Collect well cutting (formation samples) at a minimum of every five (5) feet or at distinct lithologic or textural breaks and described them using the Dunham, 1962-classification scheme.

2. During mud rotary drilling, independently determine the drilling mud properties three (3) times daily. Mud density shall be determined using a beam-type balance and viscosity using a Marsh funnel to ensure compliance with drilling specifications.

3. During reverse-air drilling operations :

   a. Record drilling time (in minutes) for each 30-foot section of drill rod

   b. Record water levels reported in depth of water (in feet and 1/10 of feet) from top of casing within the casing every 30 feet (average length of drill rod).

   c. Collect water samples from circulated return fluids (composite formation water) at 30-foot intervals to the total depth of each pilot hole. Perform field water quality analyses.

4. Record water levels reported in depth of water (in feet and 1/10 of feet) from top of casing in the well casing every morning before drilling starts.

5. Oversee all casing installation and subsequent cement grouting operations per Exhibit A. well construction specifications.

6. Supervise all geophysical logging operations per Exhibit A. well construction specifications.

7. Assist step-drawdown test operations per Exhibit A, well construction specifications.

8. Provide weekly summary reports related to drilling, construction, and/or testing activities.

9 Generate final lithologic and reverse-air water quality data report.

IV. WORK BREAKDOWN STRUCTURE

The Contractor shall be responsible for recording well construction, supervising well testing activities, assuring communication between the driller and the District representatives and documenting final construction activities.

A. Well Construction Oversight

The Contractor shall monitor and record well drilling and construction activities as outlined in the well construction specifications (Exhibit A). The Contractor shall maintain daily drilling logs. These logs shall include information related to casing installed, neat cement volumes pumped, depth and type of formation encountered, drilling time, daily water levels, water quality of reverse-air returns, well development, hydraulic testing operations, and the driller's compliance with District specifications and contract documents. The contractor shall coordinate with the driller for safe and unobstructed collection of formation and water quality samples during drilling operations.

The Contractor shall oversee well construction activities specifically those related to casing installation and cement grouting. The general requirements are:

1. Casing Installation - The Contractor shall physically measure and note the identifier for each section of casing to insure proper depth control. All pipe measurements shall be considered part of the daily field logs.

2. Cement Grouting – The Contractor shall ensure that all casing is cemented using standard American Society of Testing and Materials (ASTM) TYPE II C150-94, or API Class B neat cement-grout. Neat cement grout shall not exceed 15.6 lbs./gal with zero percent free water when pumped yielding 1.18 cubic feet per 94 lbs. sack of cement. During the pumping of each cement stage, the Contractor shall be responsible for determining the density of three (3) grout samples. Grout samples shall be taken before pumping, at the midpoint and near the end of each stage. Slurry densities shall be determined in accordance to API Spec 10 using a Pressurized Fluid Density Balance and must ensure that this standard is met before grouting operations commence.

B. Well Testing Oversight

During the course of well construction, the driller is required to perform specific testing activities. The Contractor shall oversee and assist in the performance of these tests to the extent specified by the District designate. Among the tests to be performed are:

1. Specific Capacity/Step Drawdown Testing – The Contractor shall work with the driller to setup and perform these tests as directed by the District. The Contractor shall provide calibrated down-hole pressure transducer(s) and electronic recording instrumentation (e.g., Hermit 4000)

2. Geophysical Logging – Five (5) sets of geophysical logs will be collected during pilot-hole drilling and well construction. The Contractor will work with the driller to assure that geophysical logging operations are performed in accordance with District specifications and contract documents. In addition, the Contractor will ensure that the field prints and electronic copies of the geophysical log data are delivered to the District.

3. Water Quality Testing - Water quality samples will be collected during the course of drilling and production-type tests. The Contractor will collect representative water samples at 30-foot intervals during reverse-air drilling operations. Field parameters which, includes specific conductance, pH and temperature plus chloride concentrations will be determined for each sample. A Hydrolab® multi-parameter probe or equivalent will be required to measure field parameters. A field titration method (Hach® Kit) or equivalent shall be used to determined chloride concentrations. The Hydrolab® multi-parameter probe or equivalent shall be calibrated using appropriate standards at the beginning and end of each workday. The calibration reports shall be part of the daily reports. The Contractor shall submit information regarding the water quality sampling equipment and materials before start of drilling operations.

C. Communication

Construction time for the proposed exploratory is estimated at three (3) months. During this period, it is important that communication between the driller and District and/or their designate be timely and constructive. The Contractor is required to have a cell phone for contact in the field. The Contractor shall assure that the District is promptly informed of site activities to schedule and coordinate well drilling or testing operations. A 72-hour advanced notification is required for all-major site activities (e.g., specific capacity, setting of individual casings and grouting events). The Contractor will make recommendations related to each activity, but the District shall be responsible all final decisions regarding well construction and testing operations.

D. Reporting

The Contractor shall submit weekly written reports summarizing drilling, construction, and testing activities to the District. The preferred method of submitting these reports is via e-mail. In addition, the weekly reports shall include well construction documentation (e.g., mill certificates), well testing activities, a lithologic log, water quality data, and copies of the geophysical logs conducted. In case of a personal injury, the proper action shall be taken and the injury shall be reported immediately by telephone or messenger to the District.

V. PROJECT SCHEDULING AND DELIVERABLES

Construction and testing of the exploratory well is expected to be completed within three (3) months from the start of construction. All well construction activities are expected to be completed during normal working hours (7:00 a.m. to 7:00 p.m., Monday through Friday) or as approved by the District. At times, it may be necessary to do certain parts of the work outside normal working hours to avoid undesirable impacts to adjacent landowners. The Contractor shall do this work at no additional cost to the District. This work shall be coordinated with the District prior to initiation of the work.

Deliverables for this effort include daily updates and weekly summary reports on the status of the well construction activities. The Contractor shall submit a final data report to the District within 15 days of the completion of well construction and testing. In addition, five (5) hard copies and five (5) electronic copies of the final report shall be submitted to the District at the conclusion of the work. All documents shall be in Microsoft Word & Excel compatable formats.

VI. PAYMENT

Quantities have been estimated for quoting purposes. The Contractor shall be paid based on actual services rendered at the specified unit price and within the not-to exceed total quote price. Services shall be invoiced on a monthly basis. Payment will be made thirty (30) days from receipt and acceptance, by the District, of the invoice.

Certificate of Insurance

PROVIDED TO

South Florida Water Management District

Issue Date (MM/DD/YY)

AGENT/BROKER: Name/Address/Telephone/Fax Number

INSUREDS: Name/Address/Telephone/Fax Number

Required Coverage Identified by Letters with ☒

COMPANIES AFFORDING COVERAGE AND BEST RATING

COMPANY LETTER **A**	COMPANY LETTER **D**
COMPANY LETTER **B**	COMPANY LETTER **E**
COMPANY LETTER **C**	COMPANY LETTER **F**

	TYPE OF COVERAGE	POLICY NUMBER	EFFECTIVE DATE	EXPIRATION DATE	LIST DEDUCTIBLE SIR LIMIT	LIABILITY LIMITS
☒ A	**General Liability** ☒Comprehensive Form ☒Premises/Operations ☐XCU Coverage ☒Products/Completed Operations ☒Contractual ☒Independent Contractors ☒Broad Form Property Damage ☒Personal Injury ☐Watercraft				$	PER OCCURRENCE BI & PD Combined **$300,000.**
☒ B	**Automobile Liability** ☒Any Auto ☐All Owned Autos (Priv Pass) ☐All Owned Autos (Other than Priv Pass) ☐Hired Autos ☐Non-Owned Autos Garage Liability				$	LIABILITY LIMITS PER OCCURRENCE BI & PD Combined **$300,000.**
☒ C	**Workers' Compensation & Employers' Liability**				$	STATUTORY LIMITS $100,000 (Each Accident) $500,000 (Disease – Policy Limit) $100,000 (Disease – Each Employee)
☐ D	**Professional Liability**				$	LIABILITY LIMITS BI & PD Combined $
☐ E	**Builders Risk**				$	100% of Value
☐ Other						

NOTE: South Florida Water Management District shall be included as Additional Insured under General Liability.

Certificate Holder
South Florida Water Management District
P. O. Box 24680 West Palm Beach, FL 33416-4680
Attention: Purchasing Agent

Should any of the above coverage be cancelled or modified, the Insurance Agent shall notify the Certificate Holder thirty (30) days prior to the effective date of said change. I certify that I have a Certificate of Authority to write insurance in the State of Florida.

Authorized Representative _____ Date _____

STATEMENT OF NO RESPONSE
SOLICITATION NO. 03-017

cipients of their solicitation may elect not to respond. The District is interested in learning the reason(s) for non-esponse. If you elect not to respond with an offer to their solicitation, the District requests that the reason(s) be dicated below and their form returned to:

Procurement Department
South Florida Water Management District
P.O. Box 24680, West Palm Beach, FL 33416-4680
Fax Number: 561-681-6275

REASONS:

1. _____ Do not offer their product/service or an equivalent.
2. _____ Schedule would not permit.
3. _____ Insufficient time to respond to solicitation.
4. _____ Unable to meet specifications / scope of work.
5. _____ Specifications "too tight" (i.e. geared to specific brand or manufacturer).
6. _____ Specifications not clear.
7. _____ Unable to meet bond and/or insurance requirements.
8. _____ Solicitation addressed incorrectly, delayed in forwarding of mail.
9. _____ Other (Explanation provided below or by separate attachment.)

planation: _____

_____

_____

District MAY DELETE THE NAMES OF THOSE PERSONS OR BUSINESSES WHO FAIL TO RESPOND TO THREE (3) SOLICITATIONS AND WHO FAIL TO ETURN THIS STATEMENT, INCLUDING REASON(S) FOR NON-RESPONSE.

sire to receive future District solicitations ? ❑ Yes ❑ No

OMPANY: _____

ME: _____ TITLE: _____

DDRESS: _____

ELEPHONE: (____)_____ DATE: _____

South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33416-4680
Telephone (407) 686-8800 Ext. 6390
Florida WATS Line 1-800-432-2045

Form #0695
Rev. 5/95

PURCHASE ORDER

FLORIDA SALES TAX EXEMPTION #60-22-113498-52C
FEDERAL TAX EXEMPT #59-74-0072K

THIS NUMBER MUST APPEAR ON ALL PACKAGES, PACKING LISTS, INVOICES, AND CORRESPONDENCE. →	PAYMENT TERMS

PAGE NO.	DATE OF ORDER:	EST. DELIVERY DATE.

VENDOR NO.	PURCHASING AGENT	F.O.B.	CONFIRMING:	ORGANIZATION NO.

VENDOR

SHIP TO

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

LINE ITEMS OF YOUR INVOICE MUST MATCH LINE ITEM NUMBERS ON THIS DOCUMENT

Line	Quantity	Unit	Part Number and Description	Unit Price	Total Amount

NOTE:
- Prices displayed govern this purchase order transaction.
- Price discrepancies must be resolved prior to shipping.
- Early payment discount invoices receive priority handling.
- Purchase Order number must appear on all invoices.

Page Total	
Grand Total	

SEND ALL INVOICES TO:
South Florida Water Management District
P.O. Box 24682
West Palm Beach, FL 33416-4682

Authorized Agent
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PURCHASE ORDER TERMS AND CONDITIONS

This PURCHASE ORDER constitutes a binding contract between the South Florida Water Management District (hereinafter the "DISTRICT") and the "CONTRACTOR/VENDOR" as is named on the reverse side of the PURCHASE ORDER, when accepted by the CONTRACTOR/VENDOR, either by express acknowledgement, by commencement of shipment without reservations, or by commencement of performance of services.

GENERAL CONDITIONS

ASSIGNMENT / DELEGATION: No right, obligation or interest in this PURCHASE ORDER shall be assigned or delegated by the CONTRACTOR/VENDOR without the prior written consent of the DISTRICT. Any such unauthorized assignment or delegation by CONTRACTOR/VENDOR shall be void and may render this PURCHASE ORDER void, at the sole option of DISTRICT, without prejudice to DISTRICT'S other rights and remedies.

FORCE MAJEURE: Neither party shall be held responsible for losses resulting, if the fulfillment of any terms or provisions of this PURCHASE ORDER is delayed or prevented by unforeseeable causes including but not restricted to acts of God, restraint of Government, or for any other cause which is unavoidable through the exercise of due care, and beyond the control of the party who is to perform.

APPLICABLE LAW AND VENUE: This PURCHASE ORDER and all rights and duties of the parties hereto shall be governed by the laws of the State of Florida, including but not limited to the provisions of the Florida Uniform Commercial Code, Chapters 671 - 679, F.S. for any terms and conditions not specifically stated in this PURCHASE ORDER. Venue for any court action regarding this PURCHASE ORDER will lie with either the U.S. District Court of the Southern District of Florida, the 4th District Court of Appeals, or the Circuit Court of the Fifteenth Judicial Circuit, in West Palm Beach, Florida.

INDEMNIFICATION: For value received, the CONTRACTOR/VENDOR shall defend, indemnify, save, and hold the DISTRICT, its agents, assigns, and employees, harmless from any and all claims or causes of action, including without limitation, all damages, liabilities, expenses, costs, and attorney's fees related to such claims resulting from any negligent or intentional act or omission, or the violation of any federal, state, or local law or regulation, by the CONTRACTOR/VENDOR, its subcontractors, agents, assigns, invitees, or employees in connection with this PURCHASE ORDER. CONTRACTOR/VENDOR also agrees to save and hold harmless the DISTRICT, its employees and agents for infringement of any United States patent, trademark, or copyright for or on account of the use of any product sold to the DISTRICT or used in the performance of this PURCHASE ORDER.

INSURANCE: The CONTRACTOR shall procure and maintain, through the term of this PURCHASE ORDER, insurance coverage reflecting, at a minimum, the limits and coverage conditions identified on the DISTRICT'S Certificate of Insurance, attached and made a part of this PURCHASE ORDER. The coverage required shall extend to all employees and subcontractors of the CONTRACTOR. The attached DISTRICT Certificate of Insurance shall be completed in full, indicating the producer, insured, carrier's name and Best rating, policy numbers and effective and expiration dates of each type of coverage required. The Certificate shall be signed by the insurance carrier's authorized representative.

MODIFICATIONS: This PURCHASE ORDER may be modified or rescinded only in writing, signed by the parties' duly authorized agents.

INTERPRETATION — PAROL EVIDENCE; INTEGRATION: This PURCHASE ORDER states the entire and final understanding between the parties and no course or prior dealing, usage of the trade, or extrinsic or parol evidence shall be relevant to supplement, vary of explain any term used. The Florida Uniform Commercial Code (Chapters 671-679, F.S.) shall control definitions. The acceptance or acquiescence of any course of performance rendered under this PURCHASE ORDER shall not be construed as a waiver nor shall it be relevant to define or vary any term stated herein.

TERMINATION FOR DEFAULT: If either party fails to fulfill its obligations under this PURCHASE ORDER in a timely and proper manner, the other party shall have the right to terminate this PURCHASE ORDER by giving written notice of any deficiency. The party in default shall then have ten (10) calendar days from receipt of notice to correct the deficiency. If the defaulting party fails to correct the deficiency within this time, this PURCHASE ORDER shall terminate at the expiration of the ten (10) day time period.

PUBLIC ACCESS: The CONTRACTOR/VENDOR shall allow public access to all documents and materials in accordance with the provisions of Chapter 119, Florida Statutes. Should the CONTRACTOR/VENDOR assert any exemptions to the requirements of Chapter 119, F.S., and related Statutes, the burden of establishing such exemption, by way of injunctive or other relief as provided by law, shall be upon the CONTRACTOR/VENDOR.

PUBLIC ENTITY CRIMES AFFIDAVIT: If the purchase on the reverse side of this PURCHASE ORDER exceeds $10,000, the CONTRACTOR/VENDOR, by its execution of this PURCHASE ORDER, acknowledges that it has executed an affidavit (FORM PUR 7068) pursuant to Section 287.133(3)(a), F.S., attached hereto and made a part of this PURCHASE ORDER, either previously or concurrently hereto, affirming that the CONTRACTOR/VENDOR is not identified as being barred from entering into this PURCHASE ORDER with the DISTRICT, and that the CONTRACTOR/VENDOR understands that it remains bound by said statute and affidavit, as therein specified. The CONTRACTOR/VENDOR further understands and acknowledges by its execution of this PURCHASE ORDER, that this PURCHASE ORDER shall be null and void, and/or that this PURCHASE ORDER is subject to immediate termination by the DISTRICT, for any misstatement or lack of compliance with the mandates of said statute. The DISTRICT, in the event of such termination, shall not incur any liability to the CONTRACTOR/VENDOR for any work or materials furnished.

RECORDS/AUDIT: The CONTRACTOR/VENDOR shall maintain books, records and documents pertinent to performance under this PURCHASE ORDER in accordance with generally accepted accounting principles consistently applied. The DISTRICT shall have inspection and audit rights to such records for audit purposes during the term of the contract and for three years following the termination of obligations hereunder. Records which relate to any litigation, appeals or settlements of claims arising from performance under this PURCHASE ORDER shall be made available until a final disposition has been made of such litigation, appeals or claims.

TAX EXEMPT: The DISTRICT is exempt from federal and state taxes for tangible personal property. The CONTRACTOR/VENDOR shall not be exempted from paying any applicable taxes to the appropriate governmental agencies or for payment by the CONTRACTOR/VENDOR to suppliers for taxes on materials used to fulfill its contractual obligations with the DISTRICT. The CONTRACTOR/VENDOR shall be responsible and liable for the payment of all of its FICA/Social Security and other taxes resulting from this PURCHASE ORDER.

INVOICES AND PAYMENTS: The CONTRACTOR/VENDOR shall submit a separate invoice on each purchase order or purchase release after each delivery, and each such invoice shall reference the DISTRICT'S Purchase Order Number. Invoices for other than lump sum payments shall include an itemization of the date, amount of time expended, a description of the provided and, if applicable, transportation charges, the bill of lading and the freight waybill. Failure by the CONTRACTOR/VENDOR to follow these instructions shall result in an unavoidable delay of payment by the DISTRICT. The DISTRICT shall pay the full amount of the invoice within Thirty (30) days of receipt and acceptance, provided the CONTRACTOR/VENDOR has performed the work according to the terms and conditions of this PURCHASE ORDER. All invoices shall be mailed to ACCOUNTS PAYABLE, South Florida Water Management District, P.O. Box 24682, West Palm Beach, FL 33416-4680

COMPLIANCE: The CONTRACTOR/VENDOR, its employees, subcontractors or assigns, shall comply with all applicable federal, state, and local laws and regulations relating to the performance of this PURCHASE ORDER. The DISTRICT undertakes no duty to ensure such compliance, but will attempt to advise the CONTRACTOR/VENDOR, upon request, as to any such laws of which it has present knowledge.

NONDISCRIMINATION: The CONTRACTOR/VENDOR hereby assures that no person shall be excluded on the grounds of race, color, creed, national origin, handicap, age, or sex, from participation in, denied the benefits of, or be otherwise subjected to discrimination in any activity under this PURCHASE ORDER. The CONTRACTOR/VENDOR shall take all measures necessary to effectuate these assurances.

ADDITIONAL CONDITIONS GOVERNING SERVICES

STATEMENT OF SERVICE: The CONTRACTOR shall, to the satisfaction of the DISTRICT, fully and timely perform all work items described in the "Statement of Services", attached to this PURCHASE ORDER and incorporated herein.

OWNERSHIP: All documents and data, including but not limited to, technical reports, research notes, scientific data and computer programs in draft and final form including the source code and object code, which are developed by the CONTRACTOR in connection with this PURCHASE ORDER, shall become the exclusive property of the DISTRICT and is of great value to the DISTRICT.

PERMITS: The CONTRACTOR shall obtain, at its sole expense, all necessary licenses, authorizations and permits from the appropriate private party or federal, state, municipal or local agency, and other governmental approvals, prior to commencing performance of this PURCHASE ORDER.

ADDITIONAL CONDITIONS GOVERNING COMMODITIES

DISTRICT'S TITLE TO MATERIALS, DOCUMENTS & PACKAGING: All materials, drawings or other items provided by DISTRICT to the VENDOR remain the property of DISTRICT and will be returned to DISTRICT upon demand. All containers, reels or pallets shipped with goods by the VENDOR are to remain the property of DISTRICT unless otherwise agreed in writing.

SHIPMENT UNDER RESERVATION PROHIBITED: VENDOR is not authorized to ship the goods with any reservations and no tender of a bill of lading will substitute as a tender of the goods.

DELIVERY TERMS & TRANSPORTATION CHARGES: Delivery is "F.O.B. destination" unless delivery terms are specified otherwise in the PURCHASE ORDER. If DISTRICT agrees in writing to reimburse VENDOR for transportation costs, DISTRICT shall have the right to designate the method of shipment. In either case, the title and all risk of loss of the goods shall remain with the VENDOR until the goods are received and accepted by DISTRICT. Rejected materials will be returned to the CONTRACTOR/VENDOR at the CONTRACTOR/VENDOR'S risk and expense.

NOTIFICATION OF TOXIC SUBSTANCE: Pursuant to the federal standard as contained in OSHA 29 CFR 1910.1200 and Chapter 442, Florida Statutes, as may be amended, the VENDOR, upon acceptance of this PURCHASE ORDER shall advise the DISTRICT if any good(s) ordered is a toxic substance and, in such case, VENDOR shall mail or otherwise deliver to DISTRICT'S "DIRECTOR OF RISK MANAGEMENT", 3301 Gun Club Road, West Palm Beach, FL 33406, a Material Safety Data Sheet (MSDS) at least ten (10) days prior to shipment of DISTRICT'S order.

VENDOR TO PACKAGE GOODS: VENDOR will package goods in accordance with good commercial practice. Each shipping container shall be clearly and permanently marked as follows: (a) VENDOR'S name and address (b) consignee's name, address and Purchase Order or Purchase Release number; (c) container number and total number of containers, e.g., box 1 of 1 boxes; and, (d) the number of the container bearing the packing slip. VENDOR shall bear cost of packaging unless otherwise specified in the Purchase Order.

PRICES QUOTED: The VENDOR'S price will be the lowest prevailing market price and under no circumstances will the price be higher than specified, without the express written authorization of the VENDOR, as evidenced by a change order to the PURCHASE ORDER.

DISTRICT'S RIGHT TO CANCEL: DISTRICT reserves the right to cancel all or part of this Purchase Order, without obligation, if acceptance is not expressed by DISTRICT either through written notice or by delivery of items ordered, within the specified time(s) and date(s).

VENDOR NOT TO LIMIT WARRANTY: VENDOR shall not limit or exclude any express or implied warranties and any attempt to do so shall render this PURCHASE ORDER void, at the option of the DISTRICT. VENDOR warrants that the goods furnished will conform to the specifications, drawings, and descriptions listed in the offering document, or to samples if furnished. In the event of any conflict between the specifications, drawings, description or sample, the specifications shall govern.

Well Contractor's Specs

EXHIBIT "A"
STATEMENT OF WORK/SPECIFICATIONS
WELL CONSTRUCTION AND TESTING ON TIBET - BUTLER PRESERVE OR R.D. KEENE COUNTY PARK, ORANGE COUNTY

I. INTRODUCTION

The Kissimmee Basin Water Supply Plan (KBWSP) examined the long-term water use conditions for areas in the South Florida Water Management District (**DISTRICT**) located north of Lake Okeechobee. The report suggested that the ground water supplies in portions of Orange, Osceola and Polk Counties may not be sufficient to meet the 2020 (1-in-10 drought year) water supply needs. In the Orange, Osceola and Polk County area, the continued use of the Floridan Aquifer has been projected to contribute to possible harm to wetlands, reduction in spring flow and a factor to the formation of sinkholes. However, these conclusions were predicated on a limited amount of geologic and hydrologic information within the region. Information regarding the interactions between the surficial, intermediate and upper Floridan Aquifer is very limited. A priority recommendation in the KBSWP was the gathering of additional hydrologic information to better address the uncertainty of the future water use conditions and their impact to wetlands. Two sites have been selected for potentially collecting this information. Only one of the sites will be selected for the testing described in this scope of work. One site selected for obtaining this additional information is located in western Orange County near the Town of Windermere and within R.D. Keene County Park owned by Orange County. Reference Figure 1. The site is located within Section 20, Range 28 East and Township 23 South. The second site is located approximately 1.5 miles south of the R.D. Keene Park on the Tibet-Butler Preserve Property. This property is owned by the DISTRICT and is located in Section 31, Range 28 East, Township 23 South. Reference Figure 1.

II. OBJECTIVE

The objective of this contract is to construct and test a series of wells that will support and/or confirm the KBWSP and its recommendations. Data collected from the testing and monitoring of the wells at this site will be instrumental in the revision of the current ground water model and the development of a wetland impact constraint. At the completion of testing, the site will be designated as part of the long-term monitoring site under the **DISTRICT's** water level monitoring network.

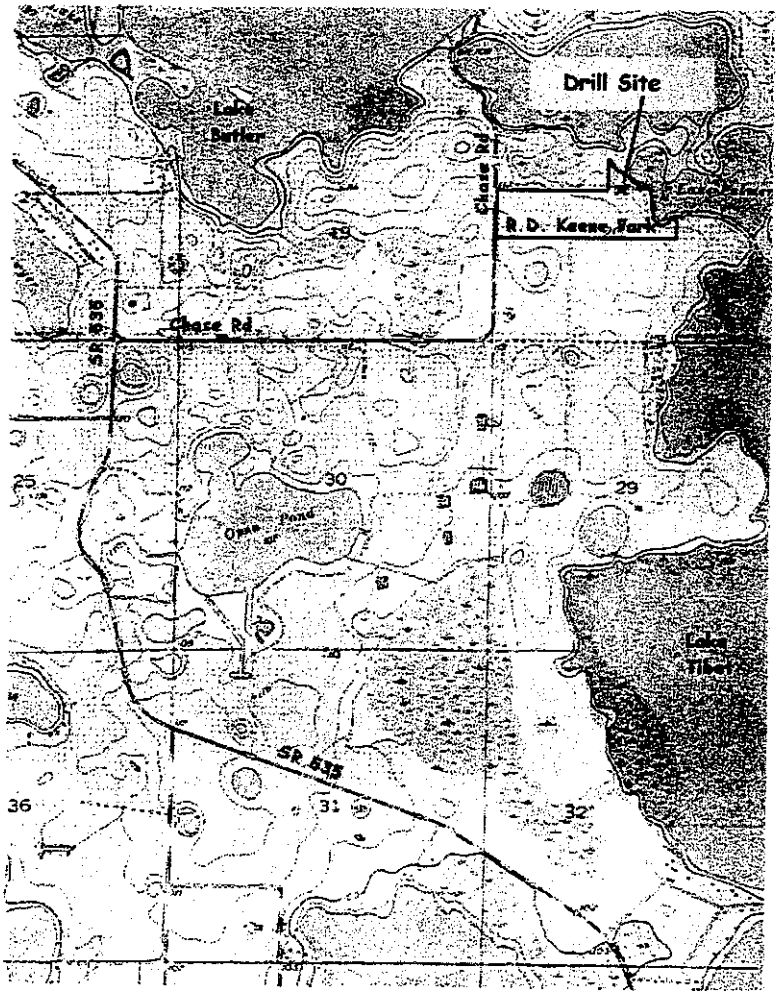
III. SCOPE OF WORK

The scope of work includes the installation of two (2) wells in the upper Floridan Aquifer System (FAS) and two shallow monitor wells to determine the nature of the connection between the Surficial Aquifer System and the Upper Florida Aquifer. The Upper Floridan Aquifer wells will consist of one (1) well, which will be 10-inch in diameter and one (1) 6-inch diameter observation well. The wells will be used to monitor the upper Floridan aquifer and test the potential impact to the Hawthorn confining unit and surficial aquifers. Two additional 6-inch diameter wells, one completed into the Hawthorn Formation (upper confining unit) and one shallow well (Surficial Aquifer System) are proposed for construction at a radius of roughly 100 feet from the Floridan

production well. Hydrogeologic testing will be performed after the construction of the Floridan production and monitor wells.

The **CONTRACTOR** will be asked to perform a series of aquifer performance tests. A total of two specific capacity tests and two constant rate tests will be performed using constructed Floridan and existing surficial and intermediate wells located on site.

FIGURE 1. SITE LOCATION



Part 6, "Special Instructions, Terms&Conditions" contains additional requirements governing the **CONTRACTOR's** performance of this Statement of Work. Part 6 will become Exhibit "M" as an integral part of the Contract. Should there be any conflict between Exhibit "M" and this Statement of Work, this Statement of Work shall take precedence.

Site Preparation and Mobilization

1. Site clearing, grading or temporary pad, as necessary

2. Mobilize drill rig and associated equipment to the site.

3 Install mud circulation system for the first phase of drilling.

4. Drill and set appropriate diameter pit casing.

Drilling and Construction

1. Set 16-inch surface casing, approximately 50 feet below land surface (bls) as needed.

2. Drill a nominal 6-inch diameter bore-hole using mud rotary method from bottom of pit casing to approximately 120 feet below land surface (bls) or as determined by site Geologist. Reference Figure 2.

3. Run 4-arm caliper and natural gamma logs. **(This will be considered part of the casing installation cost).**

4. Ream out 6-inch nominal hole and set 10-inch diameter, schedule 40 PVC casing or 0.375-inch wall thickness steel casing to approximately 120 feet bls, pressure grouting the casing back to within 5 feet of land surface.

5. Trip in and clean-out cement plug at base of 10-inch diameter casing as a result of pressure grouting. **(This will be considered part of the casing installation cost).**

6. Drill nominal 10-inch diameter or equivalent hole from base of 10-inch casing to approximately 650 feet bls, or as determined by site geologist, using the reverse-air circulation method.

7. Develop the well.

8. Perform a specific capacity test on the open-hole interval below the 10-inch diameter casing from 120 to approximately 650 feet bls (as determined by site Geologist). Perform a flow log on the interval from 120 to 650 feet bls during the test.

9. Run geophysical logs on the hole from bottom of the 10-inch casing (120 feet bls) to the bottom of the hole (650 feet bls), as listed in Table 1, Section 2.

10. Set 10-inch PVC or steel casing leaving 2.5 feet above land surface and install 10-inch PVC cap or welded cover.

11. Construct 6-inch (schedule 40, PVC or steel) observation well that mirrors the casing and depth of construction on the 10-inch APT test well. This well will be located approximately 100 feet from the APT well on site determined by site Geologist.

12. In addition to the two Floridan wells, construct shallow and Hawthorn screened wells. These will consist of one (1) 100 ft. Hawthorn well with an estimated 40 foot of slotted screen and one (1) 50-foot shallow aquifer well with an estimated 30-foot of screen. Wells will be installed using the rotary method and will include 2-inch sand/gravel packs surrounding the well screens.

13. Perform a specific capacity test on shall 6-inch well to determine future aquifer testing rate and pump setting.

14. At the conclusion of all testing, abandon 10-inch Floridan well by use of gravel fill and sealing from bottom to top with neat cement. Cut off the casing five (5) feet below land surface and backfill with clean material.

Aquifer Testing

As part of this contract, the **CONTRACTOR** shall perform two proper aquifer performance tests.

1. Conduct a constant rate pump test using the constructed 10-inch Floridan aquifer well, while measuring the water levels in the pumped 6-inch UFA, shallow and Hawthorn. Test Duration is approximately 96 hours (72 hours pumping – 24 hours recovery) or as sufficient to observe steady-state departure from initial water levels in the wells. Continue measuring recovery in all wells until water levels reach steady-state initial starting water levels or as direct by the site Geologist.

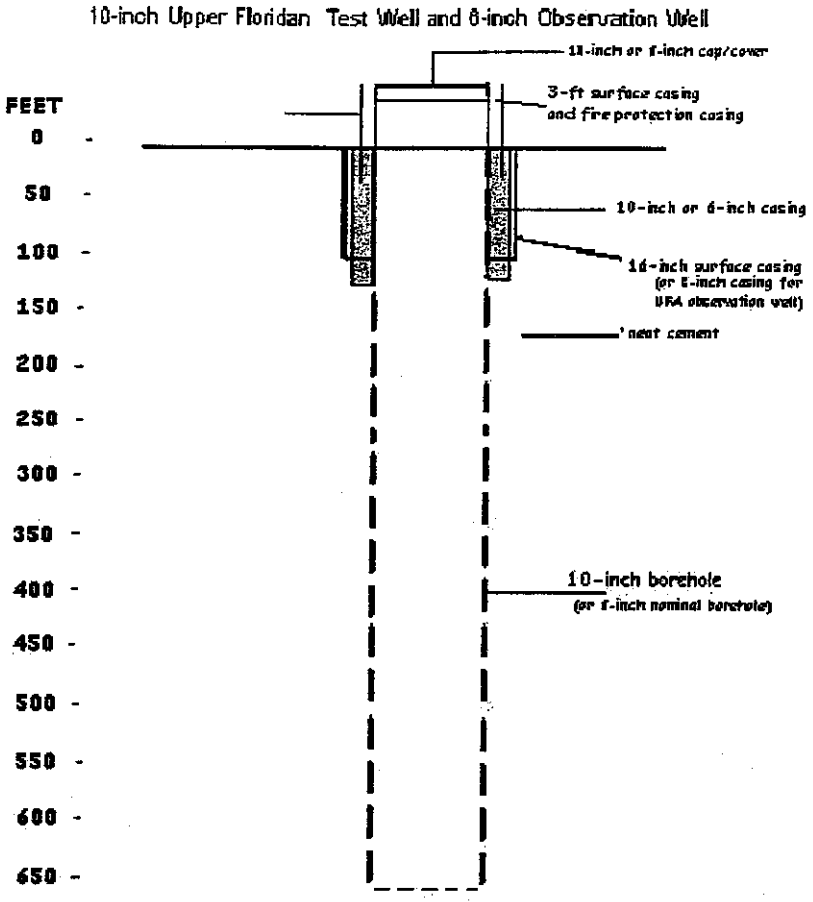


FIGURE 2. WELL DESIGN

2. Complete a pump test on the 6-inch shallow aquifer well for a duration of approximately 72 hours (48 hours pumping – 24 hours recovery) while measuring water level changes in other observation wells. Total test time will depend on the observation wells having sufficient time to observe water levels that has reached a steady-state departure from initial starting water levels.

3. The **CONTRACTOR** will be required to supply pump(s) to adequately stress each aquifer. The **CONTRACTOR** will install quick connect or other pipe to deliver the discharge water a minimum 600 feet or more from the test area and supply a means to measure and adjust the rate of flow.

Aquifer Demobilization and Site Restoration

1. Dismantle and remove drill rig and support equipment
2. Complete wellhead, pad and enclosure as specified
3. Fill in any settling pit and remove all fill, berm material and construction debris
4. Restore area to original grade and re-sod site with bahia

IV. WORK BREAKDOWN STRUCTURE

A. GENERAL INFORMATION AND REQUIREMENTS

The following information and requirements, though not all-inclusive, are given to provide the **CONTRACTOR** with sufficient information, direction and specifications to allow the **CONTRACTOR** to perform the work and meet the project objectives. **In the event of any conflict between this Statement of Work and Part 6 of Special Instructions, Terms and Conditions, this Statement of Work shall take precedence.**

1. The **CONTRACTOR** selected will furnish the material, equipment and labor to drill the two (2) monitor
   wells into the upper Floridan Aquifer System using both standard closed-circulation mud-rotary and reverse-air open circulation drilling methods. The **DISTRICT anticipates** drilling the 10-inch test well and 6-inch monitor with an **estimated** total well depth of approximately 600 feet below land surface. Final casing depths of the well will be determined after pilot-hole completion.

2. Specific tasks not completely described in these Technical Specifications that are necessary or normally required as part of the work described, or that are necessary or required to make the installation acceptable or legally operable, shall be performed by the **CONTRACTOR** without extra cost to the **DISTRICT**. The expense of such work shall be included in the lump sum prices for the work described in these technical specifications.

3. All construction activities will be conducted during normal working hours (8:00 a.m. to 6:00 p.m., Monday through Friday) or as approved by the **DISTRICT.** Conditions may arise when work must continue on a 24-hour basis. This work shall be coordinated with the **DISTRICT before commencement of the work.** No additional compensation will be afforded the **CONTRACTOR** for work performed outside normal working hours.

4. The **CONTRACTOR** shall be responsible for completing all work in the specified time. If the **CONTRACTOR** fails to complete all work within the specified period, then the **CONTRACTOR** shall be liable to pay the **DISTRICT** liquidated damages as specified in **Exhibit "A" Special Provisions of the Contract.**

5. For bidding purposes, the **DISTRICT** has **estimated** quantities of materials, the **CONTRACTOR** shall be paid for only the actual amounts of materials required and services rendered under the contract at the unit prices specified in the **Attachment A Bid Schedule Form.** The **CONTRACTOR** is urged to read all sections of this document for his/her protection and the protection of the **DISTRICT**. There is no minimum amount of work guaranteed. The **DISTRICT** reserves the right to terminate the contract without any further restitution other than payment for services rendered and material installed up to that time.

6. The **CONTRACTOR** agrees that the work will be substantially completed within ninety (90) days after
   issuance of the Notice to Proceed. Substantial completion is defined as completion of the monitor well construction and testing, including wellhead.

The following information and requirements, though not all-inclusive, are given to assist the **CONTRACTOR** in the evaluation of the work required to meet the project objectives.

B. SCHEDULING

The **CONTRACTOR** shall schedule all work such that all testing is performed during normal working hours (8:00 a.m. to 6:00 p.m.) Monday through Friday. This schedule also includes all testing activities which must be performed during the daylight hours as well or as approved by the **DISTRICT**. The **CONTRACTOR** will provide notification to the **DISTRICT** 72 hours prior to the start of each testing activity. In addition, the schedule should be developed prior to starting the project. All work should be planned and carried out with minimum interference to the operation of any existing facilities. Prior to starting the work, confer with the **DISTRICT's** representative to develop an approved work schedule. It may be necessary to do certain parts of the work outside normal working hours to avoid undesirable impacts to adjacent landowners. The **CONTRACTOR** will do this work at such times and at no additional cost to the **DISTRICT**. To meet the overall objectives of this project, certain elements of work must be completed or substantially completed in the sequence outlined in the Scope of Work.

C. EQUIPMENT AND PERSONNEL

1.The **CONTRACTOR** shall, except as specifically stated in this Statement of Work, provide all labor, materials, equipment, tools, and other facilities necessary for proper completion of the work. The **CONTRACTOR** will furnish capable personnel and equipment to perform the work as specified. The **CONTRACTOR's** tools, equipment, methods, and personnel will be subject to the **DISTRICT's** approval.

2.The **CONTRACTOR** will submit information regarding the equipment and materials he plans to use for this project prior to mobilization.

3.The **CONTRACTOR**, in addition to furnishing the services of a skilled and experienced licensed driller, will also furnish an adequate number of competent driller's assistants. The driller will be capable of maintaining clear and concise reports of all drilling and testing operations, as instructed by the **DISTRICT**.

4.The **DISTRICT** requires that a water-well **CONTRACTOR** licensed in the **State of Florida** be responsible for all work performed under this Contract. All equipment utilized by the **CONTRACTOR** will be in good working order. The **CONTRACTOR** will provide and operate equipment with adequate load/weight capacity to complete the work. If conditions develop in the field that prove the **CONTRACTOR's** rig and support equipment are incapable of completing a well due to insufficient load capacity, the **CONTRACTOR** will provide a larger rig with the necessary capacity at their own expense.

5.There will be no compensation for downtime incurred due to equipment failure or personnel problems. Unnecessary delays or work stoppages because of equipment or personnel problems will not be accepted nor be considered a valid reason for extending the length of the contract. If downtime relating to equipment and/or personnel problem(s) is more than 2 hours, the **DISTRICT** reserves the right to back charge the **CONTRACTOR** a $75.00 per hour standby fee. This fee will be assessed if **DISTRICT** personnel are on site and remain on site at the **CONTRACTOR's**

request while resolving the equipment and/or personnel problem(s). Such moneys will be chargeable to the **CONTRACTOR** and will be deducted from any moneys due to said **CONTRACTOR**.

6.The **CONTRACTOR'S** project superintendent shall attend construction coordination meetings (at the construction site) when requested by the **DISTRICT**. No additional charge will be made to the **DISTRICT** for attendance at such meetings.

D. PERMITS

1.No project operations will commence before all necessary federal, state and local permits have been obtained.

2.The **CONTRACTOR** will remain fully informed of all local ordinances, state and federal laws and regulations, and interpretations of these laws, ordinances and regulations by a governmental body or agency. They include, but not limited to, the Florida Department of Environmental Protection (FDEP), the Technical Advisory Committee of FDEP, the Environmental Protection Agency, and the **DISTRICT**, which in any manner affect the work herein. The **CONTRACTOR** shall at all times comply with said ordinances, laws and regulations. All permits, licenses, and inspection fees necessary for protection and completion of the work will be secured and paid for by the **CONTRACTOR** unless otherwise specified.

3.The **CONTRACTOR** shall obtain any other local, state, or federal drilling permits or occupational licenses and provide notifications to local municipalities before the start of the well activities. The **CONTRACTOR** will also conform to any local or county ordinances pertaining to noise levels and working hours, etc. to avoid any unnecessary delays. It is not anticipated, but should any delay in the project occur due to permit acquisition, the **DISTRICT** reserves the right to delay the start of work.

E. STANDBY TIME/EXTRA WORK

1.During the progress of the work, it may be necessary for the **DISTRICT** to perform work of an experimental nature on the well that will require the services of the **CONTRACTOR's** personnel and equipment, or work that may require such personnel and equipment to standby during normal working hours. For bidding purposes, the **CONTRACTOR** will assume that hourly extra-work and standby rates include a 2-person crew, boom truck, and equipment onsite.

2.In such an event, the **DISTRICT** representative will order the **CONTRACTOR** to furnish such assistance or to cease operations, and will state the anticipated extent or duration thereof. The **CONTRACTOR** will promptly furnish such assistance or cease operations. The time required for this purpose, as may be thus ordered, will be paid on an hourly basis at the unit prices as stated in the **CONTRACTOR's** Bid Schedule for furnishing equipment and crew to perform extra work or for standby time. Start and stop of extra work will be recorded on the **CONTRACTOR's** daily logs, and records maintained by the **DISTRICT's** representative. In the event of disagreement, the **DISTRICT's** records will be used for payment.

3.The **DISTRICT** will be given at least 72-hour notice with a schedule of activities before mobilization. Payment to the **CONTRACTOR** for standby time will be governed by the

submitted schedule, as long as such time is within normal working hours. If the **DISTRICT** representative is notified to be onsite for testing and the **CONTRACTOR** is not ready, then the **DISTRICT** will be reimbursed by the **CONTRACTOR** for the **DISTRICT's** time at a rate of $75.00 per hour. Reimbursement will commence at the time scheduled by the **CONTRACTOR** and notified to the **DISTRICT** representative. These costs will be deducted from the final Contract amount.

F. COMMUNICATION

1.The **CONTRACTOR** will be required to provide direct and reliable telephone service with the drill rig at all times during drilling and testing operations. Daily progress reports must be communicated from the driller to the **DISTRICT** Project Manager. Operable cellular telephone communication at the well site is required. The **CONTRACTOR** will also provide a telephone list of individuals directly involved in daily progression of work.

G. COORDINATION

1.The **CONTRACTOR** will cooperate in the coordination of his activities in a manner that will provide the least interference with the **DISTRICT's** operations and other municipal activities in the area. The **CONTRACTOR** will enter and exit the site using existing gates and will store equipment at a location approved by the **DISTRICT.**

2.If any difficulty or dispute should arise in the accomplishment of the above, the problem will be brought immediately to the attention of the **DISTRICT** Project Manager.

3.At no time shall the **CONTRACTOR** undertake to close off any lines or open valves or take any other action which would affect the operation of existing systems, except under explicit direction of the **DISTRICT**.

H. SITE CONDITIONS

1. SITE INVESTIGATION AND REPRESENTATION

a)The **CONTRACTOR** acknowledges satisfaction as to the nature and location of the work, the general and local conditions, particularly those bearing upon availability of transportation, access to the site, disposal, handling and storage of materials, availability of labor, water, electric power, roads, and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and conditions of the ground, the character of equipment and facilities needed prior to and during the prosecution of the work, and all other matters which can in any way affect the work or the cost thereof under this Statement of Work.

b)The **CONTRACTOR** further acknowledges satisfaction as to character, quality, and quantity of surface and subsurface materials to be encountered from his inspection of the site and from reviewing any available records of exploratory work furnished by the **DISTRICT** or included in this Statement of Work. Failure by the **CONTRACTOR** to become acquainted with the physical conditions of the site and all the available information will not relieve the **CONTRACTOR** from responsibility for properly estimating the difficulty or cost of successfully performing the work.

c)The **CONTRACTOR** warrants that as a result of examination and investigation of all the aforesaid data, the **CONTRACTOR** can perform the work in a good and workman-like manner and to the satisfaction of the District. The **DISTRICT** assumes no responsibility for any representations made by any of its officers or agents during or prior to the execution of this Contract, unless (1) such representations are expressly stated in the Contract, and (2) the Contract expressly provide that the responsibility thereof is assumed by the **DISTRICT.**

2. INFORMATION ON SITE CONDITIONS

a)Any information obtained by the **DISTRICT** regarding site conditions, subsurface information, groundwater elevations, existing construction of site facilities, as applicable and similar data will be available for inspection at the office of the **DISTRICT** upon request. Such information is offered as supplementary information only. The **DISTRICT** assumes no responsibility for the completeness or interpretation of such supplementary information.

3. DIFFERING SUBSURFACE CONDITIONS

a)In the event subsurface or latent physical conditions are found materially different from those indicated in this Statement of Work, and differing materially from those ordinarily encountered and generally recognized as inherent in the character of work covered in this Statement of Work, the **CONTRACTOR** will promptly, and before such conditions are disturbed, notify the **DISTRICT** in writing of such changed conditions.

b)The **DISTRICT** will investigate such conditions promptly and following this investigation, the **CONTRACTOR** will proceed with the work, unless otherwise instructed by the **DISTRICT**. If the **DISTRICT** finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for performing the work, the **DISTRICT** will recommend the amount of adjustment in cost and time he considers reasonable. The **DISTRICT** will make the final decision on all Change Orders to the Contract regarding any adjustment in cost or time for completion.

4. UTILITIES

a)Utilities and structures adjacent to or expected to be encountered in the work can be found in existing records and information available from existing utility plans. However, it is expected that there may be some discrepancies and omissions in the locations and quantities of utilities and structures found therein. No responsibility is assumed by the **DISTRICT** for their accuracy or completeness, and responsibility for obtaining this information is left to the **CONTRACTOR.**

b)Where the **CONTRACTOR'S** operations could cause damage or inconvenience to railway, telegraph, telephone, television, power, oil, gas, water, sewer, or irrigation systems, the operations will be suspended until all arrangements necessary for the protection of these utilities and services have been made by the **CONTRACTOR.**

c)All utility offices that are affected by the construction operation shall be notified at least 48 hours in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for all existing underground utilities.

d)All utility poles shall be protected from damage. In the event interfering power poles, telephone poles, guy wires, or anchors are encountered, notify the **DISTRICT** and the appropriate utility company at least 48 hours in advance of construction operations to permit the necessary arrangements for protection or relocation of the interfering structure(s).

e)Neither the **DISTRICT** nor its officers or agents will be responsible for damages as a result of the **CONTRACTOR'S** failure to protect utilities encountered at the site.

f)If the **CONTRACTOR** while performing the work under this Contract discovers utility facilities not identified by the public agency, he will immediately notify the **DISTRICT**, public agency, and utility in writing. In addition, the **CONTRACTOR** will notify the Project Manager by telephone.

g)The public utility, where they are the owners, will have the sole discretion to perform repairs or relocation work or permit the **CONTRACTOR** to do such repairs or relocation work at a reasonable price.

h)In the event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental breakage due to testing operations, promptly notify the proper authority. The **CONTRACTOR** shall cooperate with said authority in restoration of service as promptly as possible and bear all costs of repair. In no case will interruption of any water or utility service be allowed to exist outside working hours unless prior approval is granted. The **CONTRACTOR** should take special note that the public supply well for the park is located approximately 300 feet from the construction site and that the water quality may be impacted during the course of the drilling. The **CONTRACTOR** should be prepared to provide potable water for drinking/washing purposes to the park within a 24-hour notice of the well being impacted. This service will continue until such time as the water quality returns to potable standards.

i)The **CONTRACTOR** will replace, at its own expense, all existing utilities or structures removed or damaged during construction, unless otherwise provided for in this Statement of Work or ordered by the **DISTRICT**.

5 INTERFERRING STRUCTURES

a)The **CONTRACTOR** will take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground.

b)Underground and aboveground existing structures shall be protected from damage. Where such existing fences, gates, barns, sheds, buildings, or any other structure must be removed to properly carry out the construction, or are damaged during construction, the **CONTRACTOR** shall restore such structures to their original condition to the satisfaction of the property owner involved at the **CONTRACTOR'S** own expense. The **CONTRACTOR** shall notify the **DISTRICT** of any damaged underground structure, and make repairs or replacements before back filling.

c)Without additional compensation, the **CONTRACTOR** may remove and replace in a condition as good as or better than original, such small miscellaneous structures as fences, mailboxes, and signposts that interfere with the **CONTRACTOR'S** operations.

I. TEMPORARY CONSTRUCTION UTILITIES AND FACILITIES

1.TEMPORARY WATER

a)The **CONTRACTOR** will make its own arrangements for water. The **CONTRACTOR** will install a pressure-reducing backflow device to any potable water source. The **CONTRACTOR** will also provide all temporary piping and fittings required between the well and water source.

2.TEMPORARY ELECTRIC POWER

a)The **CONTRACTOR** will determine the type and amount available and arrange for obtaining a separate electric service, and pay all costs for the electric power used during the Contract period, if required.

3.SAFETY REQUIREMENTS FOR TEMPORARY ELECTRIC

a)Temporary electric power will meet the construction safety requirements of OSHA, state, and other governing agencies.

4.SANITARY FACILITIES

a)The **CONTRACTOR** will provide and maintain sanitary facilities for his employees and his subcontractors' employees that will comply with the regulations of the local and state departments of health and as directed by the **DISTRICT**. Sanitation facilities will be on site before equipment mobilization and removed shortly after demobilization.

5.STORAGE OF MATERIALS

a)Materials will be stored to ensure the preservation of their quality and fitness for the work. When considered necessary, materials will be placed on wooden platforms or other hard, clean surfaces, and not on the ground. Stored materials will be located to facilitate prompt inspection. Private property will not be used for storage purposes without the written permission of the owner or lessee. The **DISTRICT** must approve storage of hazardous material onsite. All chemicals required will be stored and handled in a lawful manner.

J. SAFETY

1.CONSTRUCTION SAFETY PROGRAM

a)The **CONTRACTOR** will develop and maintain for the duration of this Contract, a safety program that will effectively incorporate and implement all OSHA-required safety provisions. The plan should demonstrate the availability of proper equipment, materials, and **CONTRACTOR** understanding of the work, and ability to handle emergency situations. The **CONTRACTOR** will appoint an employee who is qualified and authorized to supervise and enforce compliance with the safety program.

b)The duty of the **DISTRICT** to conduct construction review of the **CONTRACTOR'S** performance is not intended to include a review or approval of the adequacy of the

CONTRACTOR'S safety supervisor, the safety program, or any safety measures taken in, on, or near the construction site.

c) The **CONTRACTOR** will prepare, have available on site, and comply with a rig safety plan for use of its personnel. A copy of this plan will be provided to the **DISTRICT** before mobilization to allow the **DISTRICT's** representative time to prepare and comply with its contents. The **CONTRACTOR** will do all work necessary to protect the general public from hazards including, but not limited to, open boreholes, water sumps, surface irregularities or unramped grade changes in pedestrian sidewalk or walkways, trenches and excavations. Barricades, lanterns, and proper signs will be furnished and placed to safeguard the public and the work.

d) The **CONTRACTOR** will comply with all OSHA/United States Environmental Protection Agency (USEPA) requirements regarding heavy equipment, electrical, and mechanical operations; storage of compressed and flammable gases; and storage and handling of hazardous materials. Personal safety equipment and containment and absorbent materials will be required on site for the duration of well activities. If conditions exist that may be in violation of either OSHA or USEPA standards, a site visit from the appropriate representative may be requested.

2.SAFETY EQUIPMENT

a) The **CONTRACTOR**, as part of its safety program, will maintain at the **CONTRACTOR'S** office or other well-known place at the job site, safety equipment applicable to the work as prescribed by the governing safety authorities, all articles necessary for giving first-aid to the injured, and will establish the procedure for the immediate removal to a hospital or a doctor's care of any person who may be injured on the job site.

b)The performance of all work and all completed testing, particularly with respect to ladders, platforms, structure openings, scaffolding, shoring, lagging, machinery guards and the like, will be in accordance with the applicable governing safety authorities.

3.ACCIDENT REPORTS

a)If death or serious injuries or serious damages are caused, the accident will be reported immediately by telephone or messenger to the **DISTRICT**. In addition, the **CONTRACTOR** must promptly report in writing to the **DISTRICT** all accidents whatsoever arising out of or in connection with, the performance of the work whether on, or adjacent to, the site, giving full details and statements of witnesses.

b)If a claim is made by anyone against the **CONTRACTOR** or any subcontractor because of any accident, the **CONTRACTOR** will promptly report the facts in writing to the **DISTRICT**, giving full details of the claim.

4.SAFE ACCESS BY FEDERAL, STATE AND LOCAL GOVERNMENT OFFICIALS

a)Authorized representatives of FDEP and other government officials will at all times have safe access to the work, and the **CONTRACTOR** will provide proper facilities for such access and inspection.

5.PROTECTION OF PROPERTY

a)The **CONTRACTOR** will protect stored materials, trees and crops, and other items located adjacent to the proposed work. Notify property owners affected by the testing at least 48 hours in advance of the test. During testing operations, maintain such facilities as may be required to provide access by all property owners to their property. No person will be denied access to his residence or place of business unless the **CONTRACTOR** has made special arrangements with the affected persons.

6.FIRE PREVENTION AND PROTECTION

a)The **CONTRACTOR** will perform all work in a fire-safe manner. Adequate fire-fighting equipment capable of extinguishing incipient fires will be supplied and maintained on the site. The **CONTRACTOR** will comply with applicable federal, state, and local fire-prevention regulations. Where these regulations do not apply, applicable parts of the National Fire Prevention Standard for Safeguarding Building Construction Operations (NFPA No. 241) will be followed.

7.ACCESS FOR POLICE, FIRE AND POSTAL SERVICE

a)The **CONTRACTOR** will leave a night emergency telephone number or numbers with the police department, so that contact may be made easily at all times in case of trouble or emergencies.

K. PRESERVATION,RESTORATION AND CLEANUP

1.SITE

a)The **CONTRACTOR** will at all times during the work keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment, dispose of all developed materials, and leave the project site free of rubbish or excess materials of any kind.
b)Excavated materials shall be stockpiled in a manner that will cause the least damage to adjacent lawns, grassed areas, gardens, shrubbery, or fences, regardless of whether these are on private property, or on state, county, city, or **DISTRICT** rights-of-way. All excavated materials shall be removed from grassed and planted areas, and left in a condition equivalent to their original condition.

2.SEEDING, MULCHING AND FERTILIZING

a)Damaged areas will be fertilized and planted with new sod consistent with pre-work conditions. All ground preparation and sodding will be done in accordance with the best-accepted practices for lawn planting. The **CONTRACTOR** will be responsible for obtaining a satisfactory grass turf acceptable to the **DISTRICT**.

3.FINISHING OF SITE, BORROW AND STORAGE AREAS

a)Upon completion of the project, all areas used by the **CONTRACTOR** will be properly cleared of all temporary structures, rubbish, and waste materials and properly graded to drain and blend in with the abutting property. Areas used for the deposit of waste materials will be finished to properly drain and blend with the surrounding terrain.

L. REMEDIAL WORK

1.REMEDIAL WORK

a) If remedial work is necessary to make any modification or corrections to any of the wells to conform with the Technical Specifications/Statement of Work, because of accident, loss of tools, defective material, or for any other cause, the **CONTRACTOR** shall propose to the **DISTRICT** in writing, a method of rectifying the problem. The proposed method(s) will be reviewed and approved by the **DISTRICT** representative before any corrective actions are performed.

b) At all times, the work on the wells must be in accordance with applicable local, state and federal regulations. Corrective work shall be at no additional cost to the **DISTRICT** and shall not extend the length of this agreement. Under conditions where post-abandonment monitoring requirements are imposed by regulation as a result of the **CONTRACTOR's** actions, the cost of the monitoring will also be borne by the **CONTRACTOR.**

M. MOBILIZATION, DEMOBILIZATION, AND SITE CLEANUP

a) The **DISTRICT** requires one lump sum estimate for mobilization, demobilization, and site restoration. Mobilization shall include costs for all material (e.g. fill), equipment and labor required to prepare the site for drilling operations: such as clearing and grading the site, stabilizing and erecting the drill rig and support equipment, setting up circulation and settling tanks or pits, constructing berms, installing appropriated pit casing and conducting any other measure that the **CONTRACTOR** feels is necessary to protect their equipment during drilling operations.

b) During all well activities, it is essential that the site remain orderly and functional. No inoperable equipment (e.g. broken down equipment), or equipment that will not be used in a one (1) month period will be allowed to be stored or remain on site. A trash dumpster may be required to be on site and maintained for the duration of drilling operations, depending on project duration as determined by the **DISTRICT's** Project Manager.

c) The **CONTRACTOR** may store drill cuttings on site during drilling operations, but prior to demobilization, the cuttings must be removed and disposed of in accordance with federal, state, and local regulations at an approved disposal site

d) The **CONTRACTOR** shall comply with all OSHA/USEPA requirements regarding heavy equipment, electrical, and mechanical operations; storage of compressed and flammable gases; and storage and handling of hazardous materials. Necessary personal safety equipment and containment and absorbent materials will be required on site for the duration of drilling operations. If conditions exist that may be in violation of either OSHA or USEPA standards, a site visit from the appropriate representative may be requested.

e) The **CONTRACTOR** shall prepare, have available on site, and comply with a rig safety plan for the **CONTRACTOR'S** personnel. A copy of this plan shall be provided to the **DISTRICT** prior to mobilization to allow the **DISTRICT's** representative time to prepare and comply with its contents. The **CONTRACTOR** shall do all work necessary to protect the general public from hazards including, but not limited to, open boreholes, water sumps, and trenches and excavations.

b) The **CONTRACTOR** will be responsible for a straight, clear, and stable hole for geophysical logging. The logging operations will be conducted at different stages of construction as reflected by the schedule of geophysical logging (Table 1). If the open borehole collapses prior to or during geophysical logging, the **CONTRACTOR** will be responsible for adequately clearing out the borehole for a successful logging operation (meaning that all specified geophysical logging tools reach the total depth of the interval to be logged in a continuous manner, record the appropriate data, and are successfully retrieved). This potential cost should be reflected in the lump sum unit prices. Any down time related to geophysical logging (e.g., stuck probe down-hole, tool problems or bridging) will be the **CONTRACTOR'S** responsibility and will not be reimbursed by the **DISTRICT.**

c) The **CONTRACTOR** will be responsible for providing all geophysical logging services including necessary pumps to conduct flow logs. All standard and specialty geophysical logging services will be reflected in a lump sum unit price. No standby time will be paid to the **CONTRACTOR** during geophysical logging operations, as the lump sum price should reflect this item. All drilled holes will be caliper/gamma logged prior to any casing installation or cementing services being performed by the **CONTRACTOR.** Costs associated with the caliper/gamma logging services should be incorporated into the casing unit cost.

d) For the duration of geophysical logging operations, the **CONTRACTOR** will be responsible for providing an experienced Field Engineer. The Field Engineer will maintain proper quality control of the geophysical logging and data acquisition process. The Field Engineer will also be responsible for the before and after calibrations of each sonde used in the geophysical logging program listed in Table 1. The **DISTRICT** representative will also have the authority to specify up/down hole logging speeds of the individual surveys as necessary. If applicable, two hundred-foot bottom-hole repeat sections will be required for each survey.

e) The **CONTRACTOR** will furnish the **DISTRICT** with five paper copies (final prints) and an electronic copy submitted on a 3.5-inch diskette written in Log ASCII Standard (LAS) Version 1.2 or 2.0 (as defined by the Canadian Well Log Society) for all geophysical surveys conducted at the site. The time and types of logs run will be noted on the **CONTRACTOR's** daily logs.

Barricades. lanterns, and proper signs shall be furnished and placed to safeguard the public and the sites.

f) Once all drilling equipment is removed, the **CONTRACTOR** will be required to remove all remaining drill cuttings and restore the site to original grade and condition. A final site inspection by the **DISTRICT** representative will be made prior to final payment.

N. DRILLING PROCEDURES

a) All exploratory and reamed boreholes will be drilled round, straight, and plumb. All reamed boreholes will be reamed using a stepped bit reamer with lead bit the same diameter as the pilot hole. A mechanical drift indicator will be run in the pilot and reamed boreholes at intervals no greater than 90 feet. The **CONTRACTOR** at its own expense will correct deviations in plumbness greater than 45 minutes of 1 degree. Drift indicator data and plots will be maintained by the **CONTRACTOR** for the duration of this project and will be part of the driller's daily logs.

b) The pilot hole will be drilled to a depth of approximately 120 feet using the mud rotary method with a nominal 6-inch tooth or button bit. Reverse-air open-circulation method will be used beyond the depth of 120 feet to the total depth of the pilot-hole, which will be approximately 650 feet. Drilling depths of individual items are only estimates. Particular items or task may be omitted based on local geologic conditions at the site.

c) Drilling of the 6-inch diameter Hawthorn and shallow wells will be conducted using the mud rotary method that allows the installation of screened wells with gravel pack surrounding the well screens. The installed gravel pack should extend one foot above the top of the well screen and should be capped with approximately one foot of bentonite seal over the gravel pack. Gravel and bentonite materials should be placed by tremmie method to assure accurate placement.

O. FORMATION SAMPLES

a) The **CONTRACTOR** will provide the **DISTRICT** representative safe and unobstructed access to collect formation samples. During reverse-air circulation drilling, the **DISTRICT** Geologist will also collect water quality samples every 30 feet. A reasonable amount of time (approximately 5 to 10 minutes) will be given to the **DISTRICT'S** Geologist to measure certain water quality parameters from the reverse-air samples. The **CONTRACTOR** will accommodate the **DISTRICT** representative in retrieving representative samples, including but not limited to, moderating drill rates and circulation times as necessary. The **DISTRICT** representative reserves the right to evaluate the safety of the sample collection site and will have the authority to stop drilling operations until any concerns are addressed and met.

P. GEOPHYSICAL LOGGING

a) Geophysical logging is a required item in the Contract, as is indicated in the Attachment A Bid Schedule. The total bid amount for the Contract, and thus the amount used to select the lowest, responsible bidder will include geophysical logging services. If, however, the **DISTRICT** decides that it is in its best interest **NOT** to include the geophysical logging services, those services will be excluded from the Contract.

The **CONTRACTOR** shall make available for the testing submersible or other type pumps, capable of discharging at a constant rate between 5 and 1600 gallons per minute.

d)Constant rate testing of the 10-inch Floridan well will have a duration of approximately 96 hours (72 hours pumping – 24 hours recovery). The shallow aquifer test will last an estimated duration of 72 hours (48 hours pumping – 24 hours recovery). All tests may be longer or shorter in duration as directed by the site Geologist. Payment for the tests will be by lump sum for each test based upon one (1) 96 hours and one (1) 72 hours length tests with any test time beyond the estimated duration being paid as standby time.
e)Water discharged as part of the required tests will be directed to a location as specified by the site Geologist. The **CONTRACTOR** will make available a minimum of 600 feet of quick-connect piping and the necessary appurtenances for delivery of all discharges to a point draining away from the construction site. The method of disposal shall provide pollution abatement and sedimentation control as well as erosion control for the discharge site.

f)In the event that the **CONTRACTOR's** pump test equipment or material should fail during this exercise, and interrupt the test, the test will be restarted at the **CONTRACTOR's** expense. No additional compensation for this event shall be paid to the **CONTRACTOR.**

R. CASING

a) The **CONTRACTOR** will provide casing of the types, thickness, and diameters specified. All casing shall be of new, first quality material and free of defects in workmanship and handling. The **CONTRACTOR** shall provide technical specification submittal and/or inspection mill certificates on all casing prior to installation. Prior to installation each section of casing shall be measured and labeled to insure proper depth control. All pipe measurement shall be considered part to the driller's logs that must be submitted for partial payment. All drilled holes will be caliper and natural gamma logged prior to any casing runs. Cost for these logging services shall be included in the casing unit price. Prior to casing runs, the **DISTRICT** reserves the right to disallow certain lengths of casing due to low quality or defects. The **DISTRICT** will only authorize payment for casing installed to the pre-determined depth and cement grouted in place to the specified depth. No payment will be authorized for casing and cement, if the reamed hole was not caliper/gamma logged prior to casing installation or if casing becomes separated or collapses during cement grouting.

b) All PVC casing utilized in this project will be scheduled 40 PVC pipe, and shall meet the requirements of ASTM D 1785-86 and ASTM F480-81. The casing shall be factory assembled in not less then 20-foot lengths. Each casing joint shall be reinforced with eight stainless steel screws, which penetrate both parts of the coupling without protruding into the interior of the pipe. The Contractor shall install some type of PVC pipe centralizes. Spacing intervals for the centralizes will be the contractors option, but any problems during the installation of PVC pipe will be rectified by the Contractor at no additional cost to the District.

c) All carbon steel casing shall conform to API Standard 5L, Grade B, ASTM A53, Grade B or Spiral Weld A139 Grade B with a minimum wall thickness of 0.375 inches. Casing supplied, as plain end pipe shall be provided with ends perfectly squared and beveled for V-notch welding. Casing that will not yield an acceptable cement bond as determined by the District representative will be sandblasted at the **CONTRACTOR's** expense. The **CONTRACTOR** may propose an alternate type of casing with similar compressive and tensile strengths and quality.

TABLE 1. GEOPHYSICAL LOGGING SCHEDULE

INTERVAL	LOG/SURVEY
1. Pilot hole (6-inch diameter) from surface to an estimated 120 feet bls (mud rotary hole)	4-Arm Caliper, Natural Gamma
2. Borehole (10-inch diameter) 120 to 6500 feet bls (reverse-air hole)	4-Arm Caliper, Natural Gamma, Dual Induction Focused Log w/LL3, Spontaneous Potential, Sonic, Temperature, pumped flow log.

Q. AQUIFER PUMPING TESTS

a) This section covers the work necessary to run specific capacity and constant rate aquifer performance testing on the constructed and the already existing wells. A total of two specific capacity tests will be run: the first in the 10-inch Floridan well and the second on the 6-inch shallow well. Each specific capacity test shall be performed at the completion of the well construction, or as directed by the site Geologist, to determine well capacity for the following performance tests and to allow for the collection of representative formation water samples. The **CONTRACTOR** may be asked to operate the pumps at different rates during the course of the test to determine the best rate for future testing. The **CONTRACTOR** will be responsible for providing the submersible pumps or other type pumps, for use in these pump tests. One pump shall be capable of discharging at a rate of 5 to 50 gallons per minute (gpm) from the shallow wells while a second pump shall have a capacity of greater than 1600 gpm for use in the Floridan performance test. The Hawthorn well will be tested using a simple slug test method. The **CONTRACTOR** may be asked to assist with this test to deliver a measured slug of water to the well (5-10 gallons). Any requested assistance, if required, shall be paid as stand-by or extra work time.

b) The **CONTRACTOR** shall install the pump(s), provide the necessary water-proof wiring, proper hook-up and electrical power to run the pump for the duration of the aquifer tests and insure the pipes and joint do not leak. The **CONTRACTOR** shall be responsible for providing a calibrated in-line propeller-type flowmeter(s) or other means of accurately recording total flow and instantaneous discharge rates of 5 to 1600 gallons per minute. The **CONTRACTOR** shall be responsible for providing on site back-up equipment for all items necessary to perform a successful specific capacity test. The **CONTRACTOR** is requested to remain on site while resolving the equipment problems(s) with the test. All pump systems supplied must have the appropriate valuing mechanisms to allow for the adjustment of flow rates within the prescribed rates as determined necessary by the site Geologist.

c) Two constant rate performance tests shall be conducted as part of the well construction and testing. These tests shall be conducted by the **CONTRACTOR** and the **CONTRACTOR** shall supply all labor, materials, fuel, hosing, setup and equipment necessary for completion of each test.

The **CONTRACTOR** shall make available for the testing submersible or other type pumps, capable of discharging at a constant rate between 5 and 1600 gallons per minute.

d)Constant rate testing of the 10-inch Floridan well will have a duration of approximately 96 hours (72 hours pumping – 24 hours recovery). The shallow aquifer test will last an estimated duration of 72 hours (48 hours pumping – 24 hours recovery). All tests may be longer or shorter in duration as directed by the site Geologist. Payment for the tests will be by lump sum for each test based upon one (1) 96 hours and one (1) 72 hours length tests with any test time beyond the estimated duration being paid as standby time.

e)Water discharged as part of the required tests will be directed to a location as specified by the site Geologist. The **CONTRACTOR** will make available a minimum of 600 feet of quick-connect piping and the necessary appurtenances for delivery of all discharges to a point draining away from the construction site. The method of disposal shall provide pollution abatement and sedimentation control as well as erosion control for the discharge site.

f)In the event that the **CONTRACTOR's** pump test equipment or material should fail during this exercise, and interrupt the test, the test will be restarted at the **CONTRACTOR's** expense. No additional compensation for this event shall be paid to the **CONTRACTOR**.

R. CASING

a) The **CONTRACTOR** will provide casing of the types, thickness, and diameters specified. All casing shall be of new, first quality material and free of defects in workmanship and handling. The **CONTRACTOR** shall provide technical specification submittal and/or inspection mill certificates on all casing prior to installation. Prior to installation each section of casing shall be measured and labeled to insure proper depth control. All pipe measurement shall be considered part to the driller's logs that must be submitted for partial payment. All drilled holes will be caliper and natural gamma logged prior to any casing runs. Cost for these logging services shall be included in the casing unit price. Prior to casing runs, the **DISTRICT** reserves the right to disallow certain lengths of casing due to low quality or defects. The **DISTRICT** will only authorize payment for casing installed to the pre-determined depth and cement grouted in place to the specified depth. No payment will be authorized for casing and cement, if the reamed hole was not caliper/gamma logged prior to casing installation or if casing becomes separated or collapses during cement grouting.

b) All PVC casing utilized in this project will be scheduled 40 PVC pipe, and shall meet the requirements of ASTM D 1785-86 and ASTM F480-81. The casing shall be factory assembled in not less then 20-foot lengths. Each casing joint shall be reinforced with eight stainless steel screws, which penetrate both parts of the coupling without protruding into the interior of the pipe. The Contractor shall install some type of PVC pipe centralizes. Spacing intervals for the centralizes will be the contractors option, but any problems during the installation of PVC pipe will be rectified by the Contractor at no additional cost to the District.

c) All carbon steel casing shall conform to API Standard 5L, Grade B, ASTM A53, Grade B or Spiral Weld A139 Grade B with a minimum wall thickness of 0.375 inches. Casing supplied, as plain end pipe shall be provided with ends perfectly squared and beveled for V-notch welding. Casing that will not yield an acceptable cement bond as determined by the District representative will be sandblasted at the **CONTRACTOR's** expense. The **CONTRACTOR** may propose an alternate type of casing with similar compressive and tensile strengths and quality.

d) Welders shall be certified for making groove welds in carbon steel and stainless steel pipe in positions 2G and 5G for each welding process used. The certified welder shall perform and be responsible for the integrity of all steel casing welds. The **CONTRACTOR** must provide the **DISTRICT** proof of welders' certifications before any welding is performed. The shielded metal-arc process shall be used for all carbon steel field welding. All tack welds shall be made with an electrode that is of the same material to be used for the first weld pass. All cracked tack welds shall be completely removed. Any surface defects that will affect the weld shall be chipped or ground out. A power driven wire brush shall be used to thoroughly clean each layer of weld prior to each additional weld metal, including the final pass. A minimum of three weld passes shall be made on all steel pipes 6-inches in diameter and greater. Welded joints shall be allowed to cool for no less than 30 minutes prior to being placed in contact with water.

e)Casing centralizers may be field fabricated provided that they are constructed of the same carbon steel as the casing. Fabricated centralizers shall be curved steel bands 18-inches long and 2-inches wide. Centralizers shall be arranged at 0, 90, 180 and 270 degrees around the casing to accommodate any tremmie lines that may be inserted inside or outside the casing. Casing centralizers are to be provided on each length and type of casing and are to be positioned as follows:

- 5 feet above base of casing.
- 20 feet above base of casing.
- 40 feet above base of casing.
- 100 feet above base of casing.

At each 100 foot interval thereafter to within 100 feet of ground surface.

S. GROUTING

a) Work covered under this section must be performed by a qualified **CONTRACTOR** or a specialized company in the field of grout sealing and cementing of oil, water, and wastewater wells. An experienced technical representative shall be on site to oversee all grouting operations during the course of this project. All work performed shall conform to State of Florida well drilling practices and to AWWA standards for deep wells (AWWA; A100-84). The **CONTRACTOR**, or his Subcontractor, will be responsible for calculating cement volumes pumped during grouting operations. The **DISTRICT's** geologist will review methods and volumes prior to commencement of pumping cement grout.

b) During pressure grouting, the **DISTRICT** will require that the bottom 120 feet be cemented with standard ASTM C150, TYPE II, or API Class B neat cement grout. Neat cement grout shall not exceed 15.6 lbs./gal with zero percent free water when pumped yielding 1.18 cubic feet per 94 lbs. sack of Portland cement. Additional cement lifts may be placed using no more than an 8% (10.4 gal/sack) by weight Portland cement/bentonite slurry to next open-hole interval or land surface.

c) During pressure grouting, no method shall be permitted that fails to force grout from the bottom of the casing to the next specified interval or land surface. The grouting shall be done continuously and in such a manner to ensure the annular space of the casing is completely filled. Grouting may be placed in stages after the initial casing has been sealed. Grout slurry placed by the tremie method shall use collarless pipe having an inside diameter of 1.0 inch or greater and shall be pumped through two pipes spaced 180 degrees apart in the annulus. During the pumping of each cement stage, the **CONTRACTOR** will responsible for determining the density of three grout samples.

Grout samples will be taken prior to pumping, at the midpoint and near the end of each stage. Slurry densities will be determined in accordance to API Spec 10 using a Pressurized Fluid Density Balance. A minimum of eight hours setting time will be required between successive cement lifts. All subsequent cement lifts will be hard tagged by a collarless tremie pipe before installing an additional stage. After cement grouting is complete, the casing will remain undisturbed for a minimum of 24 hours. It will be solely the **CONTRACTOR**'s responsibility to protect against casing collapse during grouting. Any collapsed casing will be removed and replaced at the **CONTRACTOR**'s expense. Cement shall be pumped or placed so that excessive pressures and heat build-ups will not result. Should the **CONTRACTOR** fail to correct any defects, the **DISTRICT** may refuse to accept the well.

d) The cost of cement, bentonite, fracturing sand and pumping equipment shall be paid at the unit price per sack as stated in the proposal. This unit price shall include all necessary equipment, materials, and subcontracted services required to properly cement the casing as specified in this section. The **CONTRACTOR** must submit proof of cement volumes pumped as part of the payment invoice.

e) If the optional 2-inch wells are constructed as part of this contract the **CONTRACTOR** shall tremmie grout into the annular spacing of the well only after the sand pack has been placed around the well screen to a level one (1) foot above the well screen and a one (1) foot bentonite seal has been placed on top of the sand pack. Neat cement shall be placed in a continuous fashion from the bentonite seal to within five (5) feet of land surface.

T. WELL DEVELOPMENT

a) The **DISTRICT** requires that the wells be developed by either reverse-air circulation or airlift method until all visible particulate matter has been removed from the developed waters. The **CONTRACTOR** will furnish all equipment, compressors, piping and appurtenances to successfully develop wells to obtain maximum flow. During reverse-air development, the **CONTRACTOR** shall clean the aboveground circulation tanks to allow for maximum settling of developed water, before being reintroduced into the well. No standby time will be paid to clean the above ground circulation tanks of well cuttings. This work will be considered part of the well development process. The District reserves the right to determine when the well is completely developed and free of particulate matter. Payment will be on a per hour unit price basis. The hours shown on the proposal item list are only estimates and payment will be made for actual time to the nearest hour of well development.

U. WELLHEAD COMPLETION

a) Wellheads will be prepared for the 6-inch Floridan, Hawthorn and shallow wells. The well head for the 6-inch observation well will consist of a 6-inch PVC (if PVC well) or locking metal cap and standing 2.5 feet above grade. If the 6-inch is constructed of PVC, the well that shall be protected by a 8-inch PVC casing that will be set into the well pad and filled with cemented in the annular space between the 6-inch and 8-inch casings. If the casing is steal, the well shall then be painted by the **CONTRACTOR** with one coat of rust prohibitive primer, followed by 2 applications of alkyd-enamel (blue) coating.

b) Upon completion of the 6-inch Floridan, Hawthorn and shallow wellheads, the **CONTRACTOR** will pour a 4-foot x 4 foot x 6-inch reinforced concrete pad around each wellhead – or a single pad surrounding all three wells depending on their proximity. Annular space between the 6-inch and 8-inch casings. If the casing is steal, the well shall then be painted by the **CONTRACTOR** with one coat of rust prohibitive primer, followed by 2 applications of alkyd-enamel (blue) coating.

c) Upon completion of the 6-inch Floridan, Hawthorn and shallow wellheads, the **CONTRACTOR** will pour a 4-foot x 4 foot x 6-inch reinforced concrete pad around each wellhead – or a single pad surrounding all three wells depending on their proximity. Each well will be properly sealed in the annular spaces such that no leaking occurs. Expansion joints will be provided at interface between the well and the concrete. Concrete for the well pad will be ready-mixed Portland conforming to ASTM C94, Alternate 3. Concrete will be a dry, bagged premix variety and mixed with water in accordance with the manufacturer's specifications. No well pad will be necessary for the constructed 10-inch Floridan well, as this well will be abandoned later. The area around the pad shall be graded such that there is a gentle slope radiating away from the wellhead. The final wellhead assembly and pad will be inspected and must meet the satisfaction of the **DISTRICT** representative and an As-Built drawing of the well will be required prior to final payment.

d) After the well pad is configured, the **CONTRACTOR** shall install a protective, steel enclosure over each of the three (3) wellheads. Each steel enclosure shall have a minimum wall thickness of 0.01 inch. The well enclosure can be round or square, but must be at least 3 feet wide and allow for a minimum 18-inches of clearance above the well opening. The well enclosure must be mounted (bolted) to the well.

e) A 6-foot high chain link fence will be installed surrounding the concrete pad(s). The enclosure will be constructed using 6-foot high 9-guage black fence, 2 1/2-inch steel terminal posts, and 1 5/8-inch top rails. Fixed atop the perimeter of the fence will be three strands of barbwire. The final wellhead assembly, pad and fence enclosure must meet the satisfaction of the District representative prior to final payment.

f) The **CONTRACTOR** will install a steel benchmark on the surface of the concrete pads and have the wellheads surveyed by a Florida Licensed Professional Surveyor with elevations reported using the National Geodetic Vertical Datum (NGVD) of 1929. An As Built drawing of the wells and surface facilities will be prepared by a Florida Licensed Professional Engineer and will be required before final payment.

V. DAILY DRILLER'S LOG

a) The **CONTRACTOR** will maintain a detailed daily log of his operations for all work at each site. The log will be on IADC (International Association of Drilling Contractors) Forms and will provide a brief and accurate description of the following: geologic materials and depths encountered, depths of lost circulation zone(s) and methods of regaining circulation, drilling rate, time, depth, description of any unusual occurrences or problems during drilling, diameters and lengths of casing installed, complete record of drilling fluids added, mud weights, cementing operations, geophysical logs runs, repair time and any other work performed at the site. The **CONTRACTOR** must submit copies of daily logs to the **DISTRICT** on a weekly basis. Additional copies of the daily logs will be submitted as a condition of payment with each request for partial payment. Request for payment will not be processed until daily logs and itemized cost

breakdown are received and reviewed by the Project Manager. Additional supporting documentation may be required for particular items listed on the payment request.

W. WELL ABANDONMENT

a) If a well is declared abandoned by the **DISTRICT** Project Manager due to the **CONTRACTOR** or because of lost tool, or for any other **CONTRACTOR** failures to complete the well in a satisfactory manner, then no payment will be made to the **CONTRACTOR** for the abandonment operation. Under these circumstances, the **CONTRACTOR** must provide a new well to the original specification at no cost to the **DISTRICT.**

b) If a well is declared abandoned by the **DISTRICT** Geologist due to any reason not the fault of the **CONTRACTOR**, then the **CONTRACTOR** will be compensated for performing the approved abandonment plan on a time and material basis, to be agreed on between the **DISTRICT** and the **CONTRACTOR.**

c) At the conclusion of testing, the 10-inch Floridan well will be abandoned. Abandonment will include filling from bottom to top with neat cement using the tremmie method. Gravel fill may be used in the open hole portion of the well (if permitted under the abandonment permit) to a point within 20 feet of the base of the casing. The casing will be cut off a minimum five (5) feet below land surface and the space backfilled with natural materials.

d) At the conclusion of testing, the 2-inch Hawthorn and the 2-inch shallow well will be abandoned. This will involve filling from bottom to within 5-feet of land surface with neat cement using the tremmie method. The casing for each well will be cut off a minimum five (5) feet below land surface and the space backfilled with natural materials.

X. PAYMENT

The cost for completion of all work items shall be included in the lump sum and unit pricing as noted in the Attachment "A" Bid Schedule. Quantities and variable items have been estimated for bidding purposes and the **CONTRACTOR** shall be paid based on actual services rendered at the specified unit price and within the not-to-exceed total contract price. The lump sum payment distribution for mobilization, demobilization and site restoration will be as follows: 25% upon completion of site mobilization and equipment setup, 25% upon completion of the FAS and shallow monitor wells and aquifer testing, and 50% upon completion of site restoration and final inspection. The lump sum price for mobilization-demobilization shall include all material and labor required for restoration, including removing any remaining fluids, restoring the original grades and removing all construction equipment and debris. A site inspection by the **DISTRICT** Project Manager will be made before final payment. All other services (i.e. non lump sum) shall be billed on a monthly basis as per Attachment "A" Bid Schedule.

Y. MILESTONES AND ASSOCIATED TIME LIMITS

The following is a list of project milestones and their associated timelines dated from the Notice to Proceed.

Milestone #1: Mobilization and Equipment Set up
This includes mobilizing to the drill site and equipment set up of all types and installation of pit casing. This time interval also includes the preparation to drill and extends up until the day that drilling through the pit casing begins.

The anticipated time is **four (4) weeks** after the **Notice to Proceed.**

Milestone #2: Completion of 10-inch Floridan Test Well
This milestone includes the setting of all casing, drilling and reaming, well development and geophysical logging for the 10-inch Floridan well. It also includes submittal to the **DISTRICT** all test drilling samples and test data including daily driller's logs, geophysical logs and drill cuttings.

The anticipated time is **nine (9) weeks** after the **Notice to Proceed.**

Milestone #3: Completion of 6-inch Floridan, Hawthorn and Shallow Wells
This milestone includes equipment set-up, drilling, well construction, well development and wellhead construction for the 6-inch Floridan, Hawthorn and shallow wells. This includes the necessary development of each well for the removal of particulates.

The anticipated time is **thirteen (13) weeks** after **Notice to Proceed.**

Milestone #4: Completion of Specific Capacity and APT Testing
This milestone includes all specific capacity and APT tests as described in Section Q. This includes the setting of all pumps, valves and meters and the running for the pumps for the specified duration of each test.

The anticipated time is **seventeen (17) weeks** after **Notice to Proceed.**

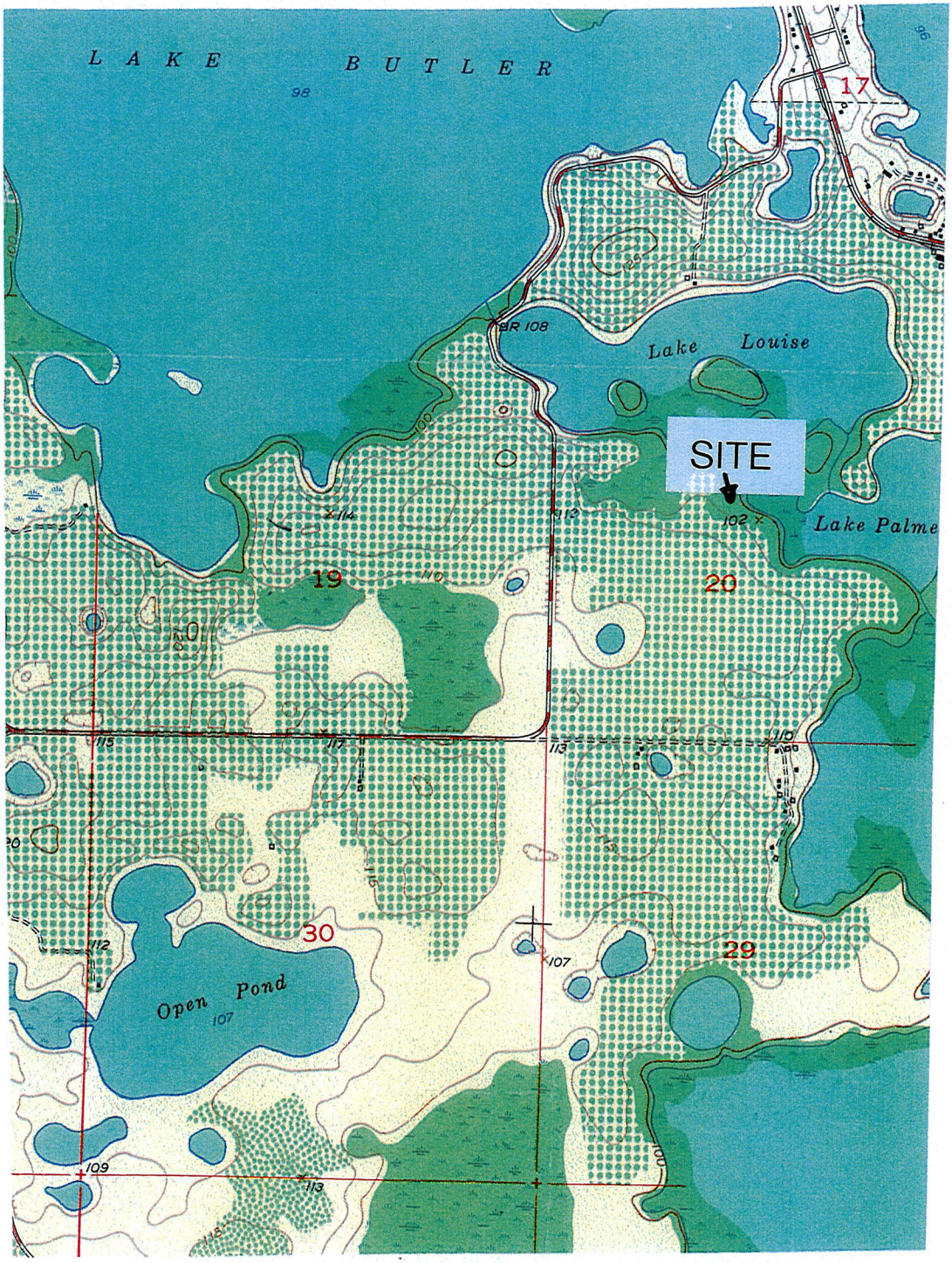
Milestone #5: Demobilization, Site Restoration.
Includes removing the drill rig and all support equipment from site, and the restoration of the site to original grade and the re-seeding/soding of the site. It also includes the wellhead installation for each of the well constructed and restoring fencing that may have been moved.

The anticipated time is **twenty (20) weeks** after notice to proceed.

Total Time: Five (5) Months from the Notice to Proceed to Completion

APPENDIX B

584768



SOURCE: "WINDERMERE, FLORIDA" QUADRANGLE MAP, 1953

UNIVERSAL
ENGINEERING SCIENCES

FINAL REPORT – WELL OVERSIGHT
R.D. KEENE PARK, ORANGE COUNTY, FLORIDA

U.S.G.S. SITE LOCATION PLAN

DRAWN BY: M.A.A.	DATE: 9-25-03	CHECKED BY: MAA	DATE: 9-25-03
SCALE: See above	ORDER NO:	REPORT NO: 308107	PAGE NO: B

APPENDIX C

R. D Keene Site - Drilling and Construction Summary:

Site Preparation and Mobilization:

1. Site clearing, grading, and placing of structural fill material, as necessary.
2. Mobilize drill rig and associated equipment to the site.
3. Install mud circulation system for the first phase of drilling.
4. Drill and set 20-inch diameter pit steel casing to a minimum 50 feet below land surface (bls).
5. Set-up and configure filtration-retention-discharge system

Drilling and Construction – 14-inch diameter Floridan aquifer test-production well – Well No. 1:

6. Drill nominal 12-inch diameter pilot hole using mud-rotary method from base of pit casing (~ 50 feet bls) to 200 feet bls.
7. Run geophysical logs on the nominal 12-inch diameter pilot hole from land surface to the to 200 feet bls, **Table 1, Part 1.**
8. Ream a nominal 20-inch diameter borehole using mud-rotary method from the base of pit casing to an estimated depth of 120 feet bls or 10 feet into competent rock.
9. Run caliper (4-arm) and natural gamma logs. **(This shall be considered part of the 14-inch diameter surface casing installation cost).**
10. Set 14-inch diameter, ASTM A53-Grade B 0.375-inch wall thickness, steel surface casing to approximately 120 feet bls. Pressure cement-grout the 14-inch diameter casing back to land surface.
11. Trip in and clean-out cement plug at base of 14-inch diameter casing as a result of pressure grouting, using a nominal 14-inch diameter bit **(This shall be considered part of the 14-inch diameter casing installation cost).**
12. Drill nominal 12-inch diameter pilot hole from base of 14-inch diameter casing to approximately 650 feet bls using the open-circulation, reverse-air method.
13. Run geophysical logs on the pilot hole from the base of the 14-inch diameter casing (120 feet bls) to 650 feet bls, as listed in **Table 1, Part 2.**
14. Develop open-hole interval via reverse-air method
15. Perform a step-drawdown/specific capacity test on the open-hole interval below the 14-inch diameter casing from 120 to 650 feet bls. Perform a flow logs on the interval from 120 to 650 feet bls during the test. Based on specific capacity results lateral distance of corresponding Floridan aquifer monitor well will be determined
16. Secure well by installing steel blind flange.

Drilling and Construction – 6-inch diameter Floridan aquifer monitor well – Well No. 2

1. Drill and set 12-inch diameter pit steel casing to a minimum 50 feet bls.
2. Drill nominal 12-inch diameter borehole to 120 feet bls.
3. Set 6-inch diameter, ASTM A53-Grade B 0.375-inch wall thickness, steel surface casing to approximately 120 feet bls. Pressure cement-grout the 6-

inch diameter casing back to land surface.

4. Trip in and clean-out cement plug at base of 6-inch diameter casing as a result of pressure grouting, using a nominal 6-inch diameter bit **(This shall be considered part of the 14-inch diameter casing installation cost)**.
5. Drill nominal 6-inch diameter pilot hole from base of 6-inch diameter casing to approximately 650 feet bls using the open-circulation, reverse-air method.
6. Develop open-hole section via reverse-air method.

Drilling and Construction of 6-inch diameter Hawthorn confining unit monitor well – Well No. 3

1. Drill and set 12-inch diameter pit casing.
2. Drill nominal 12-inch diameter borehole to 100 feet bls.
3. Install 6-inch diameter polyvinyl chloride (PVC) monitor wells to a depth 100 feet below land surface. The monitor wells shall consist of 60 feet of 6-inch diameter PVC (schedule 40) solid pipe and 40 feet of PVC well screen (20-slot) with the screen interval at 60 to 100 feet below land surface.
4. The screen interval shall be completed using gravel pack consisting of silica sand (6-20 grade) extending 2 feet above the well screen capped by fine silica sand (1-foot thick).
5. The solid portion of the casing shall extent 3-feet above grade and cemented to surface using ASTM Type I neat cement.
6. The monitor wells shall be developed by over-pumping with a centrifugal pump or by air lifting until all visible particulate matter has been removed from the produced formation water.

Drilling and Construction – 6-inch diameter Shallow aquifer monitor well – Well No. 4

1. Drill and set 12-inch diameter pit casing.
2. Drill nominal 12-inch diameter borehole to 50 feet bls via mud rotary method.
3. Install 6-inch diameter polyvinyl chloride (PVC) monitor wells to a depth 50 feet below land surface. The monitor wells shall consist of 20 feet of 6-inch diameter PVC (schedule 40) solid pipe and 30 feet of PVC well screen (20-slot) with the screen interval at 20 to 50 feet below land surface.
4. The screen interval shall be completed using gravel pack consisting of silica sand (6-20 grade) extending 2 feet above the well screen capped by fine silica sand (1-foot thick).
5. The solid portion of the casing shall extent 3-feet above grade and cemented to surface using ASTM Type I neat cement.
6. The monitor wells shall be developed by over-pumping with a centrifugal pump or by air lifting until all visible particulate matter has been removed from the produced formation water.
7. Perform specific capacity test

If necessary:

Drilling and Construction – 2-inch diameter Shallow aquifer monitor well – Well No. 5

1. Drill and set appropriate size pit steel casing, if necessary
2. Drill nominal 8-inch diameter borehole to 50 feet bls via mud rotary method or hollow stem auger
3. Install 2-inch diameter polyvinyl chloride (PVC) monitor wells to a depth 50 feet below land surface. The monitor wells shall consist of 20 feet of 2-inch diameter PVC (schedule 40) solid pipe and 30 feet of PVC well screen (20-slot) with the screen interval at 20 to 50 feet below land surface.
4. The screen interval shall be completed using gravel pack consisting of silica sand (6-20 grade) extending 2 feet above the well screen capped by a fine silica sand (1-foot thick).
5. The solid portion of the casing shall extent 3-feet above grade and cemented be to surface using ASTM Type I neat cement.
6. The monitor wells shall be developed by over-pumping with a centrifugal pump or by air lifting until all visible particulate matter has been removed from the produced formation water.

Drilling and Construction of 2-inch diameter Hawthorn confining unit monitor well – Well No. 6

1. Drill and set appropriate size diameter pit casing, if necessary.
2. Drill nominal 8-inch diameter borehole to 100 feet bls.
3. Install 2-inch diameter polyvinyl chloride (PVC) monitor wells to a depth 100 feet below land surface. The monitor wells shall consist of 60 feet of 2-inch diameter PVC (schedule 40) solid pipe and 40 feet of PVC well screen (20-slot) with the screen interval at 60 to 100 feet below land surface.
4. The screen interval shall be completed using gravel pack consisting of silica sand (6-20 grade) extending 2 feet above the well screen capped by fine silica sand (1-foot thick).
5. The solid portion of the casing shall extent 3-feet above grade and cemented to surface using ASTM Type I neat cement.
6. The monitor wells shall be developed by over-pumping with a centrifugal pump or by air lifting until all visible particulate matter has been removed from the produced formation water.

Melissa Albright

From: Michael Bennett [mbennet@sfwmd.gov]
Sent: Friday, March 07, 2003 3:05 PM
To: adrian@wellwater.com
Cc: Melissa Albright; abaray@pbworld.com; Chris Sweazy
Subject: Revised construction sequence - R.D. Keene Site


Revised_WCS.doc (49 KB)


Card for Michael Bennett (410 ...

Adrian,

Attached is a revised drilling and well construction sequence for the R.D. Keene Site. If you have any questions, please give me a call at 561-682-6822. Thanks and have a good weekend!

Subject: GPR Coordinates
Date: Wed, 11 Jun 2003 11:39:37 -0500
From: David Demonstranti <ddemonst@sfwmd.gov>
Organization: South Florida Water Management District
To: Steve Anderson <sanderso@sfwmd.gov>

Steve,

Here are the GPS coordinates taken at R.D. Keene.

Datum: NAD83

Well #1 LAT 28 28' 18.339"N LONG 81 32' 04.954"W
Well #2,3,4 LAT 28 28' 18.354"N LONG 81 32' 05.813"W
Well #5 LAT 28 28' 18.370"N LONG 81 32' 05.420"W

ddemonst.vcf	**Name:** ddemonst.vcf **Type:** VCard (text/x-vcard) **Encoding:** 7bit **Description:** Card for David Demonstranti

APPENDIX D

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight		
Reference:	R.D. Keene Park	**Time Arrived:**	
Project No.:	12666-001-01	**Time Left:**	
Technician:		**Travel Time:**	
Date:		**Breaks:**	

WATER LEVEL DATA - INITIAL

Well ID:	**Water Level:**
Notes:	

DAILY ACTIVITIES

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:**
Project No: 12666-001-01	**Date:**

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

FIELD LOG OF BORING

B-

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY:	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:

SURFACE CONDITIONS:	WATER DEPTH:		
	DATE:		
	TIME:		

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1			
							2			
							3			
							4			
							_5			
							6			
							7			
							8			
							9			
							_0			
							1			
							2			
							3			
							4			
							_5			
							6			
							7			
							8			
							9			
							_0			
							1			
							2			
							3			
							4			
							_5			
							6			
							7			
							8			
							9			
							_0			
							1			
							2			

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CORPORATE OFFICE:
P.O. Box 290699 • Tampa Florida 33687-0699 • Phone 813-988-1132 • Fax 813-985-6636

SOUTH FLORIDA WATER M.D.

Table of Submittals
C - 13372

Submitted to: Melissa A Albright

RD Keene County Park,
Orange County, Florida

Universal Engineering Sciences
3532 Maggie Boulevard
Orlando FL 32811

Construct Floridan Aquifer Test Wells & Monitor Wells

Number of Copies: 3

No.	Description	Spec. Ref.	Scheduled	Submitted	Approved	Rejected	Resubmitted	Approved
1	Construction Schedule	RFB C-13372	March 2003	e-mail 03/11				
2	Contact Information	RFB C- 13372	March 2003	03/14/03				
	Well Construction							
3	Type I Cement	SFWMD email March 7, 2003	March 2003	03/14/03				
4	Certified Welder Details	RFB C- 13372	March 2003	03/14/03				
5	Drilling Mud	As specified	March 2003	03/14/03				

DIVERSIFIED DRILLING CORPORATION

South Florida Water Management District **For: SFWMD**

Well Construction & Testing R D Keene Park C-13372 * Starting Monday March 10, 2003

Construction Schedule	Date / Days	3/10 1*	2	3	4	5	6	7	3/17 8	9	10	11	12	13	14	3/24 15	16	17	18	19	20	21	3/31 22	23	24	25	26	27	28	4/7 29	30	31	32	33	34	35	4/14 36	37	36	39	40
Permitting /Notice to Proceed																																									
(Shallow Water Supply Well)	1																																								
Upper Floridan Wells																																									
14" Floridan Aqu. Test Well																																									
Mobilize/set Rotary Rig #2	4																																								
Set 20" Surface csg to about 50'	2																																								
Drill 12"pilot hole to 200'	2																																								
Geolog - Caliper & Gamma	1																																								
Ream well & set 14" stl csg x 120'	3																																								
Trip in & clean out cement plug	2																																								
Drill nom. 12" to 650' TD/develop	9																																								
Geolog - (Table 1, Part 2)	1																																								
Step Test/Spec.Capacity & Flowlog	2																																								
Cap Well, Move Rig	1																																								
Set Rig up on Deep 6" Well	3																																								

	Date / Days	4/21 41	42	43	44	45	46	47	4/28 48	49	50	51	52	53	54	55	5/5 56	57	58	59	60	61	62	63	5/12 64	65	66	67	68	69	70	5/19 71	72	73	74	75	76	77	5/26 78	79	80	81	82	83	84	6/2 85	110
6" Floridan Aqu. Monitor Well																																														
Drill 50' & set 50' x 12" surface csg	1																																													
Drill inside *' to set 6" csg to 120'	2																																													
Drill unlined section at 6" nom to 650'	8																																													
Well #s 3 & 4																																														
Hawthorn Well #3																																														
Mobe Rotary Rig #2	1																																													
Drill 100' x 12", insert 6" screen/pack	2	**60' x sch. 40 & 40' x screen (20 slot)**																																												
Develop/test/well head	2																																													
Shallow Well (For Water Supply)																																														
Set Rotary Rig #2	1																																													
Drill 50' x 12", insert 6" screen/pack	2	**30' x sch. 40 & 20' x screen (20 slot)**																																												
Specific capacity test/well head	2																																													
Aquifer Performance Tests	Spec. Page 25 of 88																																													
Shallow Well	(Test one of the 2 shallow wells)																																													
Aq. Performance Test	5	5 GPM																																												
Floridan Test Well																																													
Aquifer Performance Test - 96 hrs	6	1600 GPM																																												
Optional Wells 5 & 6 -2" Monitors	5																																												
Complete Well Heads/clear site	9																																												
Abandon 10" U Fl & ? Shallow wells	5	See page 28 of specs. Abandon after Test Pumping.																																												

Totals for Well Construction **82** **Working Days** **110** **Calendar Days** **(Target)**

Total Time - 5 Months **140** **Days From Notice to Proceed to Completion**

Add Time For Additional Logging Required by PB Water (For Orange County)

Well Abandonment Timing TBA by SFWMD

Note: Extra Time to be added if access not ready or unstable formation/'Dredging' encountered on deep drilling stages

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P.O. Box 290699 • Tampa Florida 33687-0699 • Phone 813-988-1132 • Fax 813-985-6636

To: Universal Engineering Services

Contact Information

Submittal #2

Re: RD Keene Park – Floridan Aquifer Test Wells

Diversified Drilling Corporation

Office:	5654 N. Apopka Vineland Road, Orlando, FL 32818 Telephone: (407) 291-4755 Fax: (407) 578-8649
Vice President:	Stuart C. Anderson Mobile/Pager: (813) 917-5561 Home: (813) 960-5068
Project Supervisor:	Adrian Allen Mobile/Pager: (813) 376-2557 Office: (407) 291-4755
Drilling Superint.:	Butch Meridith Mobile/Pager: (407) 509-5793
Driller Supervisors:	David Adkins Mobile/Pager: (407) 509-6106
Helper:	Donnie Inhearst
Welder:	Dave Pass Mobile/Pager: (407) 509-6315

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South Florida Water Management District

RD Keene Park
Construct & Test Floridan Aquifer Wells

Submittal Number: 3

Type I Cement

DEVIATIONS: **NONE** ✓ ; **AS LISTED** _____

REFERENCE SPECIFICATION NUMBER: SFWMD email 03/07/03

REFERENCE DRAWING NUMBER _____

CONTRACTOR HAS REVIEWED AND SUBMITTED FOR REVIEW

SIGNATURE _____ **DATE** 3-14-03
DIVERSIFIED DRILLING CORPORATION

Rinker MATERIALS

REPORT OF CEMENT ANALYSIS
TYPE I PORTLAND CEMENT

Date: May 21, 2002

SERIAL NUMBER: 02 - 25
SILO: 1, 3, 4, 5, 6, 7 & 8

PORT CANAVAERAL TERMINAL

CHEMICAL ANALYSIS

PARAMETER	RESULTS	AASHTO M-85 SPECIFICATIONS	ASTM C-150 SPECIFICATIONS
Silicon Dioxide (SiO_2)	20.1 %		
Aluminum Oxide (Al_2O_3)	5.3 %		
Iron Oxide (Fe_3O_2)	4.1 %		
Calcium Oxide (CaO)	64.7 %		
Magnesium Oxide (MgO)	0.9 %	6.0% Maximum	6.0% Maximum
Sulfur Trioxide (SO_3)	3.0 %	3.0% Maximum *	3.0% Maximum *
Loss On Ignition	1.3 %	3.0% Maximum	3.0% Maximum
Insoluble Residue	0.29 %	0.75% Maximum	0.75% Maximum
Alkalies as Na_2O	0.43 %	0.60% Maximum **	
Tricalcium Silicate (C_3S)	61 %		
Tricalcium Aluminate (C_3A)	7.3 %		

* Limit is 3.5 max. when C3A is more than 8%

** FDOT Sec. 921

PHYSICAL ANALYSIS

Blaine Surface, m2/kg	369		260 Minimum 400 Maximum	280 Minimum
Vicat Set, minutes				
Initial	105		not less than 45	not less than 45
Final	135		not more than 375	not more than 375
Air Content	5.3 %		12% Maximum	12% Maximum
Autoclave Expansion	0.01 %		0.80% Maximum	0.80% Maximum
Compressive Strength, p.s.i. (MPa)				
1 day	2110	(14.6)		
3 days	3985	(27.5)	1800 psi Minimum	12.0 MPa Minimum
7 days	5186	(35.8)	2800 psi Minimum	19.0 MPa Minimum
Heat of Hydration, kJ/kg				
@ 7 days	319			

The cement covered by this report complies with the current specifications of ASTM C 150 and AASHTO M 85.

This cement was manufactured and tested by Compania Colombiana de Clinker, S.A. Cartegena, Colombia.

Rinker Materials Corporation, 1200 NW 137th Avenue, Miami, FL 33182, PO Box 650679, Miami, FL 33265-0679
Telephone (305) 221-7645 Facsimile (305) 229-8015

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5654 N. Apopka Vineland Road • Orlando • Florida 32818 • Phone 407-291-4755 • Fax 407-578-8649
CORPORATE OFFICE:
P.O. Box 290699 • Tampa Florida 33687-0699 • Phone 813-988-1132 • Fax 813-985-6636

South Florida Water Management District

RD Keene Park
Construct & Test Floridan Aquifer Wells

Submittal Number: 4
Certified Welder

DEVIATIONS: **NONE** ✓ ; **AS LISTED** _____

REFERENCE SPECIFICATION NUMBER: RFB C - 13372

REFERENCE DRAWING NUMBER _____

CONTRACTOR HAS REVIEWED AND SUBMITTED FOR REVIEW

SIGNATURE _____ **DATE** 3-14-03
DIVERSIFIED DRILLING CORPORATION

LAW ENGINEERING	WELDER AND WELDING OPERATOR QUALIFICATION TEST RECORD	GEOTECHNICAL MATERIALS PAVEMENT, AND ROOFING CONSULTING

270 SOUTH NORTH LAKE BOULEVARD
ALTAMONTE SPRINGS, FLORIDA 32701
407-332-6160 • FAX 407-332-9440

D.L. P200-464-51-264

Welder or welding operator's name John David Pass Identification no. 263-96-1138
Welding process SMAW Manual X Semiautomatic ____ Machine ____
Position 2F (Horizontal Fillet)
(Flat, horizontal, overhead or vertical – if vertical, state whether upward or downward)
In accordance with procedure specification no. AWS D1.1
Material specification A36
Diameter and wall thickness (if pipe) – otherwise, joint thickness 1/2" plate
Thickness range this qualifies Unlimited

FILLER METAL

Specification no. AWS A5.1 Classification E7018 F no. 4
Describe filler metal (if not covered by AWS specification) ____
Is backing strip used? N/A
Filler metal diameter and trade name 3/32" Lincoln Flux for submerged arc or gas for gas metal arc or flux cored arc welding N/A

Guided Bend Test Results

Type	Result	Type	Result
MACRO	Acceptable		
BREAK	Acceptable		

Test conducted by D.S. Pacacha Laboratory test no. OR89-997
per AWS D1.1-88

Welder is qualified to weld on plate and pipe in the flat and horizontal positions with all approved AWS electrodes.

David S. Pacacha, P.E.

We, the undersigned, certify that the statements in this record are correct and that the welds were prepared and tested in accordance with the requirements of

Manufacturer or contractor Meridith Corporation
Authorized by Hershall Scott
Date 6/26/89

DIVERSIFIED DRILLING CORPORATION

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South Florida Water Management District

RD Keene Park
Construct & Test Floridan Aquifer Wells

Submittal Number: 5

Drilling Mud

DEVIATIONS: **NONE** ✓ ; **AS LISTED** _____

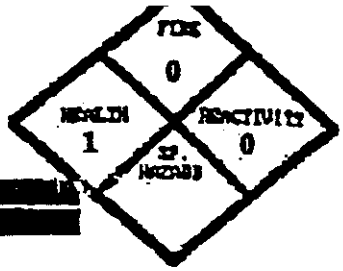
REFERENCE SPECIFICATION NUMBER: SFWMD spec.

REFERENCE DRAWING NUMBER _____

CONTRACTOR HAS REVIEWED AND SUBMITTED FOR REVIEW

SIGNATURE _____ **DATE** 3-14-03
DIVERSIFIED DRILLING CORPORATION

Baroid Environmental, Safety and Transportation Data Sheet



QUIK-GEL®

I. PRODUCT IDENTIFICATION

SUPPLIER BAROID DRILLING FLUIDS, INC.	REGULAR TELEPHONE NUMBER 713/987-5900 EMERGENCY TELEPHONE NO. 713/987-4000
ADDRESS P.O. BOX 1675 HOUSTON, TEXAS 77251	
TRADE NAME QUIK-GEL	
GENERIC DESCRIPTION HIGH YIELD BENTONITE; SODIUM MONTMORILLONITE 1302-78-9	

II. HAZARDOUS INGREDIENTS

MATERIAL OR COMPONENT	%	HAZARD DATA
SILICA 14808-60-7	2-6%	LOW CONCENTRATIONS OF
		CRYSTALLINE SILICA (SiO2)
		IN THE FORM OF QUARTZ,
		CRISTOBALITE AND TRIDYMITE
		MAY BE PRESENT
		(SEE SECTION V)

III. PHYSICAL DATA

BOILING POINT (Deg F) NA	MELTING POINT NA	FREEZING POINT NA
SPECIFIC GRAVITY (H2O = 1) 2.5	VAPOR PRESSURE (mm Hg) NA	
VAPOR DENSITY (AIR = 1) NA	SOLUBILITY IN WATER, % BY WT. NA	
% VOLATILES BY VOLUME NA	EVAPORATION RATE(BUTYL ACETATE = 1) NA	
APPEARANCE AND ODOR GREY, TAN POWDER, NO ODOR	DENSITY @ 20 Deg C (Uncompacted) 47.6 LB/CU	
pH NA		

NA = Not Applicable ND = Not Determined

Baroid Drilling Fluids, Inc.
P.O. Box 1675, Houston, Texas 77251

IV. FIRE AND EXPLOSION DATA

NOT FLAMMABLE OR EXPLOSIVE DOES NOT SUPPORT COMBUSTION.
EXTINGUISHING MEDIA: USE MEDIA APPLICABLE TO SURROUNDING FIRE.
SPECIAL FIRE FIGHTING PROCEDURES: NONE ANTICIPATED

V. HEALTH HAZARD INFORMATION

CARCINOGENICITY - SEE ROUTES OF EXPOSURE AND EFFECTS (BELOW)

ACUTE ORAL LD50	ACUTE DERMAL LD50	AQUATIC TOXICITY LC50
ND	ND	ND

ROUTES OF EXPOSURE AND EFFECTS

THIS PRODUCT CONTAINS FREE CRYSTALLINE SILICA WHICH ACCORDING TO THE IARC HAS EXHIBITED LIMITED EVIDENCE OF CARCINOGENICITY IN HUMANS. PROLONGED INHALATION OF THE POWDER MAY RESULT IN SILICOSIS, A NONCANCEORUS LUNG DISEASE. OSHA FINAL LIMITS TABLE Z-3 MINERAL DUSTS.
CRYSTALLINE SILICA QUARTZ (RESPIRABLE) 10 mg/m3 ——— %SiO2 + 2
QUARTZ (TOTAL DUST) 30 mg/m3 ——— %SiO2 + 2
IF CRISTOBALITE OR TRIDYMITE IS DETECTED, USE ONE HALF THE VALUE CALCULTAED FROM FORMULA FOR QUARTZ.
EYES: IRRITANT SKIN: POTENTIAL IRRITANT INHALATION: IRRITATION TO LUNGS, NOSE, AND THROAT; PROLONGED INHALATION MAY CAUSE LUNG INJURY OR DISEASE.

EMERGENCY AND FIRST AID PROCEDURES

NORMAL PERSONAL HYGIENE.

BEST Sheet **QUIK-GEL®**

VI. REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY
STABLE

INCOMPATIBILITY
NONE

HAZARDOUS DECOMPOSITION PRODUCTS
NONE

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION
NONE

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED
NORMAL HOUSEKEEPING; CAUSES SLIPPERY SURFACES WHEN WET.

NEUTRALIZING CHEMICALS
NA

WASTE DISPOSAL METHOD
DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS

VIII. INDUSTRIAL HYGIENE CONTROL MEASURES

VENTILATION REQUIREMENTS
MECHANICAL, GENERAL ROOM VENTILATION. USE LOCAL VENTILATION TO MAINTAIN TLV (SEE SECTION V)

SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY
DUST MASK

EYE
SAFETY GLASSES, GOGGLES

GLOVES
WORK GLOVES

OTHER CLOTHING AND EQUIPMENT
APRON, EYEWASH

IX. SPECIAL PRECAUTIONS

PRECAUTIONARY STATEMENTS

RECOMMENDED LABELING:
FRONT PANEL: CAUTION! SEE BACK PANEL FOR CAUTION BEFORE USE. BACK PANEL: CAUTION THIS PRODUCT CONTAINS FREE CRYSTALLINE SILICA WHICH ACCORDING TO THE IARC HAS EXHIBITED LIMITED EVIDENCE OF CARCINOGENICITY IN HUMANS. PROLONGED INHALATION OF THE POWDER MAY RESULT IN SILICOSIS. A NONCANCEROUS LUNG DISEASE. AVOID CREATING DUSTY CONDITIONS AND USE A NIOSH APPROVED DUST RESPIRATOR.

OTHER HANDLING AND STORAGE REQUIREMENTS

STORE IN SHELTERED AREA OR COVER TO PROTECT FROM MOISTURE

X. DEPARTMENT OF TRANSPORTATION INFORMATION

PROPER SHIPPING NAME :
NOT REGULATED AS HAZARDOUS

PLACARDS :
NONE

HAZARD CLASS :
NOT HAZARDOUS

REPORTABLE QUANTITY :
NONE

HAZARDOUS SUBSTANCE :
NONE

ID NUMBER :
NONE

LABEL :
NONE REQUIRED

Prepared by:
Environmental Services

DATE:
February,1995

XI. REGULATORY INFORMATION

STATUS ON SUBSTANCE LISTS

Comprehensive Environmental Response, Compensation and Liability Act of 1980, (CERCLA) requires notification of the National Response Center of release of quantities of Hazardous Substances equal to or greater than the reportable quantities (RQs) in 40 CFR 302.4.

Components present in this product which may require notification are:

Chemical	CAS Number
NONE	

Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III requires emergency planning based on Threshold Planning Quantities (TPQs) and release reporting based on RQs.
Components present in this product at a level which could require reporting under the statute are:

NONE

SARA requires the submission of annual reports of toxic chemicals that appear in 40 CFR 372 (for SARA 313). This information must be included in all MSDS that are copied and distributed for this material.
Components present in this product at a level which could require reporting under the statute are:

NONE

Toxic Substances Control Act (TSCA)
The ingredients of this product are on the TSCA inventory.

XII. STATE RIGHT TO KNOW

QUARTZ IS ON CANADIAN WHMIS (WORKPLACE HAZARDOUS MATERIAL INFORMATION SYSTEM) INGREDIENT DISCLOSURE LIST, MASSACHUSETTS SUBSTANCE LIST, NEW JERSEY RIGHT TO KNOW HAZARDOUS SUBSTANCE LIST AND PENNSYLVANIA HAZARDOUS SUBSTANCE LIST.

APPENDIX E

R.D. Keene Park Well Oversight: Work completed March 17 through March 21, 2003:

March 17, 2003: Diversified began drilling pilot hole for Well No. 1. Drilled to 60' bls.

March 18, 2003: Reamed hole. Installed pit casing to 63.3' bls.

March 19, 2003: Drilled through cement plug at base of pit casing. Advanced to 90' bls.

March 20, 2003: Drilled 90 to 106' bls. Void 106 to 121.67' bls.

March 21, 2003: Pumped approximately six yards of cement into void.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight		
Reference:	R.D. Keene Park	**Time Arrived:**	7:45 a.m.
Project No.:	12666-001-01	**Time Left:**	1715
Technician:	Melissa Albright	**Travel Time:**	40 min to /
Date:	3-17-03	**Breaks:**	

WATER LEVEL DATA - INITIAL

Well ID:	Well #1	**Water Level:**	N/A
Notes:			

DAILY ACTIVITIES

Arrived at site. Rig set on first well. Mud pit dug. RTBH, surface casing, dull rod, port-o-let all staged at site. Weather: partly overcast from overnight rain. Temp expected to be in the low to mid 80's. Drillers arrive on site @ ~ 8:40 a.m. Well (supply) non-productive. Using a garden hose to obtain water from shed by entrance Road. Started mixing drilling mud @ ~ 10:20 a.m. Started drilling pilot hole for surface casing @ ~ 11:15 am. Tested viscosity & density prior to drilling. Reached 60' approx 1330 Tested Viscosity and Density at 1340. Pulled Pipe out of Hole @ 1410. Preparing Hole For Casing. Brief Rain Shower At 1400, Prepped Bit For Casing, Welder Arrived At 1500, Flanges Welded on Bit, Lowered Bit Into Hole, Made up More Drilling Mud, Prepped Everything For Installing Casing In The Morning. Leaving Jobsite At 1715.

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** Albright / Miller
Project No: 12666-001-01	**Date:** 3-17-03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	11:10 am	8.6 lb/gall ; 1035 kg/m3	103 sec.
Midpoint	1340	8.6 lb/gal ; 1035 kg/m3	108 sec
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

Density @ 1100 [redacted] water = 8.3 lb/gal / Viscosity - 1 qt. water = 25.5 sec

Document No. 272205

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:** 1715
Technician: DARREN MILLER	**Travel Time:** 45 MIN / 45 MIN
Date: 3/18/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #1	**Water Level:**
Notes:	

DAILY ACTIVITIES

ARRIVED ONSITE AT 7:45 AM. DRILLERS ARRIVED AT 8:15. CIRCULATION STARTED ON DRILLING MUD 8:45 START OF REAMING OUT HOLE FOR 20" CASING, 22' REACHED AT 1000 AM. TOOK VISCOCITY AND DENSITY TEST AT 10:30. REACHED 43' AT 1110, REACHED 62' AT 1150 CONTINUED CIRCULATION OF DRILLING MUD TO FLUSH OUT HOLE. WELDED HOOKS ONTO CASINGS AND MEASURED CASINGS PULLED PIPE FROM HOLE. READY TO INSTALL CASING BEGUN INSTALLATION OF CASING AT 1330. SECTION #1 = 21' 1" SECTION #2 = 21' 1½" SECTION #3 = 21' 1" TOTAL 63' 3½" INSTALL AND WELD CASING TIL 1550. GROUT POURED AT 1600 DENSITY BEFORE PUMPING 15.4 lbs/gal MIDPOINT DENSITY - 13.7 lbs/gal END POINT DENSITY - 10.7 lbs/gal LET GROUT SETTLE. RAISED 2" PIPE OFF OF BOTTOM. LETTING GROUT CURE OVERNITE. LEFT SITE AT 1715

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 3/18/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	835	8.7 lbs/gal 1042 Kg/m³	1.51 SEC
Midpoint	1030	8.6 lbs/gal 1035 Kg/m³	1.03 SEC
Ending	1300	8.6 lbs/gal 1035 Kg/m³	1.04 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL: 1 qt WATER = 25.5 SEC

DENSITY: 1 GAL = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:** 1715
Technician: DARREN MILLER	**Travel Time:** 45 MIN / 45
Date: 3/19/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #1	**Water Level:**
Notes:	

DAILY ACTIVITIES

ARRIVED ONSITE AT 745, DRILLERS ARRIVED AT 830 PULLED 2" PIPE OUT OF CASING CUT HEADER OFF OF CASING, LOWERING 17" BIT INTO CASING. MUD DRILLING STARTED AT 1100 AM KNOCKING OUT CEMENT PLUG. REMOVAL OF 17" BIT AND REPLACING IT WITH DRILL PIPE. PILOT HOLE DRILLING CONTINUED AT 1445. DOWN TO 90' AT 1600. SUMP PUMP DEVELOPED PROBLEM REPAIRING IT NOW PROBLEM FIXED AT 1650 SHUTDOWN AT 1700.

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 3/19/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1100	8.7 lbs/gal 1050 KG/m³	33.62 SEC
Midpoint	1400	8.9 lbs/gal 1070 KG/m³	34.21 SEC
Ending	1700	9.5 lbs/gal 1140 KG/m³	37.90 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 26.4 SEC

DENSITY - 1 GAL = 8.3 lbs/GAL

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:** 1700
Technician: DARREN MILLER	**Travel Time:** 45 min
Date: 3/20/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #1	**Water Level:**
Notes:	

DAILY ACTIVITIES

ARRIVED ONSITE AT 745. DRILLERS ARRIVED AT 830, FUELING EQUIPMENT WITH DIESEL. TOOK DENSITY AND VISCOSITY OF DRILLING MUD AT 845am. DRILLING REACHED VERY HARD LAYER AT 100' VERY SLOW DRILLING. 1115 SWITCHING OUT BITS TO GO THRU HARD LAYER. DRILLING RESUMED AT 1140 1300 HAVE REACHED 106' VERY SLOW GOING. TOOK DENSITY AND VISCOSITY AT 1300 BOTTOM DROPPED OUT OF HOLE AT 106' VOID TO 121'8" AT AROUND 215pm WAITING ON DECISION FROM SFWMD AS TO WHICH COURSE TO PROCEED ON SHUT DOWN AT 1700

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 3/20/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	845	8.85 lbs/gal 1060 KG/M3	30.93 SEC
Midpoint	1300	9.4 lbs/gal 1130 KG/M3	37.20 SEC.
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 26.13 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

Document No. 272205

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 800
Project No.: 12666-001-01	**Time Left:** 1500
Technician: DARREN MILLER	**Travel Time:**
Date: 3/21/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #1	**Water Level:**
Notes:	

DAILY ACTIVITIES

ARRIVED ON SITE AT 800, DRILLERS ARRIVED AT 845. PULLED PIPE AND PREPPED WELL FOR PUMPING CONCRETE INTO VOID. READY FOR PUMPING AT 1100AM STEADY RAIN FALLING SINCE 1130. WAITING ON CONCRETE. RINKER ARRIVED 1430 PUMPED 6 yds GROUT INTO VOID DENSITY 15.9 lbs/gal WELL TAP ON MONDAY LEFT SITE 300pm

Document No. 272205

R.D. Keene Park Well Oversight: Work completed March 24 through March 28, 2003:

March 24, 2003: Mud pump pistons and sleeves damaged. Pump being repaired, no progress.

March 25, 2003: Drilled through clay layer to void, grout sealed void. Drilled 104 to 200 feet bls.

March 26, 2003: Southern Resource Exploration completed geophysical logging on the 200' pilot hole.

March 27, 2003: Diversified reamed pilot hole - 20" by 110' bls.

March 28, 2003: Southern Resource Exploration completed geophysical logging on the 115' 20" diameter borehole. Diversified set surface casing to 110' bls.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	3/24/03

DAILY ACTIVITIES

815	ARRIVED ONSITE DRILLERS ALREADY HERE
830	ATTEMPTING TO PUSH THRU CLAY TO TOP OF VOID REACHED 100'
850	DETERMINED BY DRILLERS THAT WE WILL HAVE TO DRILL THRU CLAY TO REACH VOID
1000	LOWERING BIT INTO HOLE PREPARING TO DRILL CIRCULATING DRILL MUD
1030	MUD PUMP ON RIG DEVELOPED PROBLEM TEARING DOWN PUMP TO FIX IT
1300	PUMPS PISTONS AND SLEEVES DAMAGED DRILLER HAS TO GO TO TAMPA TO GET REPLACEMENTS RIG SHUT DOWN FOR TODAY LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	3/25/03

DAILY ACTIVITIES

745	ARRIVED ONSITE INSPECTED MUD PUMP PARTIALLY REBUILT
810	DRILLERS ARRIVE AND BEGIN TO FINISH PUTTING MUD PUMP BACK TOGETHER
935	TESTING MUD PUMP
1000	LOWERING PIPE BACK INTO HOLE AND MIXING UP MORE MUD
1045	DRILLING STARTED TO GET BACK THRU CLAY DOWN TO VOID
1100	DRILLING CONTINUED THRU VOID GROUT SEALED UP VOID
1200	DRILLING AND TAKING SAMPLES
1300	DRILLING AND TAKING SAMPLES
1400	DRILLING AND TAKING SAMPLES
1520	REACHED 200 FEET
1530	CIRCULATING MUD THRU HOLE
1550	PULLING PIPE OUT OF HOLE PULLED FINAL DENSITY AND VISCOSITY
1630	FINISHED PULLING PIPE SHUT DOWN RIG
1645	DRILLER INFORMED ME LOGGER WILL BE OUT 3/26 @ 1100 - 1200
1700	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	3/25/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1030	9.2 lbs/gal 1100 KG/M³	76.86 SEC
Midpoint	1400	10.1 lbs/gal 1210 KG/M³	50.50 SEC
Ending	1550	10.3 lbs/gal 1230 KG/M³	42.30 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1 qt WATER = 26.18 SEC

DENSITY - 1 gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	3/26/03

DAILY ACTIVITIES

745	ARRIVE ON SITE AND SET UP
815	DRILLERS ARRIVE
900	CIRCULATING MUD THRU HOLE TO MAINTAIN INTEGRITY OF HOLE FOR LOGGING
1020	SAMPLED DENSITY AND VISCOSITY
1030	MILES ARRIVED TO DO GEOPHYSICAL LOGGING / MILES IS WITH SOUTHERN RESOURCE EXPLORATION
1035	PULLED PIPE FROM HOLE
1100	SETTING UP TO DO LOGGING AND LOGGING STARTED
1215	LOGGING COMPLETE MILES MAKING 6 FIELD PRINTOUTS 4 TO UNIVERSAL
	2 TO DIVERSIFIED FINAL REPORT AND ELECTRONIC DATA TO BE SENT TO DIVERSIFIED
1300	SHUTDOWN AND LEAVE SITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 3/26/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	910	10.25 lbs/gal 1230 kg/m³	49.42 sec
Midpoint	1035	10.0 lbs/gal 1200 kg/m³	37.37 sec
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 26.13 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	3/27/03

DAILY ACTIVITIES

745	ARRIVE ONSITE AND SET UP
840	DRILLERS ARRIVE WITH WELDER
900	LOWERING BIT INTO HOLE FOR REAMING
915	REAMING PILOT HOLE, WELDER WORKING ON CASING
930	MAKING MORE MUD AND CONTINUED DRILLING
1245	TOOK SAMPLES TO OFFICE
1345	RETURNED TO SITE
1400	REACHED 99'
1600	REACHED 110' CIRCULATING MUD THRU HOLE TO MAINTAIN INTEGRITY
1730	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 3/27/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	915	9.6 lbs/gal 1150 KG/m³	44.17 SEC
Midpoint	1230	9.1 lbs/gal 1090 KG/m³	36.34 SEC
Ending		9.2 lbs/gal 1100 KG/m³	42.90 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH Funnel - 1qt WATER = 26.12 SEC

DENSITY - 1qm WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	3/28/03

DAILY ACTIVITIES

615	DRILLERS ARRIVE AND BEGIN CIRCULATING MUD THRU HOLE
745	ARRIVE ON SITE MEASURE AND MARK CASINGS
830	LOGGER ARRIVES - MILES WITH SOUTHERN RESOURCE
845	PULL PIPE AND PREP FOR LOGGING
900	LOWER GAMMA PROBE INTO HOLE
1000	LOGGING COMPLETE READY TO START SETTING CASING
1015	SETTING CASING #1 = 21' 1"
1030	SETTING CASING #2 = 21' ½"
1045	SETTING CASING #3 = 21' 1"
1100	SETTING CASING #4 = 21' 1"
1115	SETTING CASING #5 = 21' 1"
1200	SETTING CASING #6 = 7' 7½"
1300	TOTAL DEPTH OF CASING 110' BLS 3 FT ABOVE LAND SURFACE
1315	WELDING TOP ON CASING TO PUMP GROUT INTO
1330	WELDER QUIT WORKING NEED A DIFFERENT ONE
1400	BUTCH ARRIVES WITH A NEW WELDER FINISHED WELDING CASING TOP
1430	READY FOR CEMENT
1530	CEMENT ARRIVED
1540	CEMENTING IN CASING
1610	CEMENTING COMPLETE
1630	PULLED 20 FEET OF 2" PIPE OUT OF CASING
1645	JOB SHUTDOWN FOR WEEKEND

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARRA MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	3/28/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1540	15.5 lbs/gal
Midpoint	1555	15.25 lbs/gal
Ending	1610	15.10 lbs/gal
Total Volume Pumped:	6 YDS	

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1gal WATER = 8.3 lbs/gal

R.D. Keene Park Well Oversight: Work completed March 31 through April 4, 2003:

March 31, 2003: Drilled through cement cap located 109 feet bls. Pumped mud from borehole. Diversified moved equipment around to begin reverse air drilling

April 1, 2003: Began reverse air at 103' feet bls. Drilled 14" borehole, 103 to 322 feet bls.

April 2, 2003: Drilled 14" borehole, 322 to 402 feet bls.

April 3, 2003: Drilled 14" borehole, 402 to 442 feet bls.

April 4, 2003: Drilled 14" borehole, 442 to 502 feet bls.

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MIHER
Date:	3/31/01

DAILY ACTIVITIES

845	ARRIVE ONSITE AND SET-UP
1000	DRILLERS ARRIVE
1015	PULL 2" PIPE OUT OF CASING
1030	CUT OFF TOP OF 14" CASING
1045	SWITCHING OUT DRILL BITS
1100	LOWERING PIPE INTO HOLE
1145	ENCOUNTERED PLUG AT 109' BLS
1200	MIXING MUD TO CUT THRU CEMENT CAP AT 109'
1230	PUNCHED THRU CEMENT PLUG
1300	CIRCULATING MUD THRU HOLE
1400	CIRCULATING MUD THRU HOLE AND PREPPING RIG FOR REVERSE AIR
1500	CIRCULATING MUD AND PREPPING RIG
1530	CIRCULATION CEASED DISPOSING OF MUD PREPPING FOR REVERSE AIR
1600	RECONFIGURING SITE FOR REVERSE AIR
1700	PUMPING MUD OUT OF HOLE AT 103'
1715	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	3/31/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1210	8.9 lbs/gal	46.73 SEC
Midpoint	1400	8.7 lbs/gal	48.26 SEC
Ending	1515	8.7 lbs/gal	48.32 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 26.18 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/1/03

DAILY ACTIVITIES

745	ARRIVE ON SITE
820	DRILLERS ARRIVE
830	STARTED REVERSE AIR AT 183' TO GET DRILLING MUD OUT OF HOLE
1130	DOWN TO 190' WITH REVERSE AIR STILL MUDDY DISCHARGE
1140	REACHED 201'8" PUMPING WATER TIL CLEAR
1300	STARTED DRILLING FROM 202' DOWN
1330	DOWN TO 221'8"
1445	DOWN TO 241'8"
1530	DOWN TO 261'8"
1620	DOWN TO 281'8"
1635	DOWN TO 301'8"
1715	DOWN TO 321'8"
1730	DRILLING RIG SHUT DOWN
1745	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/1/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
20' 8"		32.24	330	8.57	23.6	<500 ~~5000~~ mg/L
#8 20FT	28:00	34.64	320	8.58	23.7	<500 ~~5000~~ mg/L
#9 20 FT	73 min 32 sec	34.33	281	8.98	23.7	<500 ~~5000~~ mg/L
#10 20FT	28 min 11 sec	33.20	271	8.95	23.4	<500 ~~5000~~ mg/L
#11 20FT	21 min 37 sec	31.33	283	8.59	23.3	<500 ~~5000~~ mg/L
#12 20FT	14 min 16 sec	30.80	279	8.55	23.3	<500 ~~5000~~ mg/L
#13 20 FT	14 min 52 sec	30.45	276	8.44	23.4	<500 ~~5000~~ mg/L

CALIBRATION INFORMATION

PH 4.01 = 3.97 7.00 = 6.98 10.00 = 9.97

COND - 447 = 447 15000 = 14999

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/2/03

DAILY ACTIVITIES

715	AT OFFICE CONSULTING WITH MELISSA
815	ARRIVE ON SITE & SET-UP STATIC WATER LEVEL = 26.00 FT
830	DRILLERS ARRIVE - FUELING EQUIPMENT
900	STARTED DRILLING AT 321'8"
940	ENCOUNTERED BROWN LIMESTONE AT 337'
1000	REACHED 341'8"
1255	REACHED 361'8"
1430	REACHED 381'8" HAD TO UNCLOG DISCHARGE LINE(WE) NOT INCLUDED IN DRILL TIME
1700	REACHED 401'8"
1745	RIG SHUTDOWN FOR THE DAY
1800	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/2/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#14 20FT	56min 15Sec	31.10	303	8.64	23.8	< 500mg/L
#15 20FT	2HRS 37m 5Sec	27.98	300	8.48	23.7	< 500mg/L
#16 20FT	1HR 9min 14Sec	27.66	298	8.30	23.7	< 500mg/L
#17 20FT	2HRS 17MIN	27.39	314	8.35	23.9	< 500mg/L

CALIBRATION INFORMATION

PH 4.01 = 3.98 7.0 = 7.00 10.00 = 9.97

COND 447 = 447 15000 = 15000

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/3/03

DAILY ACTIVITIES

745	ARRIVE ON SITE STATIC WATER LEVEL = 26.62
800	DRILLERS ARRIVE
830	STARTED DRILLING FROM 401'8"
1200	REACHED 421'8" VERY HARD BROWN LIMESTONE
1730	REACHED 441'8" VERY HARD BROWN LIMESTONE
1745	RIG SHUTDOWN FOR DAY
1815	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/3/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#18 20FT	3HRS 25MIN	27.19	310	8.26	23.8	<500mg/L
#19 20FT	5HRS 5MIN	27.58	303	8.40	23.6	<500mg/L

CALIBRATION INFORMATION

PH-4.01=3.99 7.00=7.01 10.00=9.98

Cond. 447=447 15000=15000

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/4/03

DAILY ACTIVITIES

745	ARRIVE ON SITE AND SET-UP STATIC WATER LEVEL = 26.66
800	DRILLER ARRIVES
830	STARTED DRILLING AT 441'8"
930	DRILL BIT STUCK AT 444'
1115	BIT UNSTUCK RESUME DRILLING
1245	2 HRS 10 MIN INTO DRILLING AT 450'
1335	REACHED 461'8"
1355	CONNECTIONS MADE RESUME DRILLING
1505	REACHED 481'8"
1615	REACHED 501'8"
1630	RIG SHUTDOWN FOR WEEKEND
1700	FINISH SIFTING SAMPLES AND PACKING UP
1715	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/4/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#20 20FT	3HRS 9MIN	27.37	323	8.31	24.2	<500mg/L
#21 20FT	1 HR 6MIN	27.36	303	8.40	25.0	<500mg/L
#22 20FT	54MIN	27.24	294	8.37	24.4	<500mg/L

CALIBRATION INFORMATION

pH - 4.01 = 3.99 7.00 = 7.01 10.00 = 9.99

Cond 447 = 447 15000 = 14999

R.D. Keene Park Well Oversight: Work completed April 7 through 11, 2003:

April 7, 2003: Drilled 14" borehole, 502' to 632' bls

April 8, 2003: Drilled 14" borehole, 632' to 650' bls (end of boring)

April 9, 2003: Installed 60 hp pump, developed well; approximately 5 feet of draw down

April 10, 2003: Start logging well, completed gamma log, obstruction encountered approximately 336' bls during caliper, pulled probe and pump, placed drill pipe back into hole and opened borehole to 650' again, re-installed pump and developed well

April 11, 2003: Completed logging

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/7/03

DAILY ACTIVITIES

730	WENT INTO OFFICE DROP OFF LOGS AND TIMESHEET
830	ARRIVE ONSITE STATIC WATER LEVEL = 28.09
845	CLEARING HOLE OF ROCKS THAT FELL IN OVER WEEKEND
925	STARTED DRILLING AT 501'8"
1035	REACHED 521'8"
1045	CONTINUED DRILLING
1125	REACHED 541'8"
1220	REACHED 561'8"
1330	REACHED 581'8"
1440	REACHED 601'8"
1600	REACHED 621'8"
1650	DISCHARGE LINE PLUGGED UP AT 624'
1730	RIG SHUT DOWN FOR DAY DEPTH 632'
1745	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/7/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#23 20FT.	1HR 7MIN	29.13	330	8.68	24.0	<500mg/L
#24 20FT	40MIN	28.82	325	8.30	23.9	<500mg/L
#25 20FT	40MIN	29.00	321	8.58	23.9	<500mg/L
#26 20FT	53MIN	29.00	319	8.32	24.3	<500mg/L
#27 20FT.	1HR	29.45	293	8.93	24.3	<500mg/L
#28 20FT.	1HR 14MINS	29.13	315	8.56	24.3	<500mg/L
~~#29~~						

CALIBRATION INFORMATION

PH - 4.01 = 3.99 7.00 = 7.01 10.00 = 9.98

COND - 447 = 447 15000 = 14999

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/8/03

DAILY ACTIVITIES

745	ARRIVE ON SITE STATIC WATER LEVEL = 28.25
820	DRILLERS ARRIVE
830	STARTED EQUIPMENT AND DRILLING
935	REACHED 641'8'
1030	REACHED 651'8" PUMPING CUTTINGS OUT OF HOLE
1130	PULLING PIPE FROM 651'8"
1445	ALL DRILLING PIPE PULLED FROM WELL STATIC WATER LEVEL = 28.00
	CONFIGURING RIG TO BE MOVED ON WEND. MORNING
1545	JOB SHUT DOWN FOR DAY PUMP SHOULD BE DELIVERED WEND MORN
1615	PACKED UP AND LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/8/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	Viscosity
Before Pumping		
Midpoint		
Ending		
Total Volume Pumped:		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#29 20 FT	~~28.78~~ 1 HR 27 MIN	28.78	326	8.34	24.0	< 500 mg/L
#30 10 FT	42 MIN	28.52	325	8.20	23.7	< 500 mg/L

CALIBRATION INFORMATION

PH - 4.01 = 4.00 7.00 = 7.01 10.00 = 9.98

COND 447 = 447 15000 = 15000

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/9/03

DAILY ACTIVITIES

750	ARRIVE ON SITE STATIC WATER LEVEL = 27.96
900	DRILLERS ARRIVE
915	WELDING PLATFORM ON RIG TO MOVE IT
945	RIG MOVED SETTING PUMP DOWN INTO WELL 60HP PUMP
1045	PUMP SET AT 63' DOWN
1130	RIGGING DISCHARGE LINES AND SETTING UP GENERATOR
1200	BEGAN PUMPING WELL DISCHARGE RATE 1000 GPM WATER LEVEL 27.50
1300	WATER LEVEL - 32.16 TOTAL VOLUME DISCHARGED 60,000 GALS DRAWDOWN - 4.66 FT TO
1400	WATER LEVEL - 32.30 TOTAL VOL. DISCH. 120,000 GALS DRAWDOWN 4.8 FT TOTAL
1500	WATER LEVEL - 32.52 TOT. VOL. DISCH. 180,000 GALS DRAW DOWN - 5.02 FT. TOTAL
1600	WATER LEVEL 32.52 TOT. VOL. DISCH. 240,000 GALS DRAWDOWN 5.02 TOTAL
1700	WATER LEVEL 32.45 TOT VOL DISCH. 300,000 GALS DRAWDOWN 4.95 TOTAL
1715	PACKED UP AND LEFT JOBSITE

1-E. KEENE WELL #1 4/9/03

1200	27.50	1700	32.45
1202	31.58		
1205	31.53	TOTAL VOLUME PUMPED	
1210	31.70	300,000 GALLONS	
1215	31.86		
1220	31.88		
1225	31.95		
1230	32.05		
1235	32.09		
1240	32.14		
1245	32.09		
1250	32.10		
1255	32.10		
1300	32.16		
1305	32.18		
1310	32.20		
1315	32.20		
1320	32.25		
1325	32.25		
1330	32.28		
1335	32.28		
1340	32.28		
1345	32.30		
1350	32.31		
1355	32.30		
1400	32.30		
1500	32.52		
1600	32.52		

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight
Reference: R.D. Keene Park

Project No.: 12666-001-01

Technician: DARREN MILLER

Date: 4/10/03

DAILY ACTIVITIES

745	ARRIVE ONSITE STATIC WATER LEVEL 26.95
800	LOGGER AND DRILLERS ARRIVE
815	SETTING UP TO DO LOGGING
845	LOWERING GAMMA PROBE
1000	LOWERED CALIPER PROBE ENCOUNTERED PROBLEM AT 336' PULLED PUMP
	OUT OF WELL AND WILL TRY LOWERING CALIPER AGAIN
1045	DETERMINED BOULDER HAD FALLEN INTO HOLE AT 336' REPOSITIONED RIG
	TO TRIP BACK INTO HOLE
1300	TRIPPED BACK INTO HOLE TO 640' ENCOUNTERED NOTHING ALL
	THE WAY DOWN
1310	ENCOUNTERED CEMENT AT 646' DRILLING OUT TO 651'8"
1430	DRILLED TO 650' LETTING REVERSE AIR CIRCULATE FOR A WHILE
1515	TRIPPING OUT OF HOLE
1630	TRIPPED OUT LEAVING RIG TO PLACE GETTING READY FOR LOGGING
1700	RIG SHUTDOWN AND LEAVING JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/11/03

DAILY ACTIVITIES

745	ARRIVE ONSITE LOGGER ALREADY HERE ARRIVED 7:15
800	DRILLERS ARRIVE LOGGING
1200	LOWERED PUMP INTO WELL STATIC WATER 27.00
1300	RUNNING FLOW LOG DRAWDOWN 30.00 3 FT
1430	LOGGING COMPLETED
1530	COPIES OF PRINTOUT RECIEVED LEFT SITE FOR OFFICE

R.D. Keene Park Well Oversight: Work completed April 14 through 18, 2003:

April 14, 2003: Installed 125 hp pump into well for step test

April 15, 2003: Developed well using 125 hp pump, approximately 13 feet of draw down

April 16, 2003: Performed step test - logged information using a Hermit 3000 and manually, e-mailed Hermit results to SFWMD, pulled 125 hp pump

April 17, 2003: Stand by, waiting placement of additional wells

April 18, 2003: Stand by, waiting placement of additional wells

FLOW 2450 GPM R.D. KEENE 4/15/03

830	STATIC 28.30
835	40.43
840	40.32
845	40.53
850	40.90
855	41.23
900	41.40
905	41.69
910	41.60
915	41.62
920	41.70
925	41.75
930	41.78
935	41.85
940	41.94
945	41.93
950	41.98
955	42.08
1000	42.10

13.8 FT DRAWDOWN

220,500 GALLONS DISCHARGED

R.D. Keene Park Well Oversight: Work completed April 21 through 25, 2003:

April 21, 2003: Diversified relocated rig to Well No.2. (No UES oversight)

April 22, 2003: Drilled pilot hole to 80 feet bls. Soil samples collected.

April 23, 2003: Reamed pilot hole. Set pit casing and grouted casing in place.

April 24, 2003: Drilled through plug and continued drilling. Lost circulation at 108' bls.

April 25, 2003: Installed 6" surface casing, total depth 110' 2" bls. Pumped 6 cy of concrete to grout casing in place and to fill void.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01 WELL #2
Technician:	DARREN MILLER
Date:	4/22/03

DAILY ACTIVITIES

745	ARRIVE ON-SITE AND SET-UP
820	DRILLERS ARRIVE
840	MAKING UP DRILLING MUD
1005	STARTED DRILLING
1330	REACHED 80' ON PILOT HOLE
1400	TRIP OUT OF HOLE
1445	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01 WELL #2	**Date:**	4/22/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	930	8.6 lbs/gal 1030 kg/m³	35.86 SEC
Midpoint	1230	9.6 lbs/gal 1150 kg/m³	58.68 SEC
Ending	1400	9.6 lbs/gal 1150 kg/m³	58.67 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 25.62 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/23/03

DAILY ACTIVITIES

745	ARRIVE ON SITE AND SET-UP
810	DRILLERS ARRIVE AND SET-UP
830	CONTINUING REAMING OF PILOT HOLE FROM 20' ON DOWN
845	MEASURE CASING
930	REAMING COMPLETE WAITING ON WELDER
1000	WELDER ARRIVED
1030	SETTING FIRST SECTION OF 14" CASING 20'6"
1105	SETTING SECOND SECTION OF CASING 21'1"
1130	SETTING THIRD SECTION OF CASING 20'7" TOTAL 62'2"
1315	CASING SET HEADER INSTALLED
1330	INSTALLING TUBING FOR GROUT WAITING ON MUD
1400	SETTING UP CONCRETE PUMP
1515	CEMENT ARRIVES GROUTED CASING IN PLACE
1645	PULLED TUBING OUT OF CASING TO SIT OVERNIGHT
1700	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/23/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	830	9.2 lbs/gal 1105 kg/m³	41.73 SEC
Midpoint			
Ending	930	9.0 lbs/gal 1080 kg/m³	38.32 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1530	15.0 lbs/gal
Midpoint	1535	15.3 lbs/gal
Ending	1545	15.4 lbs/gal
Total Volume Pumped: 3 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 26.13 SEC

DENSITY - 1 GAL WATER = 8.3 lbs/GAL

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/24/03

DAILY ACTIVITIES

730	GO BY OFFICE DROP OFF FINAL LOGS TO MELISSA
800	GO BY TOWEYS PLU JARS AND PAPER TOWELS
850	ARRIVE ON SITE AND SET-UP DRILLERS ARRIVE 5 MIN LATER
900	CUT AND REMOVE HEADER FROM CASING
1000	TRIP INTO HOLE AND TAG PLUG AT 55'
1030	CIRCULATING MUD FOR DRILLING
1045	CUTTING THRU PLUG IN CASING
1100	TRIPED DOWN TO 80'
1115	DRILLING FROM 80'
1400	REACHED 100'
1545	LOST CIRCULATION AT 108' SPOT DRILLING ON DOWN
1615	REACHED 114' WITH SPOT DRILLING
1630	READY TO SET 6" CASING TOMORROW
1700	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/24/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1045	8.7 lbs/gal 1045 Kg/m³	29.14 SEC
Midpoint	1350	10.1 lbs/gal 1210 Kg/m³	3mm 54.35EC
Ending	1615	9.6 lbs/gal 1150 Kg/m³	67.30 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

MARSH FUNNEL - 1qt WATER = 25.86SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/25/03

DAILY ACTIVITIES

745	ARRIVE ON SITE AND SET-UP
750	DRILLERS ARRIVE BEGIN PREPPING FOR CASING INSTALLATION AND SWITCH TO
	REVERSE AIR DRILLING
900	WELDER ARRIVED WAITING ON CASING TO ARRIVE
920	CASING ARRIVED FROM DIVERSIFIED
945	MEASURED CASING
1030	INSTALLING FIRST SECTION OF CASING 42' 1" 6"
1045	SETTING SECOND SECTION OF 6" CASING 42' 1" 6"
1110	WELDING 8" BELL ONTO 6" CASING
1120	SETTING FIRST SECTION OF 8" CASING ONTO BELL 8'
1145	SETTING SECOND SECTION OF 8" CASING 21' TOTAL 84' 2" OF 6"
	6" LONG 8" TO 6" BELL REDUCER 29' OF 8" 1 FT HEADER 8" TOTAL DEPTH BLS 110' 2" TOTAL LENGTH 114'8
1200	INSTALLING HEADER AND SETTING CASING CENTERED IN 14" CASING
1210	INSTALLING TUBING INSIDE HEADER FOR CEMENT
1245	TUBING INSTALLED WAITING ON CEMENT
1350	CEMENT ARRIVED BY RINKER TRUCK
1400	PUMPING CEMENT INTO CASING 6 YDS TOTAL
1430	PUMPING COMPLETED LETTING CEMENT SETTLE INTO LOST CIRCULATION ZONE
1500	LETTING CEMENT CURE FOR AWHILE BEFORE PULLING TUBING
1600	PULLED TUBING TO DETERMINE DEPTH OF CEMENT AND AMOUNT NEEDED TO FINISH
	SETTING CASING ON MONDAY
1645	FILLED ZONE SPACE WITH WATER WILL TAG PLUG ON MONDAY
1700	LEFT JOBSITE.

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/25/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1400	15.2 lbs/gal 1825 KG/m³
Midpoint	1415	15.2 lbs/gal 1825 KG/m³
Ending	1430	15.2 lbs/gal 1825 KG/m³
Total Volume Pumped:	6 YDS	

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 gal WATER = 8.3 lbs/gal

R.D. Keene Park Well Oversight: Work completed April 28 through May 2, 2003:

April 28, 2003: Plug not tagged within 97 feet of the land surface. Pumped 4 cy of concrete to fill void.

April 29, 2003: Plug 69 feet bls. Pumped 3 cy of concrete to finish grouting casing in place.

April 30, 2003: Drilled through plug. Drilled from 120 feet bls to 203 feet bls using reverse air. Bore hole appeared to be collapsing from approximately 140 feet bls; discharge would not run clear.

May 1, 2003: Drilled from 203 feet bls to 343 feet bls using reverse air. Discharge still not running clear.

May 2, 2003: Casing dropped approximately one foot over night. Bore hole has filled to approximately 335 feet bls. Decision made to fill bore hole to approximately 140 feet bls using sand, will place concrete plug above the fill and then grout up around the base of the casing to secure the casing in place. Began filling bore hole with sand.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/28/03

DAILY ACTIVITIES

815	ARRIVE ON SITE
900	DRILLERS ARRIVE AND START SETTING UP TO TAG
940	LOWERED 97' OF TUBING INTO HOLE AND STILL DIDN'T TAG PLUG
945	SETTING UP TO PUMP 4 YDS OF CEMENT INTO CASING
1000	WAITING ON CEMENT
1100	CEMENT ARRIVES PUMP 4 YDS INTO CASING
1200	PUMPING COMPLETE
1245	PULLED TUBING OUT OF HOLE WILL TAG PLUG IN THE MORNING
1300	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/28/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1110	15.1 lbs/gal
Midpoint	1120	15.2 lbs/gal
Ending	1135	15.2 lbs/gal
Total Volume Pumped: 4 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 GAL WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight
Reference:	R.D. Keene Park
Project No.:	12666-001-01
Technician:	DARREN MILLER
Date:	4/29/03

DAILY ACTIVITIES

750	ARRIVE ON SITE DRILLERS ALREADY HERE
830	TAGGED CEMENT AT 69' DOWN NEED 3 YDS CEMENT TO ENCLOSE CASING
845	SET UP FOR PUMPING CEMENT WAITING ON CEMENT
1035	CEMENT ARRIVES
1045	PUMPING CEMENT INTO CASING
1105	PUMPING COMPLETED LETTING CEMENT SETTLE AND CURE
1200	PULLED TUBING OUT OF CASING CEMENT CURING OVERNITE [redacted]
1220	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	4/29/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ Density
Before Pumping	1045	15.0 lbs/gal
Midpoint	1050	14.8 lbs/gal
Ending	1100	14.9 lbs/gal
Total Volume Pumped:	3 yds	

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 GAL WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:**
Project No.: 12666-001-01	**Time Left:**
Technician: DARREN MILLER	**Travel Time:**
Date: 4/30/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID:	**Water Level:**
Notes:	

DAILY ACTIVITIES

750	ARRIVE ON SITE
810	DRILLERS ARRIVE
830	CUTTING OFF HEADER
845	LOWERING DRILL PIPE INTO CASING
1020	TAGGED CEMENT AT 107' DRILLING THRU PLUG
1045	RAN OUT OF PLUG AT 114'
1055	DRILLED TO 120' REVERSE AIR DISCHARGE LINE PLUGGED
1130	REACHED 123' WATER LEVEL 29.52
1245	REACHED 143' WATER LEVEL 29.81
1330	REACHED 163' WATER LEVEL 30.20
1415	REACHED 183' WATER LEVEL 30.24
1515	REACHED 203' WATER LEVEL 30.10
1545	RUNNING REVERSE AIR TRYING TO CLEAR UP THE WATER
1615	HOLE APPEARS TO BE COLLAPSING IN ON ITSELF FROM 140'
1630	STILL TRYING TO CLEAR UP THE WATER DISCHARGE
1645	SHUT DOWN RIG FOR THE DAY STARTED RAINING
1650	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 4/30/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
123FT		29'5.2"	229	10.30	25.9	40mg/L
#4 20FT	48MIN 18SEC	29FT 8.1IN	235	10.26	24.9	40mg/L
#5 20FT	29MIN 1SEC	30.2FT	292	10.49	24.6	40mg/L
#6 20FT	22MIN 47SEC	30.24FT	262	10.39	24.5	40mg/L
#7 20FT	42MIN 45SEC	30.10FT	276	9.67	24.2	40mg/L

CALIBRATION INFORMATION

PH 4.0 = 3.99 7.0 = 7.01 10.0 = 9.99

COND 447 = 447 15000 = 14999

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left: 1700
Technician: DARREN MILLER	Travel Time:
Date: 5/1/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #2	Water Level: 27.65
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON-SITE STATIC WATER LEVEL 27.65 RAINING
840	DRILLERS ARRIVE - STILL RAINING
915	RAIN SLACKENING OFF - SERVICING RIG
945	STARTED DRILLING AT 203' - RAIN RETURNING NO CAVE-IN FOUND
1045	REACHED 223' WATER LEVEL 29.10 STILL RAINING
1200	REACHED 243' WATER LEVEL 29.25 RAIN DECREASING
1310	REACHED 263' WATER LEVEL 29.10 RAIN CEASED
1330	REACHED 283' WATER LEVEL 28.94 SPRINKLING
1400	REACHED 303' WATER LEVEL 28.80 RAIN STOPPED
1435	REACHED 323' WATER LEVEL 28.68
1600	REACHED 343' WATER LEVEL 28.37 TRYING TO CLEAR UP WATER
1645	TRIPPING OUT 10 SECTIONS OF PIPE IN CASE OF CAVE-IN
1700	SHUTDOWN RIG LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	5/1/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#8 20FT	48 MIN	29.10	298	9.40	23.6	60 mg/L
#9 20FT	43 MIN	29.25	311	9.53	23.6	60 mg/L
#10 20FT	44 MIN 38 SEC	29.10	313	9.40	24.0	60 mg/L
#11 20FT	17 MIN	28.94	307	9.29	23.7	60 mg/L
#12 20FT	18 MIN 11 SEC	28.80	301	9.20	24.3	60 mg/L
#13 20FT	17 MIN 23 SEC	28.68	302	9.14	24.1	60 mg/L
#14 20FT	65 MIN	28.37	312	9.19	24.1	60 mg/L

CALIBRATION INFORMATION

PH- 4.0 = 3.98 7.0 = 7.0 10.0 = 9.99

COND 447 = 447 1413 = 1412

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 750
Project No.: 12666-001-01	Time Left:
Technician: DARREN MILLER	Travel Time:
Date: 5/2/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: #2	Water Level: 26.3 TOC
Notes:	

DAILY ACTIVITIES

750	ARRIVE ON SITE DRILLERS ARRIVED SAME TIME
800	TAKE WATER LEVEL NOTICE CASING HAS DROPPED ABOUT 1' DOWN THE HOLE
845	DIVERSIFIED HAS DETERMINED TO TRIP INTO HOLE TO DETERMINE IF ANY
	FILL HAS DROPPED INTO HOLE SFWMD HAS BEEN CONTACTED TO COME
	OUT AND LOOK OVER THE SITUATION
915	ENCOUNTERED FILL AT ABOUT 335' TRYING TO RUN REVERSE AIR
	TO BLOW OUT FILL AND CLEAN UP HOLE
1000	DECISION HAS BEEN MADE TO TRIP OUT OF HOLE FILL HOLE TO ABOUT
	140' MAKE CONCRETE PLUG LET SIT AND CURE OVER WEEKEND THEN
	PRESSURE GROUT AROUND CASINGS ON MONDAY
1030	TRIPPING OUT OF HOLE LOWER 80' OF PIPE FULL OF FINE SAND
1130	ALL PIPE OUT OF HOLE DRILLER GETTING HOPPER TO PUT SAND DOWN
	HOLE ALSO CONCRETE FOR PLUG
1215	WELDER ARRIVED TO WELD CASING
1230	DRILLERS RETURNED ARE PREPPING HOLE TO POUR SAND INTO
1345	TRIPPING INTO HOLE TO DEPTH OF 200'
1430	POURING SAND AND WATER INTO HOLE TO FILL IT UP TO 130'
1700	POURED SAND AND WATER INTO HOLE AND STILL HAVE NOT FILLED UP HOLE
1720	TRIPPED OUT TO INSIDE OF CASING WILL TAG ON MONDAY AND FILL
	FROM THERE LEFT JOBSITE

R.D. Keene Park Well Oversight: Work completed May 5 through May 9, 2003:

May 5, 2003: Continued to backfill borehole. Placed concrete plug approximately 131 feet bls.

May 6, 2003: Pressure grouted casing in place; pumped approximately 6 CY of cement.

May 7, 2003: Continued pressure grouting; pumped approximately 3 CY of cement.

May 8, 2003: Drilled through plug at base of casing. Walls of borehole appear to continue to collapse into hole; development water will not run clear.

May 9, 2003: Decision made to abandon current borehole and move Well No. 2 to a new location. Chris Sweazy, SFWMD, marked location in field and Diversified began moving equipment. Plan is to set pit casing 80 to 90 feet bls and surface casing 140 to 150 feet bls.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 840
Project No.: 12666-001-01	Time Left: 1430
Technician: DARREN MILLER	Travel Time:
Date: 5/5/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #2	Water Level:
Notes:	

DAILY ACTIVITIES

840	ARRIVE ON SITE DRILLERS ALREADY HERE
845	TAGGED SAND AT 152' POURING MORE SAND AND WATER DOWN HOLE
1030	FILLING CONCRETE DRILLER GETTING CEMENT TO PLACE PLUG
1415	PLUG IN PLACE AT 131' LEFT JOBSITE

Document No. 272205

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left:
Technician: DARREN MILLER	Travel Time:
Date: 5/6/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID:	Water Level:
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON-SITE WAITING ON DRILLERS TO TAG PLUG
815	DRILLERS ARRIVED
830	TAGGED PLUG AT 122' TRIPPING DRILL PIPE OUT OF HOLE
900	SCREWING ON HEADER AND INSTALLING PIPE FOR PRESSURE GROUTING
1030	WAITING ON PUMPER TRUCK AND CEMENT TO ARRIVE
1245	PUMPER TRUCK ARRIVED WAITING ON CEMENT
1305	CEMENT HAS ARRIVED.
1415	PUMPED ABOUT 6 YDS OF GROUT INTO CASING AFTER SETTING
	FOR A SHORT TIME SUCTION OCCURED AND CEMENT LEVEL WAS
	GREATLY DECREASED
1430	SHUT DOWN FOR DAY LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	5/6/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1340	14.9 lbs/GAL 1730 KG/m³
Midpoint	1350	14.5 lbs/GAL 1740 KG/m³
Ending	1400	14.4 lbs/GAL 1730 KG/m³
Total Volume Pumped: 6 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 GAL WATER = 8.3 lbs/GAL

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 800
Project No.: 12666-001-01	**Time Left:**
Technician: DARREN MILLER	**Travel Time:**
Date: 5/7/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2	**Water Level:**
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE DRILLERS ALREADY HERE TAGGED CEMENT AT 114'
815	PRESSURING HOLE TO CHECK FORMATION
830	PUMPING CEMENT INTO HOLE
845	PUMPING COMPLETED WAITING CEMENT SETTLE
930	HOLE STILL HAS SUCTION MORE CEMENT WILL BE NEEDED
	DRILLER WILL TAG PLUG LATER TODAY AND NOTIFY ME AS TO THE
	DEPTH OF PLUG AND AMOUNT OF CEMENT HE WILL PUMP INTO HOLE
	ON THURSDAY
1000	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	5/7/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	835	14.5 lbs/gal 1740 Kg/m³
Midpoint	840	14.2 lbs/gal 1710 Kg/m³
Ending	845	14.4 lbs/gal 1730 Kg/m³
Total Volume Pumped: 3 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY -- 1 gal = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left:
Technician: DARREN MILLER	Travel Time:
Date: 5/8/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID:	Water Level:
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE
830	DRILLERS ARRIVE TAG PLUG AT 110' PRESSURIZING CASING
900	WILL DRILL OUT PLUG IN CASING AND GET READY FOR MORE CEMENT OR DETERMINE WHETHER THE FORMATION HAS BEEN SEALED
1300	DRILLER DOWN TO 123' TRYING TO CLEAN UP WATER APPEARS THAT THIS DEPTH IS BACK INTO FORMATION.
1430	DRILLING ON DOWN TO 143' TO DETERMINE IF DEPTH IS STILL IN FORMATION OR CEMENT.
1630	DRILLING VERY SLOWLY TO CLEANOUT HOLE AND CLEAN UP WATER.
1700	WATER WONT CLEAR UP
1715	LEFT JOBSITE

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:**
Project No.: 12666-001-01	**Time Left:**
Technician: DARREN MILLER	**Travel Time:**
Date: 5/9/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2	**Water Level:**
Notes:	

DAILY ACTIVITIES

AT 800 AM. THIS MORNING DIVERSIFIED CONTACTED UNIVERSAL TO LET US KNOW THAT THE DETERMINATION HAD BEEN MADE TO ABANDON THIS WELL. SFWMD WILL RESTAKE A LOCATION FOR THIS 6" WELL AND DIVERSIFIED WILL RELOCATE TO THIS STAKE AND BEGIN DRILLING. IT WAS DECIDED THAT THE 12" CASING WOULD BE SET AT 80 TO 90 FEET AND THE 6" CASING WILL BE SET AT 140-150 FEET TO KEEP THIS PROBLEM FROM HAPPENING ON NEXT WELL.

R.D. Keene Park Well Oversight: Work completed May 12 through May 16, 2003:

May 12, 2003: Began drilling pilot hole for Well No. 2R (replacement well). Drilled to 82 feet bls. Well is located approximately 17 feet east of original location (17 feet closer to Well No. 1).

May 13, 2003: Advanced pilot hole from 82 feet bls to 104 bls. Reamed hole. Prepared 14" casing.

May 14, 2003: Set 102'7" of 14 inch casing. Pressure grouted casing into place; pumped approximately 8.8 CY of cement.

May 15, 2003: Drilled through plug which was tagged approximately 98 feet bls. Spot drilled to 142 feet bls in order to set six inch casing. Lost circulation at approximately 109.5 feet bls while drilling.

May 16, 2003: Checked bottom of borehole which was encountered approximately 142 feet bls. Prepared six inch casing. Will install casing on Monday, as Diversified could not get a delivery until Monday.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 1230
Project No.: 12666-001-01	**Time Left:** ~~Done~~ 1730
Technician: DARREN MILLER	**Travel Time:** 1.0 HR
Date: 5/12/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2-R	**Water Level:**
Notes:	

DAILY ACTIVITIES

1230	ARRIVE ONSITE SPOKE TO DRILLER FINAL PREPARATIONS TO START DRILLING BEING MADE.
1330	DRILLING MUD BE MADE UP AND CIRCULATED
1415	TANK HOLDING DRILLING MUD ROLLED OVER SPILLING MUD
1500	TANK UPRIGHTED FRESH MUD MADE UP READY TO DRILL
1515	STARTING PILOT HOLE
1720	DRILLED TO 82' SHUT DOWN FOR DAY
1730	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/12/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1570	8.6 lbs/gal	45.0 SEC
Midpoint	1630	9.0 lbs/gal	44.51 SEC
Ending	1720	9.6 lbs/gal	44.28 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.15 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

Document No. 272205

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 820
Project No.: 12666-001-01	Time Left: 1715
Technician: DARREN MILLER	Travel Time: 1.0 HR
Date: 5/13/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	Water Level:
Notes:	

DAILY ACTIVITIES

820	ARRIVE ON SITE AND SET-UP
835	DRILLERS ARRIVE
900	STARTED DRILLING AT 83'
1130	REACHED 123' GETTING INTO ROCK
1400	REACHED 104' CIRCULATING MUD THRU HOLE
1500	REAMING OUT HOLE UNLOADING CASING
1545	MEASURING CASING WELDING EARS ONTO CASING PLAN ON SETTING 14"
	CASING DOWN TO 98'
1700	CASING ALL READY TO INSTALL IN THE MORNING
1715	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/13/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	900	9.6 lbs/gal	48.77 SEC
Midpoint	1130	9.8 lbs/gal	53.07 SEC
Ending	1500	10.1 lbs/gal	55.19 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.21 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 800
Project No.: 12666-001-01	**Time Left:** 1700
Technician: DARREN MILLER	**Travel Time:** 1.0 HR
Date: 5/14/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	**Water Level:**
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE DRILLERS ALREADY HERE ONE SUPPORT SUNK INTO
	GROUND WILL HAVE TO RELEVEL RIG AND REREAM HOLE
1000	HOLE REDRILLED CIRCULATING MUD WAITING ON WELDER
1045	WELDER ARRIVED FINISHING WELDING EARS ON CASING
1130	CEMENT PUMPER ARRIVED GETTING READY TO INSTALL CASING
1200	SETTING FIRST PIECE OF CASING 23' 5½"
1220	INSTALL SECOND PIECE OF CASING 11' 4"
1235	INSTALL THIRD PIECE OF CASING 21' ½" TOTAL DEPTH 102' 7"
1245	INSTALL FOURTH PIECE OF CASING 21'
1310	INSTALL FIFTH PIECE OF CASING 21' 1"
1330	INSTALL HEADER FOR CASING 4' 8"
1340	INSTALL TUBING FOR PRESSURE GROUT
1410	PUMPING CEMENT INTO CASING
1430	PUMPING COMPLETED
1500	LETTING CEMENT CURE
1700	PULLED PIPE UP THRU CASING LETTING CEMENT CURE OVERNIGHT

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/14/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1410	14.4 lbs/GAL
Midpoint	1420	13.8 lbs/GAL
Ending	1430	13.1 lbs/GAL
Total Volume Pumped: 8.8 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 GAL WATER = 8.3 lbs/GAL

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 830
Project No.: 12666-001-01	**Time Left:** 1700
Technician: DARREN MILLER	**Travel Time:** 1.0HR
Date: 5/15/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	**Water Level:**
Notes:	

DAILY ACTIVITIES

830	ARRIVE ON SITE
900	DRILLERS ARRIVE
915	PULLING PIPE COMPLETELY OUT OF CASING
930	CUTTING OFF HEADER
1000	HAVING TO REALIGN RIG ON HOLE
1130	TAGGED PLUG AT 98' READY TO DRILL THRU PLUG
1230	DRILLING THRU PLUG GOING TO 142' FOR 6" CASING
1330	DRILLING THRU ROCK AT 101'
1515	LOST CIRCULATION AT 109½' SHUT DRILLING DOWN TO 142'
1645	SHUT DRILLED TO 142'
1700	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/15/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1245	9.3 lbs/GAL	41.93 SEC
Midpoint	1445	9.0 lbs/GAL	40.17 SEC
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1 qt WATER = 26.09 SEC

DENSITY - 1 GAL WATER = 8.3 lbs/GAL

Document No. 272205

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 800
Project No.: 12666-001-01	**Time Left:** 1530
Technician: DARREN MILLER	**Travel Time:**
Date: 5/16/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL # 2R	**Water Level:**
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE
845	DRILLERS ARRIVE
900	TRIP INTO HOLE AND TAGGED BOTTOM AT 142'
1000	TRIPPED OUT OF HOLE WAITING ON WELDER
1230	KAREN WITH PB WATER ARRIVES ON SITE JUST CHECKING THINGS OUT
1330	KAREN LEFT AND WELDER ARRIVED
1400	WELDING EARS ONTO CASINGS
1500	CEMENT UNAVAILABLE UNTIL MONDAY
1530	LEFT JOBSITE

R.D. Keene Park Well Oversight: Work completed May 19 through May 23, 2003:

May 19, 2003: Surface casing installed to a depth of approximately 148 feet bls at Well No. 2R. Approximately 4.8 CY of cement used to grout casing in place.

May 20, 2003: Pumped an additional 6.4 CY of cement to grout casing in place.

May 21, 2003: Switched to reverse air. Drilled through plug and continued to 322 feet bls. Water level fluctuated from 34.8 to 31.7 feet bls.

May 22, 2003: Initial water level 29.02 feet bls. Drilled from 322 to 402 feet bls.

May 23, 2003: Initial water level 30.03 feet bls. Drilled from 402 to 562 feet bls. Secured well site for holiday weekend.

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DAILY LOG

PROJECT INFORMATION

Contract:	SFWMD Well Oversight		
Reference:	R.D. Keene Park	Time Arrived:	820
Project No.:	12666-001-01	Time Left:	1600
Technician:	DARREN MILLER	Travel Time:	1.0
Date:	5/19/03	Breaks:	

WATER LEVEL DATA - INITIAL

Well ID:	WELL #2R	Water Level:	
Notes:			

DAILY ACTIVITIES

820	ARRIVE ON SITE DRILLERS ALREADY HERE TRIPPING PIPE OUT
910	SETTING FIRST PIECE OF CASING 21'1"
925	SETTING SECOND PIECE OF CASING 21'1"
940	SETTING THIRD PIECE OF CASING 21'1"
950	SETTING FOURTH PIECE OF CASING 21'1"
1000	SETTING FIFTH PIECE OF CASING 21'1"
1010	SETTING 6" TO 8" BELL REDUCER 6"
1025	SETTING SIXTH PIECE OF CASING 21'1"
1045	SETTING SEVENTH PIECE OF CASING 21'1"
1105	CASING IN PLACE TOTAL DEPTH 148'1"
1115	INSTALLING PIPE FOR CEMENT
1130	PIPE READY WAITING ON CEMENT
1230	CEMENT PUMPER AND CEMENT ARRIVED [redacted] WITH PB WATER ALSO HERE
1300	PUMPING CEMENT INTO CASING
1330	PUMPING COMPLETED 4.8 YDS
1415	LETTING CEMENT SETTLE AND CURE
1600	PULLED PIPE OUT OF CASING CEMENT TO CURE OVERNIGHT HERE
	SOURCE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/19/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1300	14.0 lbs/gal
Midpoint	1310	14.1 lbs/gal
Ending	1320	14.1 lbs/gal
Total Volume Pumped: 4.8 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 gal WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:** 1515
Technician: DARREN MILLER	**Travel Time:** 1.0
Date: 5/20/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	**Water Level:**
Notes:	

DAILY ACTIVITIES

745	ARRIVE ON SITE DRILLERS ALREADY HERE
800	TAG CEMENT AT 110'
915	SHOT 2.3 YDS CEMENT INTO HOLE TO TRY AND SEAL VOID
930	PUMPING STOPPED WAITING CEMENT CURE
1300	GETTING READY TO PUMP MORE CEMENT INTO CASING
1340	PUMPING CEMENT INTO CASING 4.1 YDS PUMPED THIS TIME
1480	PUMPING COMPLETED TOTAL VOLUME 6.4 YDS RAINING HARD
1430	PULLING TUBING OUT OF CASING STILL RAINING
1445	RAIN SLACKING OFF CEMENT TO CURE OVERNIGHT
1515	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	5/20/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	915	14.3 lbs/gal
Midpoint	1340	12.8 lbs/gal
Ending	1350	13.1 lbs/gal
Total Volume Pumped: 6.4 YDS		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

DENSITY - 1 GAL WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left:
Technician: DARREN MILLER	Travel Time: 1.0 HR
Date: 5/21/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	Water Level:
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE AND SET UP
910	DRILLERS ARRIVE START RECONFIGURING FOR REVERSE AIR OPERATIONS
1030	READY FOR REVERSE AIR TRIPPING INTO HOLE
1045	TAG PLUG AT 135'
1100	REACHED 142'
1200	REACHED 162' WATER LEVEL 34.80
1245	REACHED 182' WATER LEVEL 34.65
1315	REACHED 202' WATER LEVEL 34.05
1350	REACHED 222' WATER LEVEL 33.20
1445	REACHED 242' WATER LEVEL 33.25
1600	REACHED 262' WATER LEVEL 32.41
1635	REACHED 282' WATER LEVEL 31.94
1655	REACHED 302' WATER LEVEL 31.82
1715	REACHED 322' WATER LEVEL 31.71
1730	SHUTDOWN FOR DAY LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/21/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#5 20FT	45MIN 11SEC	33.80	343	9.71	25.5	240 mg/L
#6 20 FT	23MIN 6SEC	34.65	334	9.62	24.9	240 mg/L
#7 20FT	16MIN	34.05	339	9.41	25.2	240 mg/L
#8 20FT	15MIN 8SEC	33.20	290	9.74	25.4	<40 mg/L
#9 20 FT.	30MIN 6SEC	33.25	267	9.46	24.9	<40 mg/L
#10 20FT	12MIN	32.41	251	10.35	25.0	<40 mg/L
#11 20FT	11MIN 11SEC	31.94	296	10.75	24.7	<40 mg/L
#12 20FT	8MIN 9SEC	31.82	208	9.55	24.6	<40 mg/L
#13 20FT	7MIN 50SEC	31.71	207	9.53	25.0	<40 mg/L

CALIBRATION INFORMATION

PH - 4.00 = 3.99 7.0 = 7.11 10.00 = 9.98

COND 447 = 447 1417 = 1416

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left:
Technician: DARREN MILLER	Travel Time: 1.0 HR
Date: 5/22/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL # 2R	Water Level: 29.02
Notes:	

DAILY ACTIVITIES

800	ARRIVE ONSITE SET-UP WATER LEVEL 29.02
815	DRILLERS ARRIVE FUELING EQUIPMENT
840	STARTED DRILLING AT 322'
945	REACHED 342' WATER LEVEL 31.34
1115	REACHED 362' WATER LEVEL 31.00
1225	REACHED 382' WATER LEVEL 30.30
1315	REACHED 402' WATER LEVEL 30.50
1400	DISCHARGE LINE CLOGGED UP TRYING TO FIX
1730	DISCHARGE LINE UNCLOGGED AFTER REPEATED ATTEMPTS INCLUDING
	TRIPPING COMPLETELY OUT OF HOLE THE LOWER 45 FT HAD
	A PLUG OF FINE SAND AND BROWN LIMESTONE ROCK FINALLY
	CLEARED RAINSHOWERS SEVERAL TIMES DURING THE DAY
	AND RAIN CONTINUES TO FALL
1800	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/22/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#14 20FT.	61 MIN 46 SEC	31.34	197	9.50	24.3	< 40 mg/L
#15 20FT.	1 HR 18 MINS	31.00	201	9.22	24.6	< 40 mg/L
#16 20FT	47 MINS 7 SEC	30.30	225	8.99	24.6	< 40 mg/L
#17 20FT	42 MINS 20 SEC	30.50	195	9.17	24.7	< 40 mg/L
~~#18 20FT~~						

CALIBRATION INFORMATION

PH - 4.0 = 3.99 7.0 = 7.00 10.0 = 9.98

COND 447 = 445 1417 = 1417

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 800
Project No.: 12666-001-01	Time Left: 1630
Technician: DARREN MILLER	Travel Time: 1.0
Date: 5/23/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	Water Level: 29.23
Notes:	

DAILY ACTIVITIES

800	ARRIVE ON SITE SAME TIME AS DRILLERS SET-UP
925	REACHED 422' WATER LEVEL 30.03 *
1145	REACHED 442' WATER LEVEL 29.96
1225	REACHED 462' WATER LEVEL 29.96
1255	REACHED 482' WATER LEVEL 30.08
1320	REACHED 502' WATER LEVEL 29.86
1355	REACHED 522' WATER LEVEL 29.76
1440	REACHED 542' WATER LEVEL 29.81
1525	REACHED 562' WATER LEVEL 29.64
1540	CIRCULATING WATER GETTING READY TO TRIP 160' OUT OF HOLE FOR
	LONG WEEKEND TO AVOID CAVE-IN
1600	TRIPPED OUT OF HOLE 160'
1615	SHUTDOWN RIG FOR WEEKEND
1630	LEFT JOBSITE
	* NOTE SECTION #18 WAS STARTED ON 5/22/03 PRIOR TO DISCHARGE LINE
	CLOGGING UP AND COMPLETED ON 5/23/03.

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** Darren Miller
Project No: 12666-001-01	**Date:** 5/23/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#18 20FT	6 MIN 28 SEC	30.03	213	9.00	23.7	< 40 mg/L
#19 20FT	2 HRS 7 MINS 47 SEC	29.96	226	8.70	23.8	< 40 mg/L
#20 20FT	24 MIN 30 SEC	29.96	232	8.57	23.9	< 40 mg/L
#21 20FT	19 MIN 24 SEC	30.08	220	8.70	23.9	< 40 mg/L
#22 20FT	17 MIN 26 SEC	29.86	215	8.79	24.0	< 40 mg/L
#23 20FT	18 MIN 57 SEC	29.76	233	8.56	24.1	< 40 mg/L
#24 20FT	21 MIN 23 SEC	29.81	232	8.61	24.1	< 40 mg/L
#25 20FT	27 MIN 53 SEC	29.64	194	9.02	24.1	< 40 mg/L

CALIBRATION INFORMATION

PH- 4.0 = 3.98 7.0 = 7.01 10.0 = 9.99

COND 447 = 447 1417 = 1417

R.D. Keene Park Well Oversight: Work completed May 26 through May 30, 2003:

May 26, 2003: Memorial Day - no work.

May 27, 2003: Finished drilling Well No. 2R. End of boring approximately 652 feet bls. Developed well. Diversified began breaking down rig.

May 28, 2003: Diversified mobilizing smaller rig for remainder of wells. UES not on-site.

May 29, 2003: Diversified setting up for smaller diameter wells. UES not on-site.

May 30, 2003: Diversified finalizes preparation for next phase of work. UES not on-site.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 815
Project No.: 12666-001-01	**Time Left:**
Technician: DARREN MILLER	**Travel Time:** 1.0
Date: 5/22/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #2R	**Water Level:** 29.11
Notes:	

DAILY ACTIVITIES

815	ARRIVE ONSITE SET UP (WATER LEVEL 29.11
840	DRILLERS ARRIVE
910	STARTED DRILLING AT 562'
950	REACHED 582' WATER LEVEL 30.05
1030	REACHED 602' WATER LEVEL 29.92
1110	REACHED 622' WATER LEVEL 30.00
1150	REACHED 642' WATER LEVEL 29.82
1215	REACHED 652' WATER LEVEL 29.40
1230	CIRCULATING WATER TO CLEAR IT UP
1330	TRIPPING OUT OF HOLE
1530	BIT COMPLETELY OUT OF HOLE BREAKING DOWN RIG
1630	LEFT JOBSITE

UNIVERSAL ENGINEERING SCIENCES

DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 5/27/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping			
Midpoint			
Ending			
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.
#26 20FT	4.3MIN/18SEC	30.05	238	8.66	24.4	< 40mg/L
#27 20FT	22MIN 24SEC	29.92	249	8.56	24.7	< 40mg/L
#28 20FT	21MIN 30SEC	30.00	239	8.56	24.6	< 40mg/L
#29 20FT	25MIN 46SEC	29.82	246	8.53	24.8	< 40mg/L
#30 10FT	12MIN 8SEC	29.40	267	8.34	24.5	< 40mg/L

CALIBRATION INFORMATION

PH - 4.0 = 3.99 7.0 = 7.01 10.0 9.98

COND 447 = 447 1417 = 1416

R.D. Keene Park Well Oversight: Work completed June 2 through June 6, 2003:

June 2, 2003: Began drilling Well No. 3. Mechanical problems - stopped drilling at mid-day.

June 3, 2003: Finished drilling Well No. 3 to 92 feet bls where rock was encountered. Set 6" well.

June 4, 2003: Began drilling Well No. 4. Installed well to a depth of 52 feet bls. Moved to Well No. 5 and re-tooled rig.

June 5, 2003: Drilled Well No. 5 to a depth of 52 feet bls, and installed well.

June 6, 2003: UES not present at site. Diversified to begin cleaning site.

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 810
Project No.: 12666-001-01	**Time Left:** 1630
Technician: DARREN MILLER	**Travel Time:** 1.0
Date: 6/2/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #3	**Water Level:**
Notes:	

DAILY ACTIVITIES

810	ARRIVE ONSITE
900	DRILLERS ARRIVE START SETTING UP TO DRILL HOLE
1100	DRILLING HOLE
1230	BLEW HYDRAULIC LINE ON RIG RUNNING TO GET REPLACEMENT
	CHAIN ALSO BROKEN
1530	DRILLERS RETURN AND REPLACE HOSE CHAIN TO BE PICKED UP
	TUESDAY MORNING
1630	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 6/2/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	1045	8.9 lbs/gal	52.11 SEC
Midpoint	1200	8.7 lbs/gal	50.42 SEC
Ending	1530	9.2 lbs/GAL	63.72 SEC
Total Volume Pumped:			

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.07 SEC

DENSITY - 1 GAL WATER = 8.3 lbs/GAL

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:** 1700
Technician: DARREN MILLER	**Travel Time:** 1.0
Date: 6/3/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #3	**Water Level:**
Notes:	

DAILY ACTIVITIES

745	ARRIVE ON SITE
845	DRILLER FROM TAMPA ARRIVES
920	DRILLERS ARRIVE WITH CHAIN REPLACEMENT
1000	FINISH DRILLING HOLE #3 TO ROCK AT 92'
1230	START INSTALLING 6" WELL INTO GROUND 40' 20 SLOT SCREEN
	55' RISER
1300	WELL INSTALLED ADDING SAND
1445	40 BAGS OF (6-20 GRADE) SAND ADDED AND 2 BAGS OF SILICA
	SAND CAPPING IT OFF TO TOTAL OF 47'
1600	CONCRETE POURED AROUND 6" WELL 1/4 D
[redacted]/1700	LEFT JOBSITE

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	6/3/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	950	8.8 lbs/GAL	53.17 SEC
Midpoint	1100	9.2 lbs/GAL	70.57 SEC
Ending	1230	9.0 lbs/GAL	66.81 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	[redacted] 1500	13.2 lbs/GAL
Midpoint	1510	13.7 lbs/GAL
Ending	1525	13.9 lbs/GAL
Total Volume Pumped: 140		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.31 SEC

DENSITY - 1gal WATER = 8.3 lbs/gal

UNIVERSAL ENGINEERING SCIENCES

DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight Reference: R.D. Keene Park	Time Arrived: 745
Project No.: 12666-001-01	Time Left: 1630
Technician: DARREN MILLER	Travel Time: 1.0
Date: 6/4/03	Breaks:

WATER LEVEL DATA - INITIAL

Well ID: WELL #4	Water Level:
Notes:	

DAILY ACTIVITIES

745	ARRIVE ON SITE
815	DRILLERS ARRIVE START MOVING AND SETTING UP ON WELL #4
935	START DRILLING WELL #4
1050	HOLE DRILLED INSTALLING WELL
1130	WELL INSTALLED GETTING READY TO ADD SAND
1235	ADDED 37 BAGS OF (6-20 GRADE) SAND AND 2 BAGS OF SILICA SAND
	TO DEPTH OF 18 FT. WELL CONSTRUCTION IS 30 FT OF SCREEN (20 SLOT)
	AND 25 FT OF RISER TOTAL DEPTH OF WELL IS 52'
1310	CEMENT ADDED .33 YDS RAINING NOW
1320	RAIN CEASED STILL VERY CLOUDY
1400	MOVING RIG AND SETTING UP ON WELL #5 SWITCHING OUT DRILL
	BITS TO DRILL HOLE FOR SHALLOW 2" WELL
1530	EVERYTHING SET-UP AND READY TO DRILL 2" WELL HEAVY
	STORM CLOUDS MOVING IN AND GETTING VERY DARK WITH
	LIGHTNING FLASHING
1600	RAINING HARD AND HEAVY
1630	RAIN STILL COMING DOWN LEFT-JOBSITE

Document No. 272205

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DRILLING INFORMATION

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Technician:** DARREN MILLER
Project No: 12666-001-01	**Date:** 6/4/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	930	8.7 lbs/gal	48.26 sec
Midpoint	1015	8.6 lbs/gal	50.41 sec
Ending	1050	8.6 lbs/gal	57.47 sec

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ Density
Before Pumping	1250	13.7 lbs/gal
Midpoint	1300	14.1 lbs/gal
Ending	1305	13.8 lbs/gal
Total Volume Pumped: 133 yds		

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.03 SEC

DENSITY - 1 GAL WATER = 8.3 lbs/gal

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DAILY LOG

PROJECT INFORMATION

Contract: SFWMD Well Oversight **Reference:** R.D. Keene Park	**Time Arrived:** 745
Project No.: 12666-001-01	**Time Left:**
Technician: DARREN MILLER	**Travel Time:** 1.0
Date: 6/5/03	**Breaks:**

WATER LEVEL DATA - INITIAL

Well ID: WELL #5	**Water Level:**
Notes:	

DAILY ACTIVITIES

745	ARRIVE ONSITE
840	DRILLERS ARRIVE
920	DRILLER FROM TAMPA ARRIVES
945	STARTED DRILLING WELL #5 2"
1020	REACHED 52' DEPTH LETTING MUD CIRCULATE THRU HOLE
1040	WELL INSTALLED ADDING SAND
1125	21 BAGS (6-20 GRADE) SAND ADDED PLUS 2 BAGS SILICA SAND
1150	ADDED .33 YDS CEMENT TO CAP OFF WELL
1230	CLEANING UP AROUND WELLS
1400	DEVELOPING WELLS #3 & #4
1500	CLEANING UP WATER IN WELLS AND TAGGING CEMENT
1630	LEFT JOBSITE

Document No. 272205

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DRILLING INFORMATION

PROJECT INFORMATION

Contract:	SFWMD Well Oversight	**Technician:**	DARREN MILLER
Reference:	R.D. Keene Park		
Project No:	12666-001-01	**Date:**	6/5/03

DRILLING MUD PROPERTIES

Stage Measurement Taken	Time	Density	Viscosity
Before Pumping	945	9.3 lbs/GAL	34.17 SEC
Midpoint	1000	10.5 lbs/GAL	34.64 SEC
Ending	1020	11.1 lbs/GAL	30.83 SEC

GROUT PROPERTIES

Stage Measurement Taken	Time	~~Viscosity~~ DENSITY
Before Pumping	1135	11.7 lbs/GAL
Midpoint	1140	12.1 lbs/GAL
Ending	1145	11.9 lbs/GAL
Total Volume Pumped:	33 YDS	

REVERSE AIR OPERATIONS

Section Length & Identifier	Drilling Time	Water Level	Water Quality Information			
			Spec. Cond.	pH	Temp.	Chloride Conc.

CALIBRATION INFORMATION

VISCOSITY - 1qt WATER = 26.21 SEC

DENSITY - 1GAL WATER = 8.3 lbs/GAL

FIELD LOG OF BORING

B- Well #1

PROJECT: R D Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
SURFACE CONDITIONS:		WATER DEPTH: / DATE: / TIME:	

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Coarse grain sand - grey tan; significant organic material	All samples recovered from mud rotary
							2			
							3			
							4			
							5			
							6		Dark brown, coarse to fine sands; organic material	
							7			
							8			
							9			
							10			
							1		Medium brown coarse to fine grain sand with some silt	
							2			
							3			
							4			
							15			
							6		Light to medium brown fine grain sand with silt; small amount of coarse material in sample	
							7			
							8			
							9			
							20			
							1		Light brown fine grain silty sand; trace of clay	
							2			
							3			
							4			
							25			
							6		Light brown fine grain silty sand; trace of clay	
							7			
							8			
							9			
							30			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D. Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG:	ELEVATION (DATUM):	TOTAL DEPTH:
	SURFACE CONDITIONS:		DATE FINISHED:

WATER DEPTH: / DATE: / TIME:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Light brown fine grain silty sand; trace of clay	All samples recovered from mud rotary
							2			
							3			
							4			
							35			
							6		Medium to light brown fine grain silty sand; trace of clay	
							7			
							8			
							9			
							40			
							1		Grey silty fine grain sand; trace of clay	
							2			
							3			
							4			
							45			
							6		Grey silty fine grain sand; trace of clay	
							7			
							8			
							9			
							50			
							1		Grey fine grain sand with clay	
							2			
							3			
							4			
							55			
							6		Grey fine grain sand with clay	
							7			
							8			
							9			
							60			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D Keene Park			
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:**
Diversified			

SURFACE CONDITIONS:

WATER DEPTH: | DATE: | TIME:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Well indurated grey siltstone - small pieces; grey sandy clay	All samples recovered from mud rotary
							2			
							3			
							4			
							65			
							6		Well indurated grey siltstone - small pieces; matrix not recovered in sample	
							7			
							8			
							9			
							70			
							1		Well indurated grey siltstone w/ poorly sorted quartz; little or no fines; broken sharks tooth	
							2			
							3			
							4			
							75			
							6		Well indurated grey siltstone w/ poorly sorted quartz; little or no fines	
							7			
							8			
							9			
							80			
							1		Well indurated grey siltstone w/ poorly sorted quartz; shell; little or no fines	
							2			
							3			
							4			
							85			
							6		Grey sandy clay w/ well indurated siltstone & quartz	
							7			
							8			
							9			
							90			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D. Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
SURFACE CONDITIONS:		WATER DEPTH: / DATE: / TIME:	

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1			All samples recovered from mud rotary
							2		Broken quartz, lime mudstone, grey siltstone - possible	
							3		broken fossils → very little sample recovered	
							4			
							5			
							6		Broken quartz, lime mudstone, grey siltstone	
							7			
							8			
							9			
							10			
							1		Lime mudstone, grey siltstone	
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1		VOID — No samples Recovered	
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
SURFACE CONDITIONS:		WATER DEPTH: / DATE: / TIME:	

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Grey to tan packstone w/ Dark grey well-indurated siltstone	All samples recovered from mud rotary
							2			
							3			
							4			
							12.5			
							6		Tan lime packstone with a significant amount of broken shell (only small fragments recovered)	
							7			
							8			
							9			
							13.0			
							1		Tan lime packstone with broken shell and dark grey siltstone (only small fragments recovered)	
							2			
							3			
							4			
							13.5			
							6		Tan lime wackstone with small amount of dark grey siltstone	
							7			
							8			
							9			
							14.0			
							1		Lt. tan packstone w/ grey to dark grey siltstone	
							2			
							3			
							4			
							14.5			
							6		Grey to tan lime packstone with shell and dark grey siltstone	
							7			
							8			
							9			
							15.0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D. Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
SURFACE CONDITIONS:		WATER DEPTH: / DATE: / TIME:	

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Lt. tan lime wackstone with shell and grey siltstone	All samples recovered from mud rotary.
							2			
							3			
							4			
							15.5			
							6		Lt. grey lime mudstone w/ small amount of grey siltstone	
							7			
							8			
							9			
							16.0			
							1		Lt. grey lime mudstone w/ small amount of grey siltstone	
							2			
							3			
							4			
							16.5			
							6		Lt grey to tan lime wackstone w/ small amount of grey siltstone	
							7			
							8			
							9			
							17.0			
							1		Lt grey to tan mudstone w/ fossils and grey siltstone	
							2			
							3			
							4			
							17.5			
							6		Lt grey to tan lime mudstone w/ significant amount of fossil material (very small pieces recovered)	
							7			
							8			
							9			
							18.0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D. Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED:
DRILLED BY: Diversified	RIG: / ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
SURFACE CONDITIONS:		WATER DEPTH: / DATE: / TIME:	

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Grey to lt tan wackestone with siltstone & fossils (small pieces recovered)	All samples recovered from mud rotary
							2			
							3			
							4			
							18.5			
							6		Lt tan mudstone, few small fragments of siltstone recovered	
							7			
							8			
							9			
							19.0			
							1		Lt tan lime wackestone, few small fragments of siltstone & fossils (small pieces recovered)	
							2			
							3			
							4			
							19.5			
							6		Lt. tan packstone with broken shell & fragments of siltstone (small pieces recovered)	
							7			
							8			
							9			
							20.0			
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R D Keene Park			4-1-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:** / **DATE FINISHED:**
Diversified			
SURFACE CONDITIONS:			**WATER DEPTH:** / **DATE:** / **TIME:**

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							0		Lt Brown Lime Packstone, Significant skeletal matter (pieces too small to identify); significant voids visible in many pieces	Sample pieces are very small
							1			
							2			
							3			
							4			
							20.5		Lt. Brown Lime Packstone, Many pieces with significant void spaces	
							6			
							7			
							8			
							9			
							21.0		Brown to Lt. Brown Lime Wackestone. Numerous pieces of what appear to be broken echinoid fossils	Sample pieces are very small
							1			
							2			
							3			
							4			
							21.5		Lt. Brown Lime Wackestone Broken echinoid fossils (?)	Sample pieces are very small
							6			
							7			
							8			
							9			
							22.0		Tan Lime Mudstone/ Wackestone Broken echinoid fossils (?)	Sample pieces are very small
							1			
							2			
							3			
							4			
							23.5		Brown to dark brown dolostone Wackestone - numerous solution voids - permeable layer Phosphate shards (?)	
							6			
							7			
							8			
							9			
							24.0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D. Keene Park			4-1-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:** / **DATE FINISHED:**
Diversified			
SURFACE CONDITIONS:			**WATER DEPTH:** / **DATE:** / **TIME:**

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Dark brown dolostone wackestone, Phosphate shards (?)	dolostone = angular pieces
							2			
							3			
							4			
							24.5		Lt. Brown lime Packstone.	Sample pieces are very small.
							6			
							7			
							8			
							9			
							25.0		Lt Brown lime packstone, Broken echinoid fossils	Sample pieces are very small
							1			
							2			
							3			
							4			
							25.5		Lt. Brown to Brown lime wackestone, Phosphate shards (?)	Sample pieces are very small
							6			
							7			
							8			
							9			
							26.0		Brown lime packstone, voids visible	Sample pieces are very small
							1			
							2			
							3			
							4			
							26.5		Brown lime packstone, broken skeletal matter visible, higher permeability layer	Sample pieces are very small
							6			
							7			
							8			
							9			
							27.0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
RD Keene Park			4-1-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:**
Diversified			

SURFACE CONDITIONS:

WATER DEPTH:
DATE:
TIME:

DATE FINISHED:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Recovered sample appears to consist of primarily broken fossils; little to no mud present; sample effervesces w/ 10% HCl	Extremely small sample pieces!
							2			
							3			
							4			
							27.5			
							6		Brown lime grainstone; Broken fossils visible - too small to identify	Extremely small sample pieces!
							7			
							8			
							9			
							28.0			
							1		Brown lime grainstone; Broken fossils including echinoids	Extremely small sample pieces!
							2			
							3			
							4			
							28.5		Brown lime packstone; Broken fossils including echinoids	Extremely small sample pieces!
							6			
							7			
							8			
							9			
							29.0		Brown lime packstone; Broken fossils present - to small to identify	Extremely small sample pieces!
							1			
							2			
							3			
							4			
							29.5		Brown lime packstone; Broken fossils present - to small to identify	Extremely small pieces
							6			
							7			
							8			
							9			
							30.0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D. Keene Park			4-1-03

DRILLED BY:	RIG:	ELEVATION (DATUM)	TOTAL DEPTH:	DATE FINISHED:
Diversified				

SURFACE CONDITIONS:

WATER DEPTH:
DATE:
TIME:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Brown lime packstone; Broken fossils including echinoids	Sample pieces are very small
							2			
							3			
							4			
							30.5			
							6		Brown lime packstone; clay globules present (tan)	Sample pieces are very small
							7			
							8			
							9			
							31.0			
							1		Brown lime wackestone/ Packstone; Broken fossils visible - some are cone shape but are not likely Dictyconus.	Sample pieces are very small
							2			
							3			
							4			
							31.5			
							6		Brown lime packstone/ wackestone; fossils present including echinoids	Sample pieces are very small
							7			
							8			
							9			
							32.0			
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D Keene Park			4-7-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:** / **DATE FINISHED:**
Diversified			
SURFACE CONDITIONS:			**WATER DEPTH:** / **DATE:** / **TIME:**

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Tan dolostone wackestone - small solution voids present	
							2			
							3			
							4			
							505			
							6		Tan dolostone wackestone	Sample pieces are small
							7			
							8			
							9			
							510		Tan dolostone wackestone - small solution voids visible;	Sample pieces are small
							1			
							2			
							3			
							4			
							515		Lt. tan dolostone wackestone - a few small solution voids are visible	Sample pieces are small
							6			
							7			
							8			
							9			
							520		Three sample types: Majority → Lt tan dolostone wackestone; Brown dolostone mud stone; Dark grey siltstone	Sample pieces are extremely small
							1			
							2			
							3			
							4			
							525			
							6		Grey dolostone mudstone - small solution voids are visible	Sample pieces are small
							7			
							8			
							9			
							530			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D. Keene Park			4-7-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:**
Diversified			

SURFACE CONDITIONS:

WATER DEPTH:
DATE:
TIME:

DATE FINISHED:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Brown dolostone mudstone - small solution voids visible	
							2			
							3			
							4			
							535		Brown dolostone mudstone - small solution voids visible	
							6			
							7			
							8			
							9			
							540		Broken fossils - too small to identify; Lt. Brown & brown Packstone; sample effervesces w/ 10% HCl	Sample pieces are extremely small
							1			
							2			
							3			
							4			
							545		Lt. Brown dolostone mudstone	Sample pieces are extremely small
							6			
							7			
							8			
							9			
							550		Brown dolostone mudstone	
							1			
							2			
							3			
							4			
							555		Brown dolostone wackestone	
							6			
							7			
							8			
							9			
							560			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R D Keene Park			4-7-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:** / **DATE FINISHED:**
Diversified			
SURFACE CONDITIONS:			**WATER DEPTH:** / **DATE:** / **TIME:**

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Lt. Brown dolostone wackestone; A few small solution voids are visible.	
							2			
							3			
							4			
							565		Lt. Brown dolostone mudstone; A few small solution voids are visible	Sample pieces are small
							6			
							7			
							8			
							9			
							570		Brown dolostone mudstone; solution voids are visible.	
							1			
							2			
							3			
							4			
							575		Brown dolostone mudstone; Solution voids are visible	Sample pieces are extremely small
							6			
							7			
							8			
							9			
							580		Brown dolostone wackestone; solution voids are visible.	Sample pieces are small
							1			
							2			
							3			
							4			
							585		Brown dolostone wackestone	Sample pieces are small.
							6			
							7			
							8			
							9			
							590			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D. Keene Park			4-7-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:**
Diversified			

SURFACE CONDITIONS:

WATER DEPTH:
DATE:
TIME:

DATE FINISHED:

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Brown dolostone wackestone - solution voids visible	
							2			
							3			
							4			
							595		Brown dolostone wackestone - solution voids visible	
							6			
							7			
							8			
							9			
							600		Brown dolostone wackestone	
							1			
							2			
							3			
							4			
							605		Dark brown dolostone wackestone - solution voids visible	
							6			
							7			
							8			
							9			
							610		Dark brown dolostone wackestone - small solution voids visible	
							1			
							2			
							3			
							4			
							615		Brown dolostone wackestone	Sample pieces are extremely small
							6			
							7			
							8			
							9			
							620			
							1			
							2			

FIELD LOG OF BORING

B- Well #1

PROJECT: R.D. Keene Park	CLIENT:	W.O. NUMBER:	DATE STARTED: 4-7-03
DRILLED BY: Diversified	RIG:	ELEVATION (DATUM):	TOTAL DEPTH:
	SURFACE CONDITIONS:		DATE FINISHED:

WATER DEPTH:		
DATE:		
TIME:		

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Lt brown & brown lime mudstone / wackestone (too small to accurately identify) w/ dary grey well indurated siltstone	Sample pieces are extremely small
							2			
							3			
							4			
							6.25			
							6		Brown dolostone wackestone, solution voids visible	Sample pieces are small
							7			
							8			
							9			
							6.30			
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			

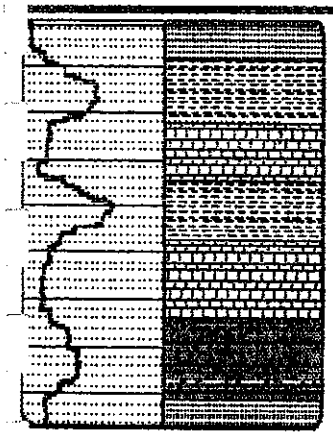
FIELD LOG OF BORING

B- Well #1

PROJECT:	CLIENT:	W.O. NUMBER:	DATE STARTED:
R.D Keene Park			4-8-03
DRILLED BY:	**RIG:**	**ELEVATION (DATUM)**	**TOTAL DEPTH:** / **DATE FINISHED:**
Diversified			
SURFACE CONDITIONS:			**WATER DEPTH:** / **DATE:** / **TIME:**

SAMPLE TYPE	SAMPLE NUMBER	SET 6"	2nd 6"	3rd 6"	N VALUE	SAMPLE RECOV.	DEPTH (FT.)	LOG	CLASSIFICATION OF MATERIAL	REMARKS
							1		Brown dolostone wackestone	
							2			
							3			
							4			
							635		Lt. Brown dolostone wackestone, voids visible	
							6			
							7			
							8			
							9			
							640		Brown dolostone wackestone	
							1			
							2			
							3			
							4			
							645		Brown dolostone wackestone, solution voids visible	
							6			
							7			
							8			
							9			
							650		eob	
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							0			
							1			
							2			

APPENDIX F

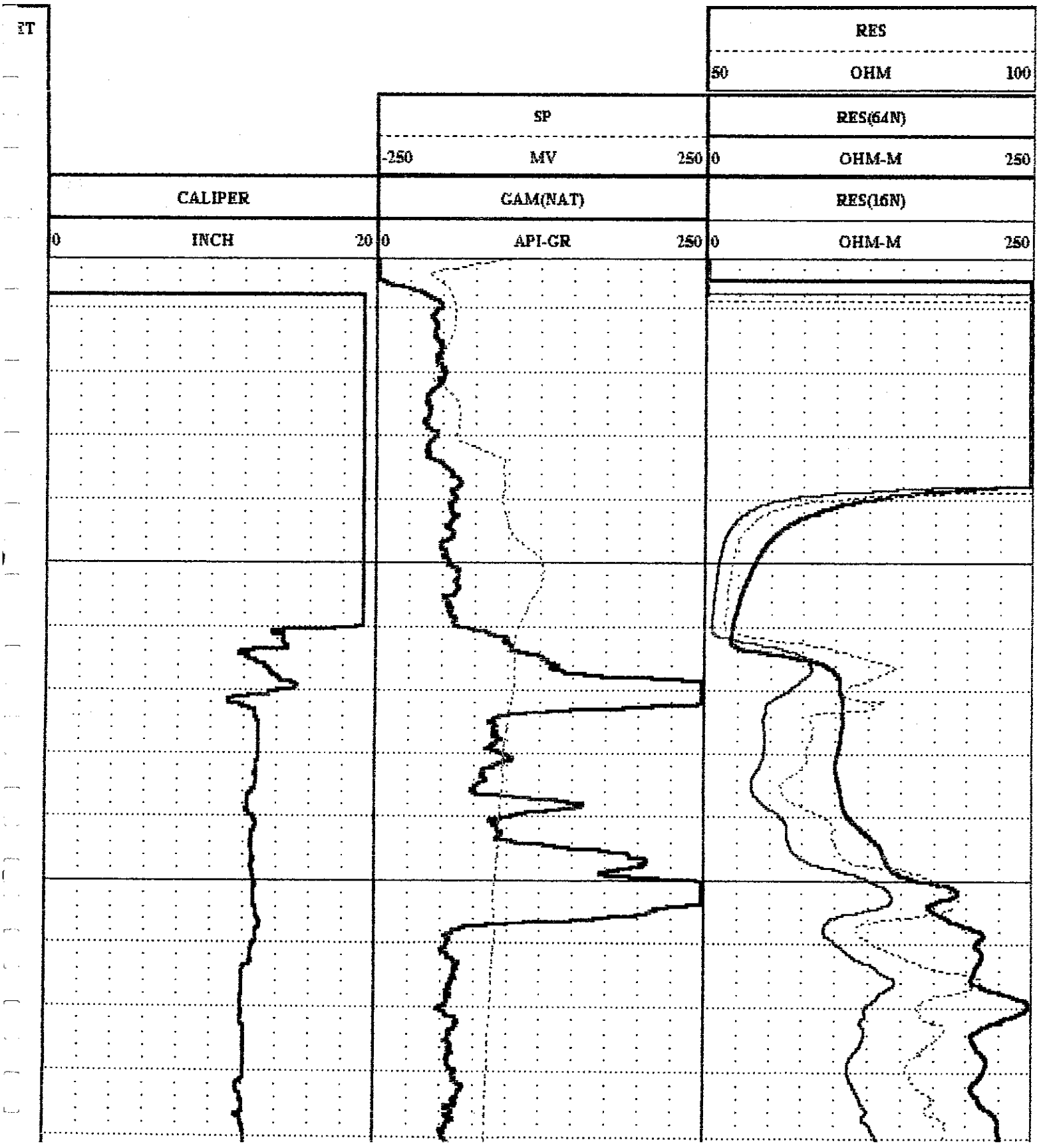


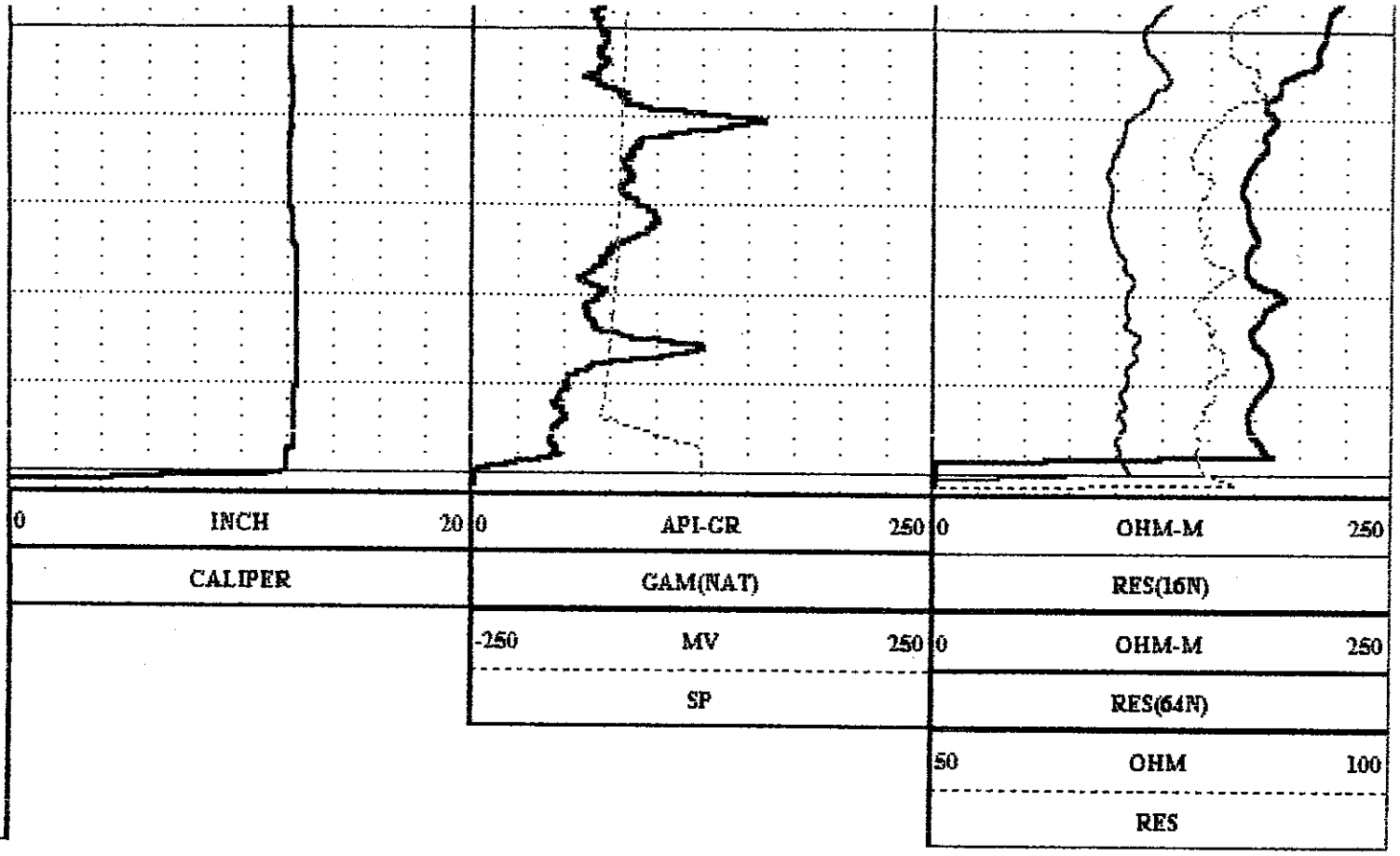
Southern Resource Exploration

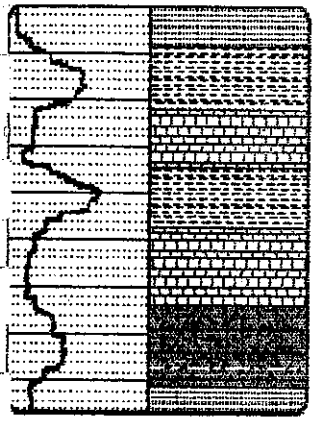
P.O. Box 14311
Gainesville, Florida 32604
Phone 352-372-5950

UFA #1

COMPANY	: DIVERSIFIED DRILLING			OTHER SERVICES:	
ELL	: UFA #1				
LOCATION/FIELD	: RD KEENE PARK				
COUNTY	: ORANGE				
STATE	: FL				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 03/26/03	PERMANENT DATUM	: -		
DEPTH DRILLER	: 202'			KB	:
LOG BOTTOM	: 202.00	LOG MEASURED FROM:	GL	DF	: -
LOG TOP	: 2.40	DRL MEASURED FROM:	GL	GL	: .
CASING DIAMETER	: 20	LOGGING UNIT	: BWT		
CASING TYPE	: STEEL	FIELD OFFICE	: GVL		
CASING THICKNESS:	.375	RECORDED BY	: MAF		
BIT SIZE	: 12.25	BOREHOLE FLUID	: MUD	FILE	: ORIGINAL
MAGNETIC DECL.	:	RM	:	TYPE	: 9041A
MATRIX DENSITY	:	RM TEMPERATURE	:		
NEUTRON MATRIX	:	MATRIX DELTA T	:		
				THRESH:	5000


ET
RES
50
OHM
100
SP
-250
MV
250
RES(64N)
0
OHM-M
250
CALIPER
GAM(NAT)
RES(16N)
0
INCH
20
0
API-GR
250
0
OHM-M
250


0
INCH
20
CALIPER
0
API-GR
250
GAM(NAT)
-250
MV
250
SP
0
OHM-M
250
RES(16N)
0
OHM-M
250
RES(64N)
50
OHM
100
RES



Southern Resource Exploration

UFA #1

P.O. Box 14311
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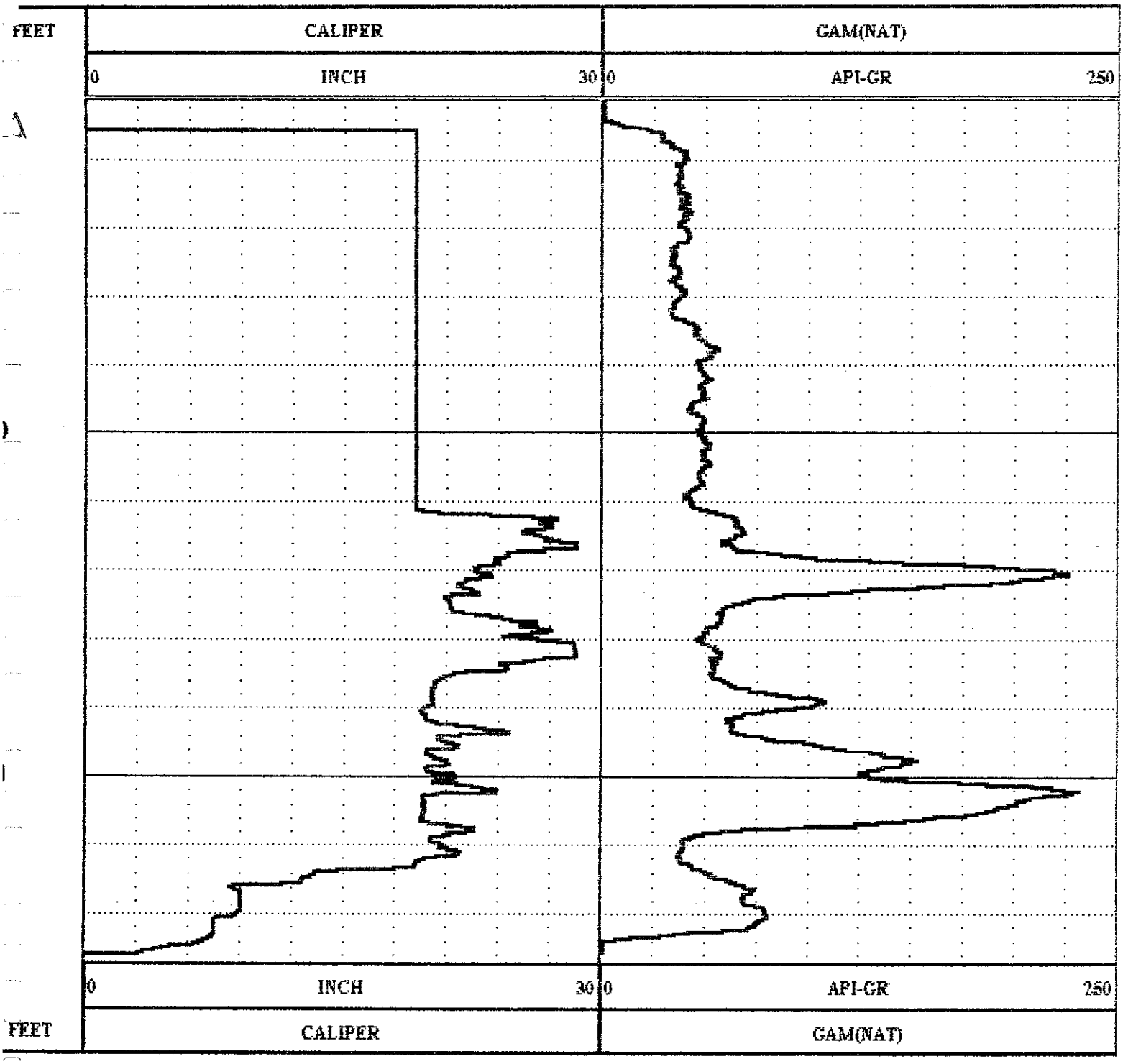
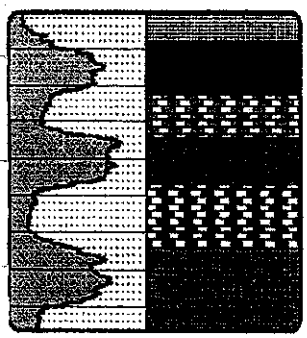
Phone 352-372-5950

COMPANY	: DIVERSIFIED DRILLING			OTHER SERVICES:	
WELL	: UFA #1				
LOCATION/FIELD	: RD KEENE PARK				
COUNTY	: ORANGE				
STATE	: FL				
SECTION	:	TOWNSHIP	: .	RANGE	:
DATE	: 03/28/03	PERMANENT DATUM	: -		
DEPTH DRILLER	: 115'			KB	:
LOG BOTTOM	: 126.20	LOG MEASURED FROM:	GL	DF	: -
LOG TOP	: 0.80	DRL MEASURED FROM:	GL	GL	: .
CASING DIAMETER	: 20	LOGGING UNIT	: BWT		
CASING TYPE	: STEEL	FIELD OFFICE	: GVL		
CASING THICKNESS:	.375	RECORDED BY	: MAF		
BIT SIZE	: 19	BOREHOLE FLUID	: MUD	FILE	: ORIGINAL
MAGNETIC DECL.	:	RM	:	TYPE	: 9041A
MATRIX DENSITY	:	RM TEMPERATURE	:		
NEUTRON MATRIX	:	MATRIX DELTA T	:		
				THRESH:	5000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS


FEET
CALIPER
GAM(NAT)
0
INCH
30
0
API-GR
250
0
INCH
30
0
API-GR
250
FEET
CALIPER
GAM(NAT)



Southern Resource Exploration

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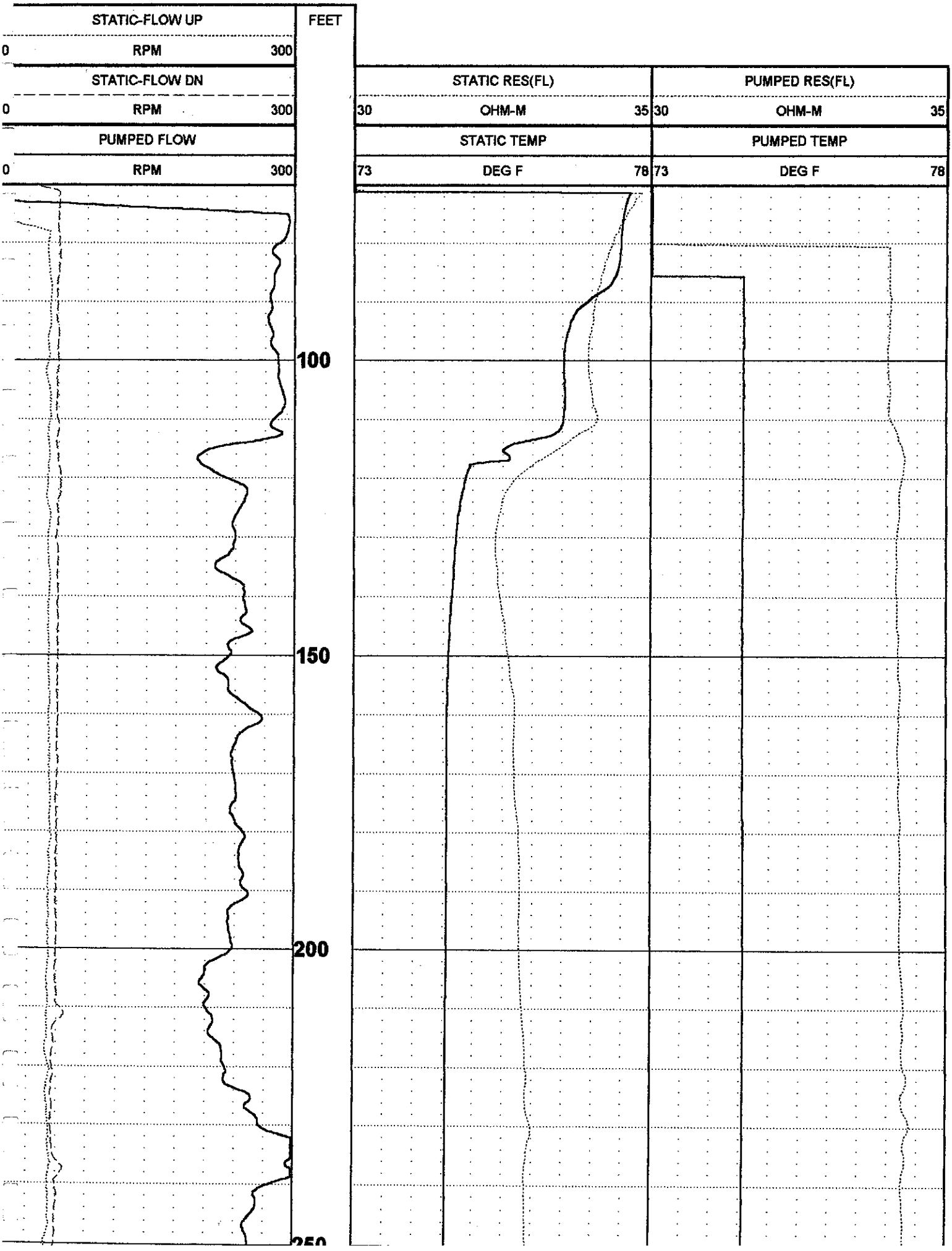
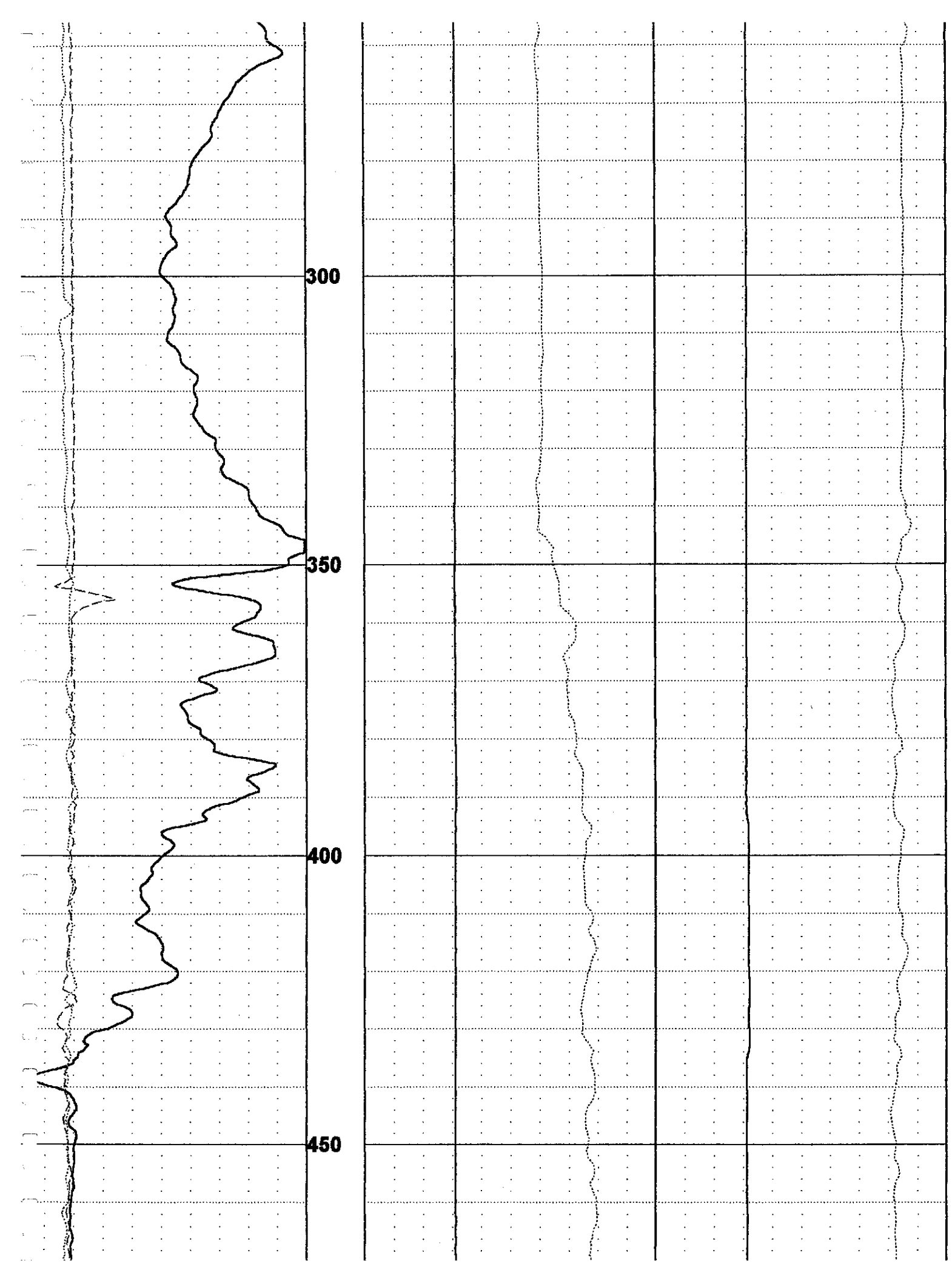
Phone 352-3725950

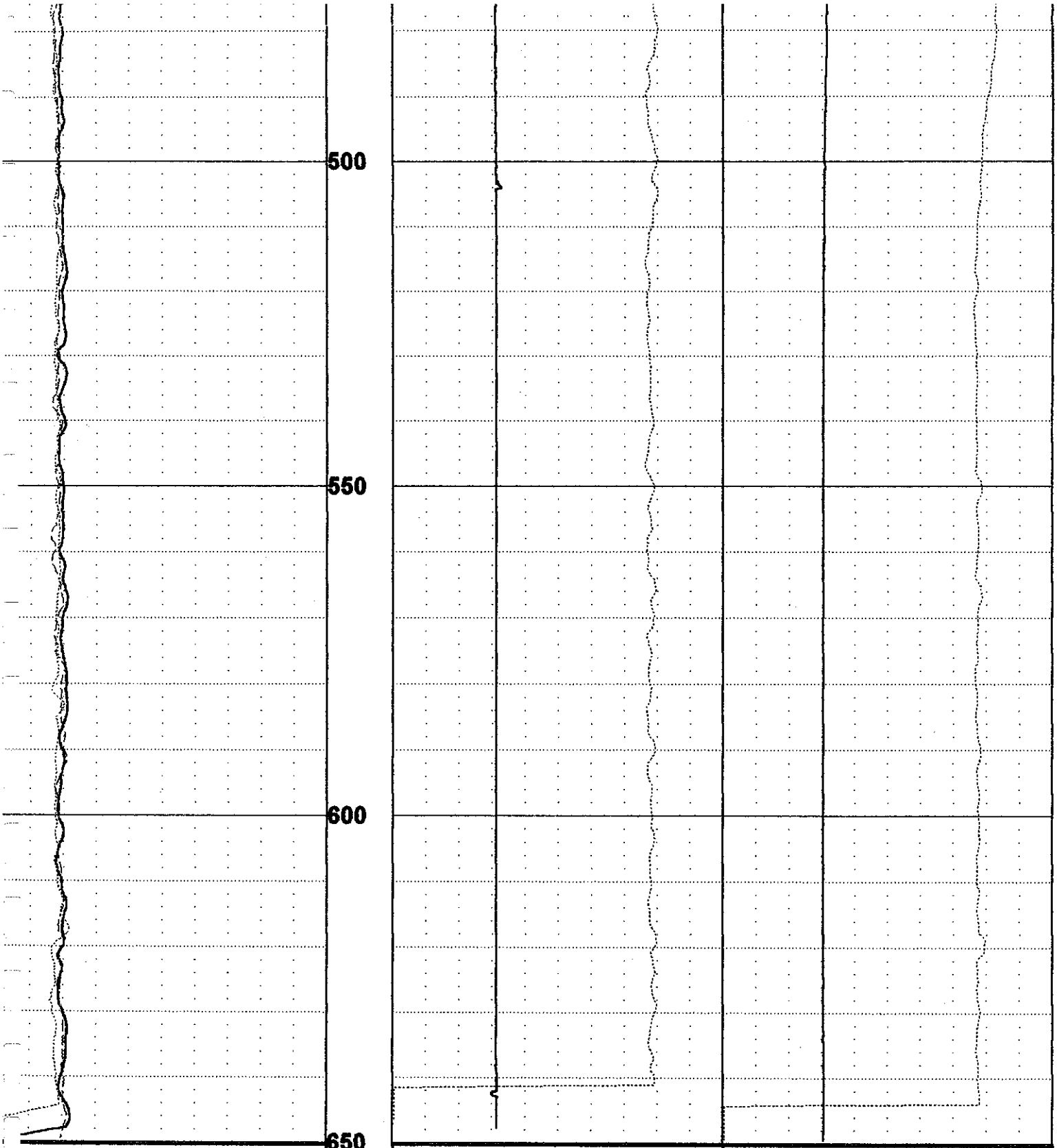
UFA #1 FLUID LOGS

COMPANY	: DIVERSIFIED DRILLING			OTHER SERVICES:	
WELL	: UFA #1				
LOCATION/FIELD	: RD KEENE PARK				
COUNTY	: ORANGE				
STATE	: FL				
SECTION	: .	TOWNSHIP	: .	RANGE	:
DATE	: 04/10/03	PERMANENT DATUM	: -		
DEPTH DRILLER	: 650'			KB	:
LOG BOTTOM	: 656.00	LOG MEASURED FROM:	GL	DF	: -
LOG TOP	: 63.80	DRL MEASURED FROM:	GL	GL	: .
CASING DIAMETER	: 14	LOGGING UNIT	: BWT		
CASING TYPE	: STEEL	FIELD OFFICE	: GVL		
CASING THICKNESS:	.375	RECORDED BY	: MAF		
BIT SIZE	: 12.25	BOREHOLE FLUID	: WATER	FILE	: PROCESSED
MAGNETIC DECL.	:	RM	:	TYPE	: 9041A
MATRIX DENSITY	:	RM TEMPERATURE	:		
NEUTRON MATRIX	:	MATRIX DELTA T	:		
				THRESH:	5000

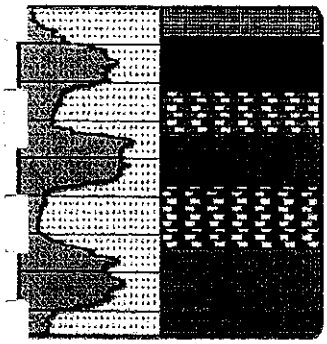
Flow Logs Run @ 40'/min.
Pumped @ 1000 gpm.


STATIC-FLOW UP
0
RPM
300
STATIC-FLOW DN
0
RPM
300
PUMPED FLOW
0
RPM
300
FEET
100
150
200
250
STATIC RES(FL)
30
OHM-M
35
STATIC TEMP
73
DEG F
78
PUMPED RES(FL)
30
OHM-M
35
PUMPED TEMP
73
DEG F
78


300
350
400
450



RPM 300	73 DEG F 78	73 DEG F 78
PUMPED FLOW	STATIC TEMP	PUMPED TEMP
RPM 300	30 OHM-M 35	30 OHM-M 35
STATIC-FLOW DN	STATIC RES(FL)	PUMPED RES(FL)
RPM 300		
STATIC-FLOW UP	FEET	



Southern Resource Exploration

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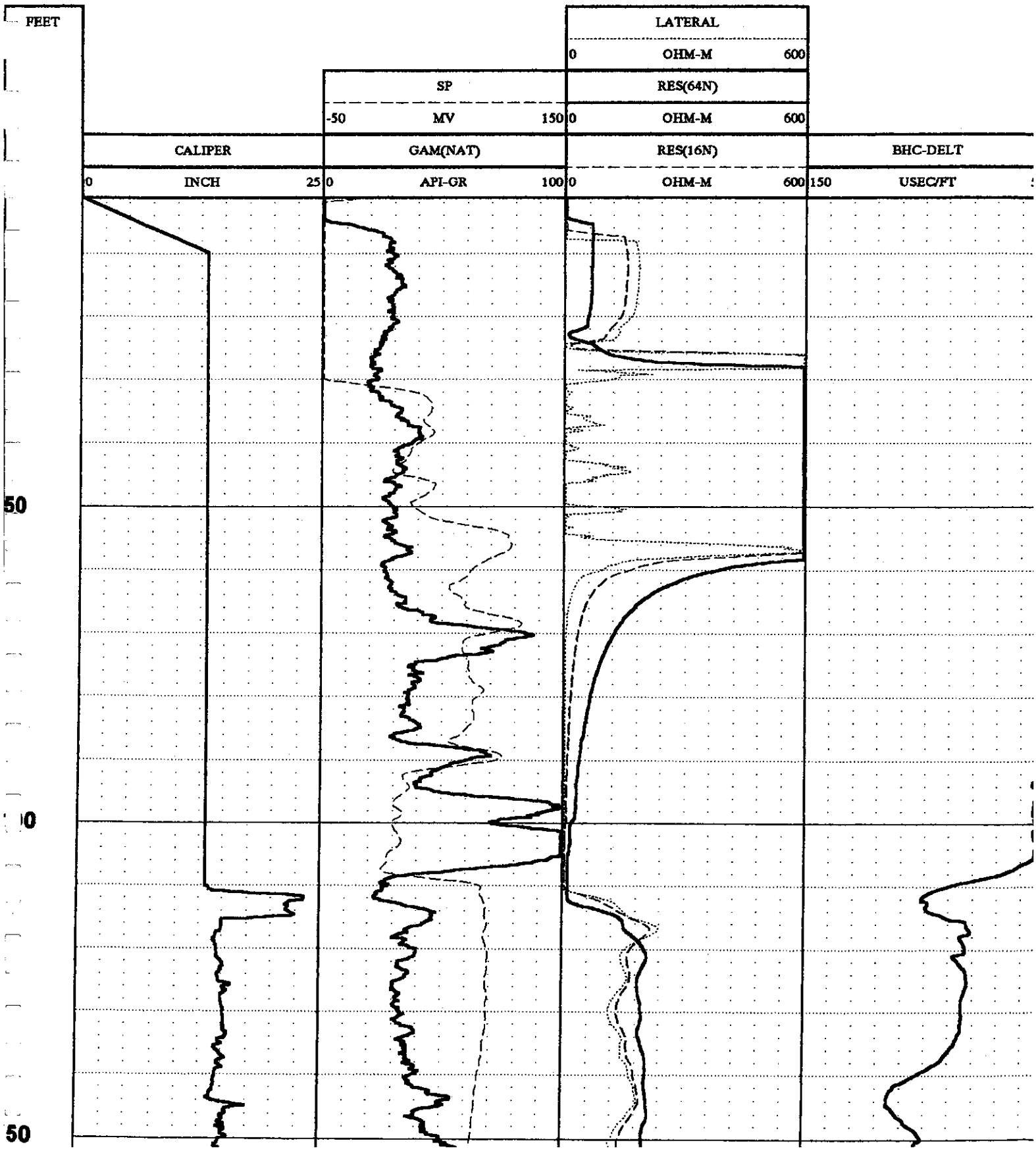
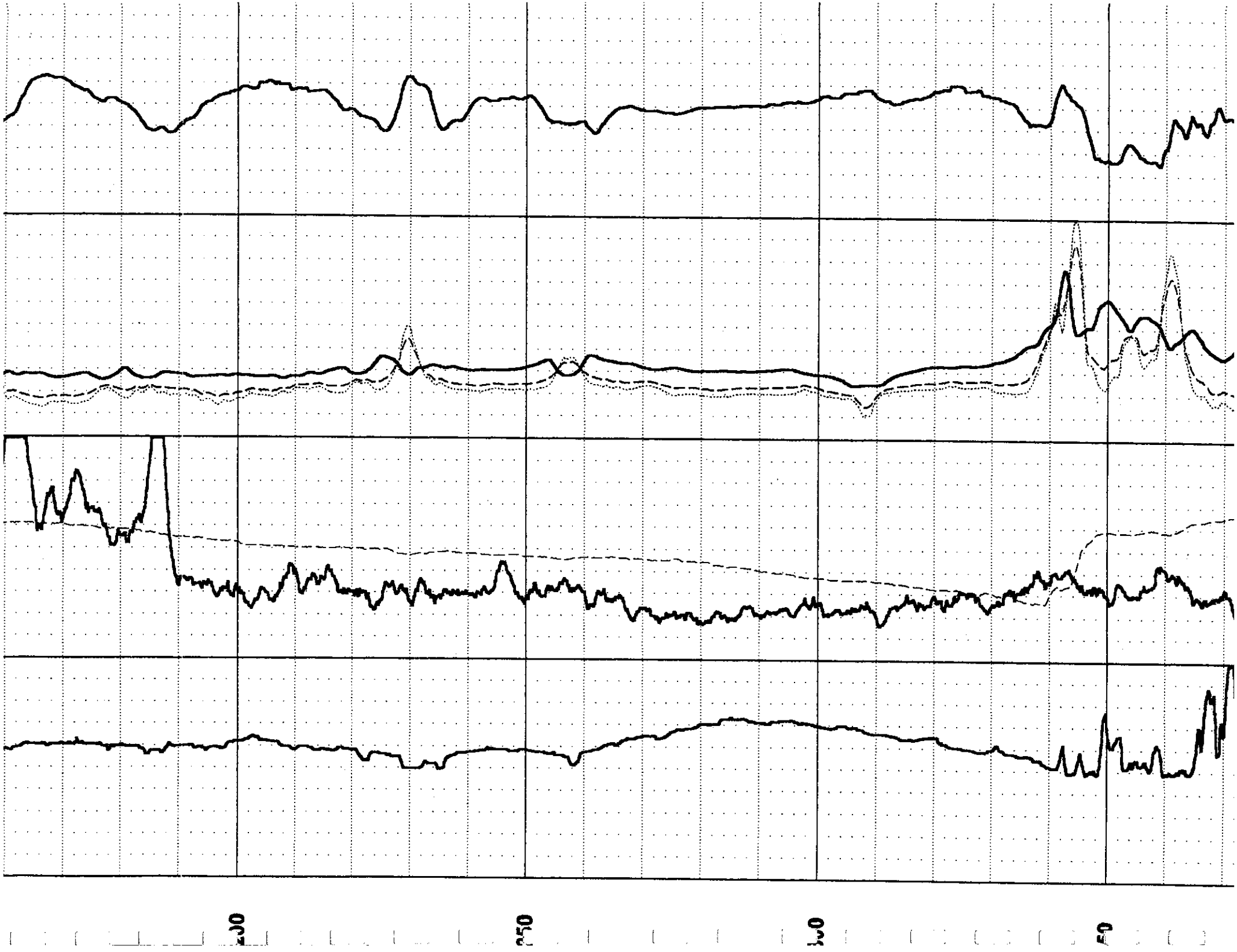
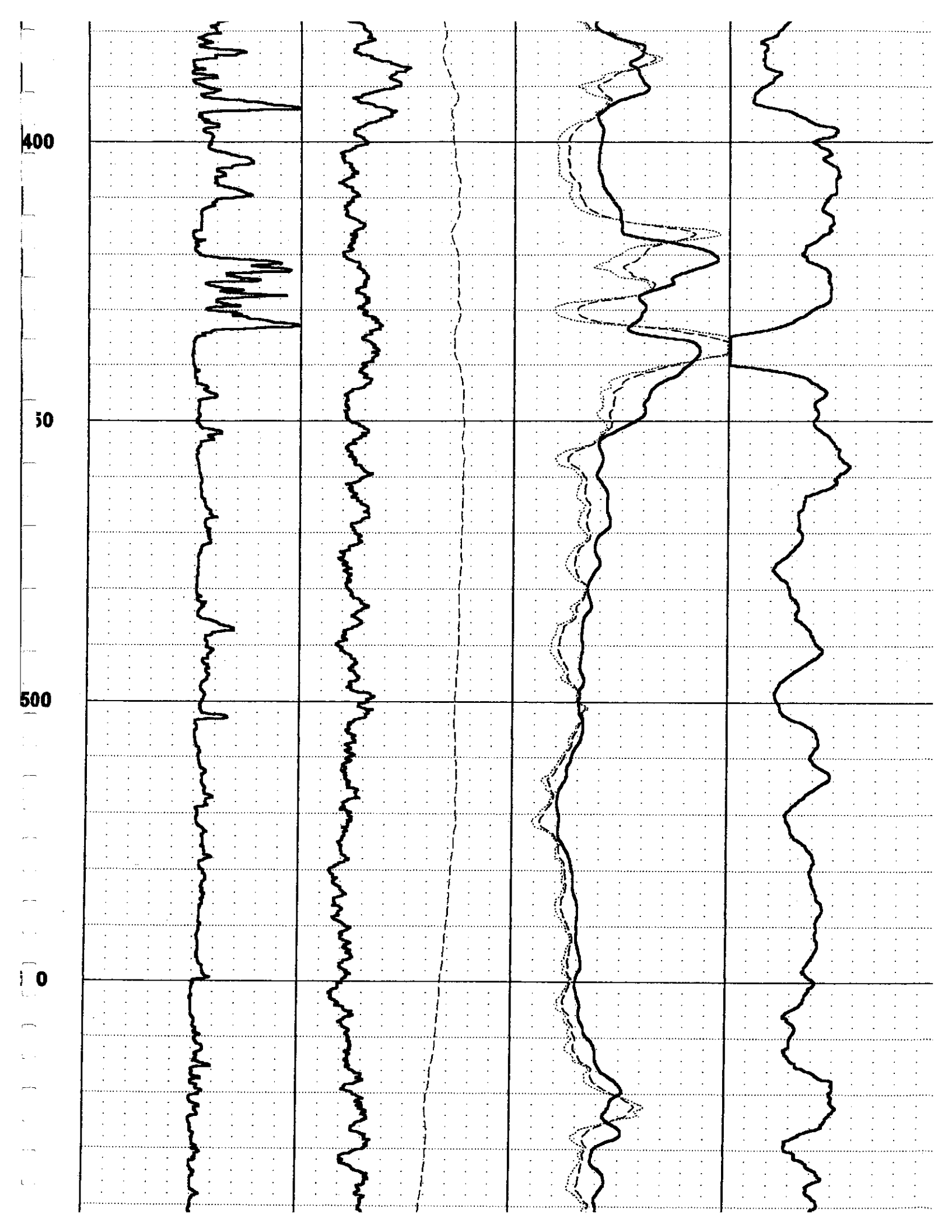
Phone 352-3725950

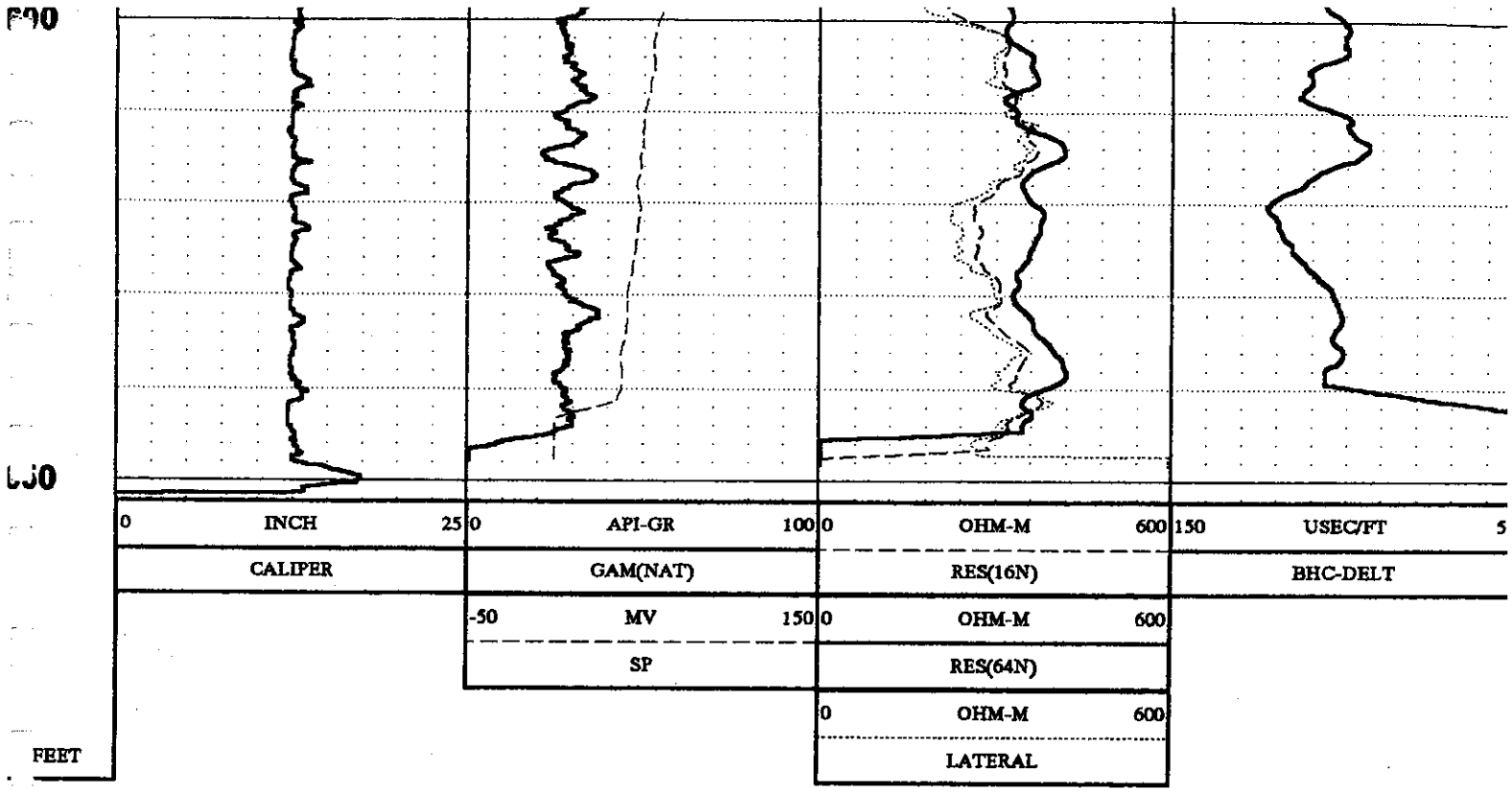
UFA #1

MPANY	: DIVERSIFIED DRILLING			OTHER SERVICES:	
VELL	: UFA #1				
CATION/FIELD	: RD KEENE PARK				
UNTY	: ORANGE				
TATE	: FL				
CTION	: .	TOWNSHIP	: .	RANGE	:
ATE	: 04/10/03	PERMANENT DATUM	: -		
PTH DRILLER	: 650'			KB	:
OG BOTTOM	: 652.00	LOG MEASURED FROM:	GL	DF	: -
G TOP	: 1.20	DRL MEASURED FROM:	GL	GL	: .
ASING DIAMETER	: 14	LOGGING UNIT	: BWT		
ASING TYPE	: STEEL	FIELD OFFICE	: GVL		
SING THICKNESS:	.375	RECORDED BY	: MAF		
SIZE	: 12.25	BOREHOLE FLUID	: WATER	FILE	: Original
GNETIC DECL.	:	RM	:	TYPE	: 9041A
ATRIX DENSITY	:	RM TEMPERATURE	:		
UTRON MATRIX	:	MATRIX DELTA T	:		
				THRESH:	5000


FEET
LATERAL
0 OHM-M 600
SP
RES(64N)
-50 MV 150
0 OHM-M 600
CALIPER
GAM(NAT)
RES(16N)
BHC-DELT
0 INCH 25
0 API-GR 100
0 OHM-M 600
150 USEC/FT
50
0
50

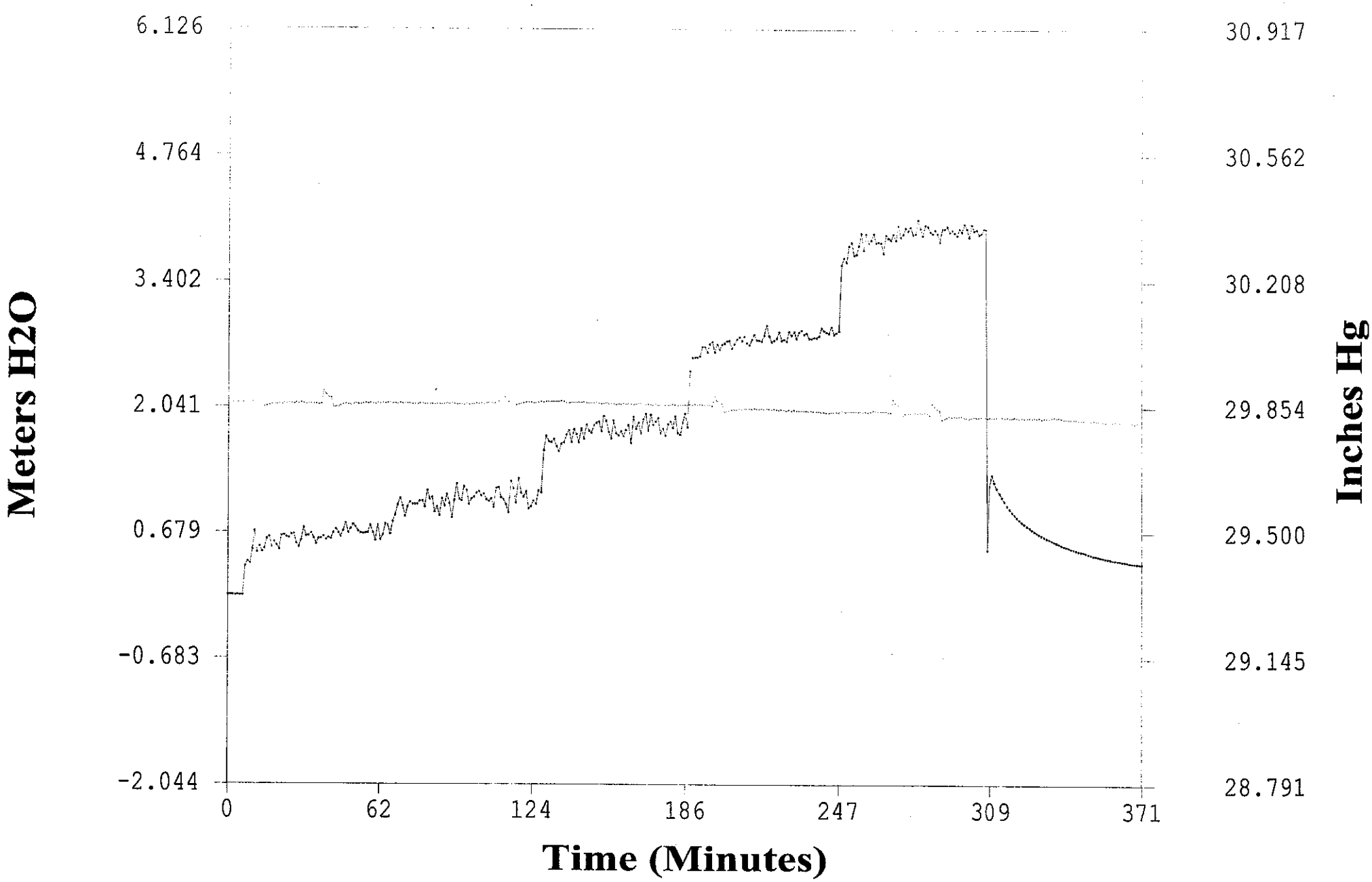



400
50
500
0


0 INCH 25
CALIPER
0 API-GR 100
GAM(NAT)
-50 MV 150
SP
0 OHM-M 600
RES(16N)
0 OHM-M 600
RES(64N)
0 OHM-M 600
LATERAL
150 USEC/FT 5
BHC-DELT
FEET

APPENDIX G

Well #1


6.126
4.764
3.402
2.041
0.679
-0.683
-2.044
Meters H2O
30.917
30.562
30.208
29.854
29.500
29.145
28.791
Inches Hg
0
62
124
186
247
309
371
Time (Minutes)
[1] -
[0] - Barometric

n-Situ Inc. Hermit 3000

Report generated: 04/16/03 15:55:31
Report from file: C:\Win-Situ\Data\SN45563 2003-04-16 075351 750 .bin
DataMgr Version 3.67

Serial number: 00045563
Firmware Version 7.10
Unit name: HERMIT 3000

Test name: 750

Test defined on: 04/16/03 06:56:26
Test started on: 04/16/03 07:53:51
Test stopped on: 04/16/03 14:05:14
Test extracted on: 04/16/03 14:47:14

Data gathered using Linear testing
Time between data points: 1.0000 Minutes.
Number of data samples: 372

TOTAL DATA SAMPLES 372

Channel number [1]
Measurement type: Pressure
Channel name:
Linearity: 0.0256000
Scale: 19.9392000
Offset: -0.2077000
Warmup: 50
Specific gravity: 1.000
Mode: TOC
User-defined reference: 0.000 Meters H2O
Referenced on: test start
Pressure head at reference: 6.849 Meters H2O

Channel number [0]
Measurement type: Barometric Pressure
Channel name: Barometric
Linearity: 0.0000000
Scale: 0.0000000
Offset: 0.0000000
Warmup: 50

Date	Time	ET (min)	Chan[1] Meters H2O	Chan[0] Inches Hg
/16/03	07:53:51	0.0000	0.000	29.866
/16/03	07:54:51	1.0000	0.001	29.866
04/16/03	07:55:51	2.0000	0.000	29.866
04/16/03	07:56:51	3.0000	-0.001	29.864
/16/03	07:57:51	4.0000	0.001	29.864
/16/03	07:58:51	5.0000	-0.002	29.866
04/16/03	07:59:51	6.0000	-0.001	29.866
/16/03	08:00:51	7.0000	0.315	29.866
/16/03	08:01:51	8.0000	0.365	29.866
04/16/03	08:02:51	9.0000	0.343	29.868
04/16/03	08:03:51	10.0000	0.492	29.868
/16/03	08:04:51	11.0000	0.695	29.868
/16/03	08:05:51	12.0000	0.462	29.866
04/16/03	08:06:51	13.0000	0.526	29.868
04/16/03	08:07:51	14.0000	0.471	29.846
/16/03	08:08:51	15.0000	0.504	29.854
/16/03	08:09:51	16.0000	0.607	29.856
04/16/03	08:10:51	17.0000	0.631	29.858
04/16/03	08:11:51	18.0000	0.515	29.860
/16/03	08:12:51	19.0000	0.576	29.860
/16/03	08:13:51	20.0000	0.538	29.860

4/16/03	08:14:51	21.0000	0.494	29.862
04/16/03	08:15:51	22.0000	0.642	29.860
04/16/03	08:16:51	23.0000	0.650	29.864
4/16/03	08:17:51	24.0000	0.631	29.862
4/16/03	08:18:51	25.0000	0.621	29.864
04/16/03	08:19:51	26.0000	0.657	29.864
04/16/03	08:20:51	27.0000	0.665	29.862
4/16/03	08:21:51	28.0000	0.558	29.866
4/16/03	08:22:51	29.0000	0.520	29.862
04/16/03	08:23:51	30.0000	0.594	29.864
04/16/03	08:24:51	31.0000	0.731	29.864
/16/03	08:25:51	32.0000	0.639	29.862
/16/03	08:26:51	33.0000	0.645	29.862
04/16/03	08:27:51	34.0000	0.670	29.862
04/16/03	08:28:51	35.0000	0.619	29.862
/16/03	08:29:51	36.0000	0.552	29.862
/16/03	08:30:51	37.0000	0.610	29.860
04/16/03	08:31:51	38.0000	0.614	29.862
/16/03	08:32:51	39.0000	0.637	29.899
/16/03	08:33:51	40.0000	0.601	29.888
04/16/03	08:34:51	41.0000	0.620	29.880
04/16/03	08:35:51	42.0000	0.609	29.878
/16/03	08:36:51	43.0000	0.675	29.852
/16/03	08:37:51	44.0000	0.718	29.854
04/16/03	08:38:51	45.0000	0.675	29.854
04/16/03	08:39:51	46.0000	0.632	29.858
/16/03	08:40:51	47.0000	0.701	29.860
/16/03	08:41:51	48.0000	0.783	29.862
04/16/03	08:42:51	49.0000	0.677	29.860
04/16/03	08:43:51	50.0000	0.721	29.860
/16/03	08:44:51	51.0000	0.767	29.862
/16/03	08:45:51	52.0000	0.735	29.864
04/16/03	08:46:51	53.0000	0.694	29.862
04/16/03	08:47:51	54.0000	0.672	29.862
/16/03	08:48:51	55.0000	0.665	29.864
/16/03	08:49:51	56.0000	0.672	29.866
04/16/03	08:50:51	57.0000	0.678	29.864
/16/03	08:51:51	58.0000	0.757	29.864
/16/03	08:52:51	59.0000	0.677	29.864
04/16/03	08:53:51	60.0000	0.593	29.862
04/16/03	08:54:51	61.0000	0.761	29.866
/16/03	08:55:51	62.0000	0.603	29.864
/16/03	08:56:51	63.0000	0.651	29.864
04/16/03	08:57:51	64.0000	0.771	29.864
04/16/03	08:58:51	65.0000	0.762	29.866
/16/03	08:59:51	66.0000	0.663	29.866
/16/03	09:00:51	67.0000	0.799	29.864
04/16/03	09:01:51	68.0000	0.869	29.864
04/16/03	09:02:51	69.0000	0.977	29.862
/16/03	09:03:51	70.0000	1.049	29.866
/16/03	09:04:51	71.0000	0.968	29.864
04/16/03	09:05:51	72.0000	0.855	29.864
/16/03	09:06:51	73.0000	0.959	29.864
/16/03	09:07:51	74.0000	1.011	29.864
04/16/03	09:08:51	75.0000	0.985	29.862
04/16/03	09:09:51	76.0000	0.987	29.862
/16/03	09:10:51	77.0000	0.989	29.862
/16/03	09:11:51	78.0000	1.020	29.864
04/16/03	09:12:51	79.0000	1.022	29.864
04/16/03	09:13:51	80.0000	0.960	29.862
/16/03	09:14:51	81.0000	1.139	29.862
/16/03	09:15:51	82.0000	1.039	29.862
04/16/03	09:16:51	83.0000	1.063	29.862
04/16/03	09:17:51	84.0000	0.905	29.862
/16/03	09:18:51	85.0000	0.959	29.862
/16/03	09:19:51	86.0000	0.863	29.862
04/16/03	09:20:51	87.0000	1.050	29.862
04/16/03	09:21:51	88.0000	0.968	29.862
/16/03	09:22:51	89.0000	1.095	29.864
/16/03	09:23:51	90.0000	0.997	29.862

04/16/03	09:24:51	91.0000	0.842	29.864
04/16/03	09:25:51	92.0000	1.032	29.862
04/16/03	09:26:51	93.0000	1.215	29.862
04/16/03	09:27:51	94.0000	1.043	29.862
04/16/03	09:28:51	95.0000	1.025	29.862
04/16/03	09:29:51	96.0000	1.182	29.862
04/16/03	09:30:51	97.0000	1.139	29.862
04/16/03	09:31:51	98.0000	0.991	29.862
04/16/03	09:32:51	99.0000	1.047	29.862
04/16/03	09:33:51	100.0000	1.066	29.862
04/16/03	09:34:51	101.0000	1.109	29.864
04/16/03	09:35:51	102.0000	1.126	29.862
04/16/03	09:36:51	103.0000	1.081	29.864
04/16/03	09:37:51	104.0000	1.098	29.862
04/16/03	09:38:51	105.0000	1.039	29.866
04/16/03	09:39:51	106.0000	1.021	29.866
04/16/03	09:40:51	107.0000	1.047	29.866
04/16/03	09:41:51	108.0000	0.956	29.864
04/16/03	09:42:51	109.0000	1.166	29.866
04/16/03	09:43:51	110.0000	1.175	29.870
04/16/03	09:44:51	111.0000	1.061	29.870
04/16/03	09:45:51	112.0000	1.037	29.888
04/16/03	09:46:51	113.0000	0.985	29.876
04/16/03	09:47:51	114.0000	0.897	29.870
04/16/03	09:48:51	115.0000	1.240	29.848
04/16/03	09:49:51	116.0000	1.163	29.856
04/16/03	09:50:51	117.0000	1.006	29.860
04/16/03	09:51:51	118.0000	1.271	29.862
04/16/03	09:52:51	119.0000	1.112	29.864
04/16/03	09:53:51	120.0000	1.066	29.866
04/16/03	09:54:51	121.0000	1.126	29.868
04/16/03	09:55:51	122.0000	0.943	29.868
04/16/03	09:56:51	123.0000	0.964	29.868
04/16/03	09:57:51	124.0000	1.025	29.866
04/16/03	09:58:51	125.0000	0.993	29.866
04/16/03	09:59:51	126.0000	1.137	29.868
04/16/03	10:00:51	127.0000	1.115	29.870
04/16/03	10:01:51	128.0000	1.577	29.868
04/16/03	10:02:51	129.0000	1.733	29.870
04/16/03	10:03:51	130.0000	1.670	29.870
04/16/03	10:04:51	131.0000	1.665	29.870
04/16/03	10:05:51	132.0000	1.699	29.870
04/16/03	10:06:51	133.0000	1.620	29.870
04/16/03	10:07:51	134.0000	1.567	29.870
04/16/03	10:08:51	135.0000	1.646	29.872
04/16/03	10:09:51	136.0000	1.662	29.870
04/16/03	10:10:51	137.0000	1.748	29.866
04/16/03	10:11:51	138.0000	1.796	29.866
04/16/03	10:12:51	139.0000	1.663	29.868
04/16/03	10:13:51	140.0000	1.804	29.868
04/16/03	10:14:51	141.0000	1.753	29.868
04/16/03	10:15:51	142.0000	1.661	29.868
04/16/03	10:16:51	143.0000	1.814	29.868
04/16/03	10:17:51	144.0000	1.703	29.870
04/16/03	10:18:51	145.0000	1.856	29.866
04/16/03	10:19:51	146.0000	1.789	29.866
04/16/03	10:20:51	147.0000	1.768	29.866
04/16/03	10:21:51	148.0000	1.849	29.866
04/16/03	10:22:51	149.0000	1.877	29.866
04/16/03	10:23:51	150.0000	1.890	29.864
04/16/03	10:24:51	151.0000	1.785	29.864
04/16/03	10:25:51	152.0000	1.949	29.864
04/16/03	10:26:51	153.0000	1.898	29.866
04/16/03	10:27:51	154.0000	1.776	29.864
04/16/03	10:28:51	155.0000	1.707	29.864
04/16/03	10:29:51	156.0000	1.903	29.864
04/16/03	10:30:51	157.0000	1.759	29.862
04/16/03	10:31:51	158.0000	1.739	29.864
04/16/03	10:32:51	159.0000	1.787	29.862
04/16/03	10:33:51	160.0000	1.727	29.864

/16/03	10:34:51	161.0000	1.800	29.862
04/16/03	10:35:51	162.0000	1.857	29.864
04/16/03	10:36:51	163.0000	1.657	29.862
/16/03	10:37:51	164.0000	1.944	29.862
/16/03	10:38:51	165.0000	1.814	29.864
04/16/03	10:39:51	166.0000	1.876	29.864
04/16/03	10:40:51	167.0000	1.762	29.864
/16/03	10:41:51	168.0000	1.915	29.862
/16/03	10:42:51	169.0000	1.977	29.862
04/16/03	10:43:51	170.0000	1.795	29.862
04/16/03	10:44:51	171.0000	1.968	29.862
/16/03	10:45:51	172.0000	1.854	29.860
/16/03	10:46:51	173.0000	1.889	29.862
04/16/03	10:47:51	174.0000	1.932	29.860
04/16/03	10:48:51	175.0000	1.762	29.860
/16/03	10:49:51	176.0000	1.817	29.862
04/16/03	10:50:51	177.0000	1.739	29.860
04/16/03	10:51:51	178.0000	1.863	29.860
/16/03	10:52:51	179.0000	1.890	29.860
/16/03	10:53:51	180.0000	1.826	29.862
04/16/03	10:54:51	181.0000	1.949	29.862
04/16/03	10:55:51	182.0000	1.768	29.860
/16/03	10:56:51	183.0000	1.748	29.862
/16/03	10:57:51	184.0000	1.881	29.860
04/16/03	10:58:51	185.0000	1.981	29.862
04/16/03	10:59:51	186.0000	1.831	29.860
/16/03	11:00:51	187.0000	2.437	29.862
/16/03	11:01:51	188.0000	2.586	29.862
04/16/03	11:02:51	189.0000	2.588	29.862
04/16/03	11:03:51	190.0000	2.588	29.862
/16/03	11:04:51	191.0000	2.604	29.862
/16/03	11:05:51	192.0000	2.705	29.862
04/16/03	11:06:51	193.0000	2.701	29.862
04/16/03	11:07:51	194.0000	2.647	29.860
/16/03	11:08:51	195.0000	2.736	29.860
04/16/03	11:09:51	196.0000	2.757	29.858
04/16/03	11:10:51	197.0000	2.650	29.884
/16/03	11:11:51	198.0000	2.735	29.872
/16/03	11:12:51	199.0000	2.675	29.866
04/16/03	11:13:51	200.0000	2.729	29.864
04/16/03	11:14:51	201.0000	2.743	29.842
/16/03	11:15:51	202.0000	2.767	29.844
/16/03	11:16:51	203.0000	2.772	29.846
04/16/03	11:17:51	204.0000	2.687	29.848
04/16/03	11:18:51	205.0000	2.737	29.848
/16/03	11:19:51	206.0000	2.789	29.848
/16/03	11:20:51	207.0000	2.810	29.850
04/16/03	11:21:51	208.0000	2.772	29.850
04/16/03	11:22:51	209.0000	2.817	29.850
/16/03	11:23:51	210.0000	2.747	29.852
/16/03	11:24:51	211.0000	2.725	29.852
04/16/03	11:25:51	212.0000	2.786	29.850
/16/03	11:26:51	213.0000	2.842	29.852
/16/03	11:27:51	214.0000	2.777	29.850
04/16/03	11:28:51	215.0000	2.778	29.850
04/16/03	11:29:51	216.0000	2.768	29.852
/16/03	11:30:51	217.0000	2.832	29.850
/16/03	11:31:51	218.0000	2.942	29.852
04/16/03	11:32:51	219.0000	2.826	29.850
04/16/03	11:33:51	220.0000	2.761	29.850
/16/03	11:34:51	221.0000	2.776	29.850
/16/03	11:35:51	222.0000	2.799	29.848
04/16/03	11:36:51	223.0000	2.867	29.848
04/16/03	11:37:51	224.0000	2.777	29.850
/16/03	11:38:51	225.0000	2.787	29.848
/16/03	11:39:51	226.0000	2.765	29.846
04/16/03	11:40:51	227.0000	2.876	29.848
04/16/03	11:41:51	228.0000	2.831	29.846
/16/03	11:42:51	229.0000	2.869	29.848
/16/03	11:43:51	230.0000	2.797	29.846

4/16/03	11:44:51	231.0000	2.866	29.846
04/16/03	11:45:51	232.0000	2.888	29.846
04/16/03	11:46:51	233.0000	2.844	29.846
4/16/03	11:47:51	234.0000	2.858	29.846
4/16/03	11:48:51	235.0000	2.798	29.844
04/16/03	11:49:51	236.0000	2.798	29.846
04/16/03	11:50:51	237.0000	2.809	29.844
4/16/03	11:51:51	238.0000	2.806	29.844
4/16/03	11:52:51	239.0000	2.825	29.844
04/16/03	11:53:51	240.0000	2.914	29.842
04/16/03	11:54:51	241.0000	2.884	29.842
4/16/03	11:55:51	242.0000	2.868	29.842
4/16/03	11:56:51	243.0000	2.856	29.840
04/16/03	11:57:51	244.0000	2.928	29.842
04/16/03	11:58:51	245.0000	2.842	29.842
4/16/03	11:59:51	246.0000	2.861	29.842
4/16/03	12:00:51	247.0000	2.882	29.842
04/16/03	12:01:51	248.0000	3.593	29.846
4/16/03	12:02:51	249.0000	3.670	29.844
4/16/03	12:03:51	250.0000	3.622	29.842
04/16/03	12:04:51	251.0000	3.798	29.844
04/16/03	12:05:51	252.0000	3.836	29.844
4/16/03	12:06:51	253.0000	3.701	29.844
4/16/03	12:07:51	254.0000	3.714	29.844
04/16/03	12:08:51	255.0000	3.802	29.844
04/16/03	12:09:51	256.0000	3.935	29.844
4/16/03	12:10:51	257.0000	3.754	29.842
4/16/03	12:11:51	258.0000	3.932	29.844
04/16/03	12:12:51	259.0000	3.830	29.842
04/16/03	12:13:51	260.0000	3.864	29.844
4/16/03	12:14:51	261.0000	3.933	29.846
4/16/03	12:15:51	262.0000	3.830	29.846
04/16/03	12:16:51	263.0000	3.845	29.844
04/16/03	12:17:51	264.0000	3.832	29.844
4/16/03	12:18:51	265.0000	3.721	29.844
4/16/03	12:19:51	266.0000	3.919	29.844
04/16/03	12:20:51	267.0000	3.886	29.842
4/16/03	12:21:51	268.0000	3.864	29.842
/16/03	12:22:51	269.0000	3.931	29.878
04/16/03	12:23:51	270.0000	3.864	29.868
04/16/03	12:24:51	271.0000	4.016	29.862
/16/03	12:25:51	272.0000	3.897	29.827
/16/03	12:26:51	273.0000	3.930	29.834
04/16/03	12:27:51	274.0000	3.994	29.838
04/16/03	12:28:51	275.0000	3.967	29.838
/16/03	12:29:51	276.0000	4.004	29.840
/16/03	12:30:51	277.0000	3.924	29.840
04/16/03	12:31:51	278.0000	3.933	29.840
04/16/03	12:32:51	279.0000	4.083	29.840
/16/03	12:33:51	280.0000	3.990	29.840
/16/03	12:34:51	281.0000	3.915	29.840
04/16/03	12:35:51	282.0000	4.024	29.840
4/16/03	12:36:51	283.0000	4.012	29.838
/16/03	12:37:51	284.0000	3.956	29.834
4/16/03	12:38:51	285.0000	3.935	29.866
04/16/03	12:39:51	286.0000	3.974	29.858
/16/03	12:40:51	287.0000	3.937	29.850
/16/03	12:41:51	288.0000	3.846	29.848
04/16/03	12:42:51	289.0000	3.985	29.821
04/16/03	12:43:51	290.0000	3.985	29.825
/16/03	12:44:51	291.0000	4.010	29.827
/16/03	12:45:51	292.0000	3.948	29.831
04/16/03	12:46:51	293.0000	3.972	29.829
04/16/03	12:47:51	294.0000	3.945	29.829
/16/03	12:48:51	295.0000	3.917	29.829
/16/03	12:49:51	296.0000	3.986	29.829
04/16/03	12:50:51	297.0000	3.955	29.831
04/16/03	12:51:51	298.0000	4.036	29.827
/16/03	12:52:51	299.0000	3.988	29.827
/16/03	12:53:51	300.0000	3.896	29.825

4/16/03	12:54:51	301.0000	4.029	29.827
04/16/03	12:55:51	302.0000	3.967	29.829
04/16/03	12:56:51	303.0000	3.976	29.827
4/16/03	12:57:51	304.0000	3.924	29.827
4/16/03	12:58:51	305.0000	3.941	29.827
04/16/03	12:59:51	306.0000	3.985	29.827
04/16/03	13:00:51	307.0000	3.982	29.827
4/16/03	13:01:51	308.0000	0.501	29.825
4/16/03	13:02:51	309.0000	1.202	29.827
04/16/03	13:03:51	310.0000	1.318	29.827
04/16/03	13:04:51	311.0000	1.239	29.827
4/16/03	13:05:51	312.0000	1.174	29.827
4/16/03	13:06:51	313.0000	1.118	29.827
04/16/03	13:07:51	314.0000	1.071	29.827
04/16/03	13:08:51	315.0000	1.027	29.825
4/16/03	13:09:51	316.0000	0.983	29.827
04/16/03	13:10:51	317.0000	0.947	29.825
04/16/03	13:11:51	318.0000	0.913	29.825
4/16/03	13:12:51	319.0000	0.884	29.827
4/16/03	13:13:51	320.0000	0.856	29.825
04/16/03	13:14:51	321.0000	0.831	29.825
04/16/03	13:15:51	322.0000	0.806	29.825
4/16/03	13:16:51	323.0000	0.785	29.825
4/16/03	13:17:51	324.0000	0.763	29.825
04/16/03	13:18:51	325.0000	0.743	29.825
04/16/03	13:19:51	326.0000	0.722	29.825
4/16/03	13:20:51	327.0000	0.704	29.825
4/16/03	13:21:51	328.0000	0.689	29.825
04/16/03	13:22:51	329.0000	0.674	29.825
04/16/03	13:23:51	330.0000	0.658	29.823
4/16/03	13:24:51	331.0000	0.642	29.825
4/16/03	13:25:51	332.0000	0.629	29.825
04/16/03	13:26:51	333.0000	0.616	29.825
04/16/03	13:27:51	334.0000	0.602	29.827
4/16/03	13:28:51	335.0000	0.590	29.827
04/16/03	13:29:51	336.0000	0.579	29.825
04/16/03	13:30:51	337.0000	0.566	29.827
4/16/03	13:31:51	338.0000	0.554	29.825
4/16/03	13:32:51	339.0000	0.545	29.823
04/16/03	13:33:51	340.0000	0.536	29.821
04/16/03	13:34:51	341.0000	0.527	29.821
4/16/03	13:35:51	342.0000	0.515	29.821
4/16/03	13:36:51	343.0000	0.507	29.821
04/16/03	13:37:51	344.0000	0.498	29.821
04/16/03	13:38:51	345.0000	0.490	29.819
4/16/03	13:39:51	346.0000	0.482	29.819
4/16/03	13:40:51	347.0000	0.480	29.819
04/16/03	13:41:51	348.0000	0.471	29.819
04/16/03	13:42:51	349.0000	0.458	29.817
4/16/03	13:43:51	350.0000	0.452	29.817
4/16/03	13:44:51	351.0000	0.442	29.819
04/16/03	13:45:51	352.0000	0.436	29.817
4/16/03	13:46:51	353.0000	0.431	29.817
4/16/03	13:47:51	354.0000	0.423	29.817
04/16/03	13:48:51	355.0000	0.418	29.815
04/16/03	13:49:51	356.0000	0.412	29.813
4/16/03	13:50:51	357.0000	0.408	29.815
4/16/03	13:51:51	358.0000	0.401	29.813
04/16/03	13:52:51	359.0000	0.394	29.813
04/16/03	13:53:51	360.0000	0.390	29.815
4/16/03	13:54:51	361.0000	0.385	29.813
4/16/03	13:55:51	362.0000	0.383	29.813
04/16/03	13:56:51	363.0000	0.377	29.811
04/16/03	13:57:51	364.0000	0.372	29.811
4/16/03	13:58:51	365.0000	0.366	29.811
4/16/03	13:59:51	366.0000	0.361	29.811
04/16/03	14:00:51	367.0000	0.355	29.811
04/16/03	14:01:51	368.0000	0.354	29.809
4/16/03	14:02:51	369.0000	0.351	29.811
4/16/03	14:03:51	370.0000	0.349	29.809

1/16/03	14:04:51	371.0000	0.347	29.840

OWNER: SFVMD DATE: 4-16-03

ENGINEER:

LOCATION: R.D. Boone Park Well No 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED 125 HP

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
9:00	14"	750	28.68 STATIC 9:00		
9:01			30.03	1.35	
9:02			30.09	1.41	
9:03			30.30	1.62	
9:04			30.48	1.80	
9:05			30.20	1.52	adj pump 740 to 750.
9:06			30.39	1.71	
9:07			30.44	1.76	
9:08			30.49	1.81	
9:09			30.51	1.83	
9:10			30.56	1.88	
9:11			30.56	1.88	
9:13			30.60	1.92	
9:15			30.70	2.02	
9:17			30.71	2.03	
9:19			30.72	2.04	
9:21			30.75	2.07	
9:23			30.78	2.10	
9:25			30.75	2.07	
9:27			30.73	2.03	
9:29		↓	30.79	2.11	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene Park, Well No. 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
9:31	[illegible]"	~~[illegible]~~ 710	30.80	2.12	[illegible] Pump [illegible] 950
9:33		↓	30.85	[illegible]	
9:35			30.96	2.28	
9:37			30.90	2.22	
9:39			30.99	2.31	
9:41			30.98	2.30	
[illegible]			30.96	2.28	
[illegible]			30.88	2.21	
[illegible]			30.88	2.21	
[illegible]		↓	31.00		
[illegible]2	change flow rate	1,000	31.88		
10:03		↓	31.91		
10:04			31.88		
10:05			31.91		
10:06			31.88		
10:07			31.93		
10:08			32.03		
10:09			31.95		
10:10			32.00		
10:11			31.99		
10:13		↓	32.00		

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene Park, Well No. 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
10:15	14	1000	32.03	3.35	
10:17		↓	32.08	3.40	
10:19		↓	32.14	3.46	
10:21		↓	32.16	3.48	
10:23		↓	32.11	3.43	
10:25		↓	32.11	3.43	
10:27		↓	32.20	3.52	
10:29		↓	32.15	3.47	
10:31		↓	32.18	3.50	
10:33		↓	32.16	3.48	
10:35		↓	32.20	3.52	
10:37		↓	32.20	3.52	
10:39		↓	32.26	3.58	
10:41		↓	32.23	3.55	
10.46		↓	32.33	3.65	
10:51		1000	32.26	3.58	
10:56		↓	32.28	3.60	
11:01		↓	32.39	3.71	
11:02	[illegible]	1500	34.10	5.42	
11:03		↓	34.19	5.51	
11:04		↓	34.19	5.51	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene Park Well No 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
11:05		1500	34.23	5.60	
11:06			34.26	5.58	
11:07			34.38	5.70	
11:08			34.39	5.71	
11:09			34.39	5.71	
11:10			34.36	5.68	
11:11			34.49	5.81	
11.13			34.51	5.83	
11:15			34.55	5.87	
11:17			34.58	5.90	
11:19			34.60	5.92	
11:21		1500	34.68	6.00	
11:23			34.64	5.96	
11:25			34.71	6.03	
11:27			34.72	6.04	
11:29			34.78	6.10	
11:31			34.79	6.11	
11:33			34.80	6.12	
11:35			34.81	6.13	
11:37			34.83	6.15	
11:39			34.86	6.18	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: P.B. Keene Ranch, Well No 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
11:41	14	1500	34.85	6.17	
11:46			34.91	6.23	
11:51			34.88	6.20	
11:56			34.96	6.28	
12:01			35.00	6.32	
12:02	change flow rate	2000	37.21	8.53	
12:03			37.39	8.71	
12:04			37.42	8.74	
12:05			37.51	8.83	
12:06			37.55	8.87	
12:07			37.59	8.91	
12:08			37.60	8.92	
12:09			37.62	8.94	
12:10			37.65	8.97	
12:11			37.73	9.05	
12:13			37.81	9.13	
12:15			37.77	9.09	
12:17			37.86	9.18	
12:19			37.91	9.23	
12:21			37.92	9.24	
12:23			37.99	9.31	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene Park, Well No 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
12:25	14	2000	37.97	9.29	
12:27			38.02	9.34	
12:29			38.03	9.35	
12:31			38.09	9.41	
12:33			38.09	9.41	
12:35			38.14	9.46	
12:37			38.12	9.44	
12:39			38.15	9.47	
12:41			38.20	9.52	
12:46			38.25	9.57	
12:51			38.28	9.60	
12:56			38.28	9.60	
1:01		↓	38.25	9.57	
1:02		2250	40.10	12.22	
1:03			41.02	12.34	
1:04			41.11	12.43	
1:05			41.13	12.45	
1:06			41.22	12.54	
1:07			41.28	12.60	
1:08			41.32	12.64	
1:09		↓	41.36	12.68	

OWNER: SFWMD DATE: 4-10-03

ENGINEER:

LOCATION: [illegible]

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
1:10	14	2450	41.38	12.70	
1:11			41.42	12.74	
1:13			41.48	12.80	
1:15			41.50	12.81	
1:17			41.55	12.87	
1:19			41.60	12.92	
1:21			41.65	12.97	
1:23			41.69	13.01	
1:25			41.69	13.01	
1:27			41.76	13.08	
1:29			41.83	13.15	
1:31			41.74	13.06	
1:33			41.85	13.17	
1:35			41.75	13.07	
1:37			41.78	13.10	
1:39			41.88	13.20	
1:41			41.80	13.12	
1:46			41.96	13.28	
1:51			42.02	13.34	
1:56			42.03	13.35	
2:01		↓	42.06	13.38	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene Park Well No. 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
Pump	Turned Off @ 2:01				
2:02			31.98	3.30	
2:03			33.18	1.50	
2:04			32.92	1.24	
2:05			[illegible]	[illegible]	
[illegible]			[illegible]	3.74	
[illegible]			32.35	3.67	
[illegible]			[illegible]	3.53	
[illegible]			32.09	3.41	
[illegible]			31.91	3.23	
[illegible]			31.79	3.11	
2:13			31.66	2.98	
2:15			31.42	2.74	
2:17			31.34	2.66	
2:19			31.21	2.53	
[illegible]			31.09	2.41	
2:23			[illegible]	2.30	
[illegible]			30.89	2.21	
2:27			30.79	2.11	
2:29			30.70	2.02	
2:31			[illegible]	1.95	

OWNER: SFWMD DATE: 4-16-03

ENGINEER:

LOCATION: RD Keene for Well No 1

STATIC WATER LEVEL BEFORE TEST 28.68 AFTER

PUMPING EQUIPMENT USED

TIME	ORIFICE READING IN INCHES	FLOW RATE IN GPM	DEPTH TO PUMPING WATER LEVEL	DRAW-DOWNS	CONDI-TIONS OF WATER
2:33	14	0	30.57	1.89	
2:35			30.49	1.81	
2:37			30.43	1.75	
2:39			30.37	1.69	
2:41			30.33	1.65	
2:43			30.28	1.60	
2:45			30.24	1.56	
2:47			30.20	1.52	
2:49			30.15	1.47	
2:51			30.11	1.43	
2:53			30.09	1.41	
2:55			30.05	1.37	
2:57			30.02	1.34	
2:59			29.98	1.30	
3:01			29.95	1.27	

Owner: SFWMD RD-Keene PARK Date: 6-16-03

Location:

Static Water Level Before Test: meter-2867 After: 2867-meter

Pumping Equipment Used: Hermit 3000 - 2-50 PSI - 3-15 PSI TRANSDUCERS - PAGE 1 of 9

JMC Combo - 2765

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5	MANGOATE
10:25 AM	STATIC WATER 28.81	29.73	11.70	6.81	6.97	
START OF TEST 12:45 PM	37.21	29.95	11.64	6.79	6.95	47" H2O 2500 GPM ?
1:00	38.81	33.71	11.65	6.80	6.99	
1:15	39.45	34.44	11.65	6.81	6.99	45.5
1:30	39.71	34.78	11.65	6.81	6.99	
1:45	40.19	35.03	11.65	6.82	6.99	45.0
2:00	40.24	35.29	11.65	6.82	6.99	
2:15	40.48	35.42	11.65	6.82	6.99	
2:30	40.64	35.51	11.65	6.82	6.99	
2:45	40.80	35.67	11.63	6.82	6.99	44.5
3:00	40.80	35.74	11.63	6.81	7.00	
3:15	40.85	35.83	11.63	6.82	7.00	
3:30	40.91	35.91	11.63	6.82	7.00	
3:45	40.91	35.95	11.63	6.82	7.00	
4:00	40.88	36.00	11.63	6.82	7.00	44.25
4:15	41.08	36.06	11.63	6.82	7.00	HEAVY RAINS
4:30	41.13	36.10	11.63	6.82	7.00	
4:45	41.11	36.14	11.62	6.82	7.00	Rains stopped
5:00	41.18	36.18	11.61	6.82	7.00	44.25 2450 GPM
5:15	41.11	36.18	11.60	6.81	6.99	Retention Pond full
5:30	41.12	36.19	11.60	6.81	6.99	
5:45	41.11	36.19	11.61	6.81	6.96	

Owner: SFWMD Date: 6-16-03

Location: W RDK and Pond

Static Water Level Before Test: After:

Pumping Equipment Used:

PAGE 2 of 9

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5	MPUMP
6:00	41.14	36.19	11.62	6.82	6.98	44.25
6:15	41.14	36.19	11.62	6.82	6.97	
6:30	41.13	36.19	11.62	6.82	6.97	RAIN
6:45	41.12	36.19	11.62	6.82	6.97	
7:00	41.13	36.19	11.62	6.82	6.97	44.28
7:15	41.14	36.19	11.62	6.82	6.97	STOPPED RAINING
7:30	41.14	36.19	11.62	6.82	6.97	
7:45	41.14	36.19	11.62	6.82	6.97	
8:00	41.14	36.19	11.62	6.82	6.97	44.25
8:15	41.14	36.18	11.62	6.82	6.97	
8:30	41.14	36.19	11.62	6.82	6.96	
8:45	41.14	36.19	11.62	6.82	6.95	44.25
9:00	41.14	36.19	11.62	6.81	6.95	
9:15	41.14	36.17	11.74	6.78	6.93	
9:30	41.14	36.26	11.75	6.78	6.92	
9:45	41.19	36.25	11.76	6.78	6.93	
10:00	41.19	36.26	11.68	6.78	6.93	44.25
10:15	41.22	36.26	11.76	6.78	6.91	
10:30	41.21	36.28	11.76	6.78	6.91	
10:45	41.21	36.26	11.75	6.78	6.91	
11:00	41.21	36.26	11.73	6.78	6.92	44.25
11:15	41.21	36.26	11.73	6.78	6.92	

915 PH-8.39 TEMP 23.5 COND. 297

Owner: SFWMD Date: 6/16/03

Location: R.O. KEENE

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2R	Well No. 3	Well No. 4	Well No. 5	
1130	41.21	36.26	11.73	6.78	6.91	
1145	41.21	36.30	11.77	6.78	6.92	
1200	41.29	36.31	11.73	6.73	6.90	44.25
0015	41.31	36.31	11.73	6.73	6.90	
0030	41.27	36.31	11.74	6.71	6.89	
0045	41.30	36.34	11.73	6.73	6.90	
0100	41.31	36.34	11.77	6.73	6.90	44.25
0115	41.31	36.37	11.80	6.75	6.89	
0130	41.32	36.38	11.78	6.75	6.90	
0145	41.32	36.40	11.80	6.73	6.88	
0200	41.31	36.41	11.82	6.75	6.89	44.25
0215	41.32	36.44	11.82	6.73	6.88	
0230	41.34	36.44	11.84	6.75	6.89	
0245	41.34	36.45	11.88	6.73	6.89	
0300	41.35	36.45	11.88	6.75	6.90	44.25
0315	41.38	36.45	11.87	6.73	6.90	
0330	41.36	36.45	11.88	6.75	6.89	
0345	41.35	36.46	11.89	6.70	6.85	
0400	41.36	36.48	11.88	6.73	6.85	44.25
0415	41.41	36.48	11.86	6.72	6.85	
0430	41.41	36.48	11.88	6.73	6.85	
0445	41.38	36.48	11.86	6.70	6.85	

Owner: SFWMD Date: 6/17/03
Location: R.D. KEENE
Static Water Level Before Test: After:
Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2R	Well No. 3	Well No. 4	Well No. 5	MPVAPC
0500	41.40	36.48	11.87	6.70	6.85	44.25
0515	41.40	36.48	11.87	6.70	6.85	
0530	41.40	36.48	11.87	6.70	6.85	
0545	41.40	36.48	11.87	6.70	6.85	
0600	41.40	36.48	11.87	6.70	6.85	44.25
0615	41.40	36.48	11.87	6.70	6.85	
0630	41.38	36.48	11.83	6.70	6.83	
0645	41.36	36.48	11.80	6.70	6.80	
0700	41.36	36.48	11.80	6.70	6.80	44.25
0715	41.38	36.48	11.80	6.70	6.80	
0730	41.36	36.48	11.80	6.70	6.80	
0745	41.36	36.48	11.80	6.70	6.80	
0800	41.38	36.48	11.81	6.70	6.80	44.25
0815	41.35	36.46	11.80	6.70	6.80	
0830	41.36	36.45	11.81	6.69	6.80	
0845	41.60	36.43	11.50	6.68	6.79	
0900	41.32	36.37	11.49	6.64	6.79	44.25
0915	41.30	36.37	11.47	6.65	6.79	
0930	41.35	36.33	11.49	6.65	6.79	
0945	41.33	36.35	11.45	6.64	6.78	
1000	41.31	36.37	11.47	6.65	6.78	44.5
1015	41.32	36.37	11.45	6.64	6.78	

2450-9PM

0900- Temp - 23.9
PH - 7.97
cond - 290

Owner: SFWMD Date: 6-17-03

Location: RD-Keene Park

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5	Mguage
10:30AM	41.33	36.35	11.43	6.65	6.77	44.25
10:45	41.32	36.32	11.43	6.65	6.76	
11:00	41.31	36.29	11.43	6.65	6.76	44.5
11:15	41.32	36.30	11.43	6.65	6.76	
11:30	41.32	36.32	11.42	6.65	6.76	
11:45	41.32	36.32	11.42	6.65	6.77	
12:00PM	41.32	36.33	11.42	6.65	6.77	44.25
12:15	41.33	36.34	11.43	6.65	6.78	
12:30	41.30	36.34	11.40	6.65	6.77	
12:45	41.31	36.32	11.41	6.64	6.77	
1:00	41.31	36.32	11.41	6.64	6.77	44.25
1:30	41.29	36.33	11.42	6.65	6.78	
2:00	41.31	36.32	11.43	6.65	6.78	44.25
2:30	41.28	36.32	11.42	6.65	6.77	
3:00	41.29	36.31	11.42	6.65	6.78	44.25
3:30	41.28	36.31	11.42	6.65	6.78	
4:00	41.27	36.31	11.42	6.65	6.78	44.25
4:30	41.28	36.29	11.38	6.65	6.77	44.50
5:00	41.26	36.20	11.39	6.64	6.76	44.50
5:30	41.24	36.21	11.41	6.63	6.77	
6:00	41.21	36.23	11.40	6.64	6.77	44.50
6:30	41.24	36.26	11.41	6.64	6.77	

HR Test Complete

2450-9Pa

Owner: RD KEENE PART Date: 6-17-03 6-18-03

Location: SFWMD

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5	MGD AGE
7:00PM	41.27	36.26	11.42	6.65	677	.44.50
7:30	41.29	36.24	11.40	6.64	676	
8:00	41.29	36.31	11.42	6.63	676	.44.50
8:30	41.28	36.31	11.43	6.63	676	
9:00	41.27	36.30	11.42	6.63	6.76	.44.50
9:30	41.26	36.31	11.46	6.63	6.74	.
10:00	41.31	36.31	11.45	6.63	6.73	.44.50
10:30	41.28	36.32	11.44	6.64	6.74	.
11:00	41.33	36.34	11.45	6.63	6.73	.44.50
11:30	41.32	36.36	11.45	6.64	6.75	.
12:00AM	41.34	36.38	11.45	6.63	6.74	.44.50
12:30	41.34	36.40	11.45	6.63	6.73	.
1:00	41.36	36.44	11.45	6.63	673	.44.50
1:30	41.36	36.45	11.46	6.63	6.73	.
2:00	41.38	36.48	11.45	6.63	6.73	.44.50
2:30	41.38	36.49	11.47	6.63	6.73	
3:00	41.41	36.50	11.46	6.63	6.73	.44.50
3:30	41.42	36.50	11.47	6.62	6.73	
4:00	41.42	36.52	11.47	6.60	6.72	.44.50
4:30	41.44	36.54	11.49	6.60	6.72	
5:00	41.45	36.56	11.48	6.59	6.71	.44.50
5:30	41.47	36.59	11.47	6.59	6.70	

2450-7PM meter

SAMPLE PARAMETERS

2460 GPM METER

2460 GPM METER

2440 GPM METER

2440 GPM METER

2440 GPM METER

9:00 Temp - 7.83 - pH
pH - 24.5 - temp
Cond - 296

Owner: SFUND Date: 6/18/03

Location: R.D. KEEVE

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2R	Well No. 3	Well No. 4	Well No. 5	MEASURE
600 AM	41.48	36.60	11.47	6.59	6.70	44.50
630	41.47	36.62	11.49	6.58	6.70	
700	41.49	36.61	11.49	6.59	6.70	44.50
730	41.51	36.62	11.48	6.58	6.69	
800	41.51	36.62	11.47	6.58	6.70	44.50
830	41.52	36.61	11.47	6.59	6.69	
900	41.55	36.61	11.48	6.58	6.68	44.50
930	41.50	36.61	11.45	6.57	6.67	
1000	41.51	36.61	11.48	6.56	6.67	44.50
1030	41.49	36.61	11.45	6.55	6.69	
1100	41.52	36.61	11.46	6.56	6.69	44.50
1130	41.49	36.61	11.47	6.56	6.67	
1200	41.44	36.58	11.45	6.55	6.67	44.50
1230	41.51	36.58	11.51	6.55	6.67	
1300	41.52	36.59	11.47	6.55	6.67	44.50
1330	41.47	36.56	11.46	6.55	6.67	
1400	41.45	36.55	11.47	6.55	6.67	44.50
1430	41.45	36.55	11.45	6.55	6.66	
1500	41.45	36.53	11.46	6.55	6.65	44.50
1530	41.47	36.56	11.45	6.55	6.65	
1600	41.42	36.55	11.46	6.55	6.65	44.50
1630	41.44	36.54	11.45	6.55	6.65	

24/30 GPM METER

SAMPLE PARAMETERS

1 HR STT

800 PH - 7.83
TEMP - 24.7
COND - 295

Owner: SFWMD Date: 6-18-03 - 6-19-03

Location: RD Keen Park

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2	Well No. 3	Well No. 4	Well No. 5	
5:00PM	41.41	36.54	11.45	6.54	6.64	44.50 MGUAGE METER 2460 5PM
5:30	41.39	36.46	11.52	6.55	6.65	
6:00	41.38	36.46	11.47	6.55	6.64	* 44.50 LIGHT RAIN
6:30	41.38	36.47	11.52	6.54	6.64	
7:00	41.40	36.45	11.52	6.54	6.64	* 44.50
7:30	41.40	36.45	11.53	6.54	6.65	* RAIN
8:00	41.40	36.45	11.53	6.54	6.64	* 44.50
8:30	41.39	36.45	11.53	6.53	6.63	SAMPLE [illegible]
9:00	41.38	36.45	11.53	6.53	6.63	* 44.50
9:30	41.40	36.47	11.53	6.52	6.63	
10:00	41.40	36.50	11.53	6.52	6.62	* 44.50
10:30	41.38	36.50	11.52	6.52	6.62	
11:00	41.40	36.53	11.51	6.52	6.61	* 44.50
11:30	41.44	36.56	11.53	6.52	6.60	
12:00AM	41.48	36.59	11.53	6.52	6.60	* 44.50
12:30	41.49	36.61	11.52	6.52	6.60	
1:00	41.50	36.61	11.52	6.52	6.60	* 44.50
1:30	41.50	36.61	11.52	6.52	6.60	
2:00	41.50	36.68	11.51	6.52	6.60	* 44.50
2:30	41.54	36.70	11.53	6.50	6.60	
3:00	41.61	36.74	11.51	6.50	6.60	* 44.50
3:30	41.69	36.78	11.51	6.50	6.59	

9:00pm PH - 7.84
TEMP - 23.4
COND - 309

Owner: SFWMD Date: 6/19/03

Location: R.D. KEENE

Static Water Level Before Test: After:

Pumping Equipment Used:

Time	Depth to Pumping Water Level (feet)					Comments
	Well No. 1	Well No. 2R	Well No. 3	Well No. 4	Well No. 5	MGUAGE
400	41.67	36.80	11.51	6.50	6.59	44.50
430	41.71	36.83	11.52	6.49	6.59	
500	41.77	36.85	11.52	6.49	6.58	44.50
530	41.75	36.86	11.55	6.48	6.59	
600	41.72	36.88	11.53	6.48	6.59	44.50
630	41.68	36.86	11.52	6.49	6.59	
700	41.68	36.85	11.52	6.49	6.59	44.50
730	41.70	36.85	11.52	6.49	6.57	
800	41.71	36.85	11.52	6.49	6.56	44.50
830	41.70	36.85	11.52	6.49	6.55	
900	41.68	36.81	11.52	6.48	6.55	44.50
930	41.65	36.80	11.52	6.47	6.56	
1000	41.64	36.77	11.52	6.47	6.56	44.50
1030	41.62	36.75	11.52	6.48	6.55	
1100	41.59	36.75	11.47	6.46	6.55	44.50
1130	41.62	36.76	11.38	6.46	6.56	
1200	41.59	36.65	11.35	6.45	6.54	44.50
1230	41.56	36.68	11.31	6.45	6.54	
1300	ENDmeter Reading -			013342		

SAMPLE PAPER

LIGHT RAIN

830 pH 7.93
Temp 23.6
Cond 297