



# Water Reclamation Facility Deep Injection Well Engineering Report VOLUME I

Prepared for:



**Bonita Springs  
Utilities, Inc.**

Prepared by:

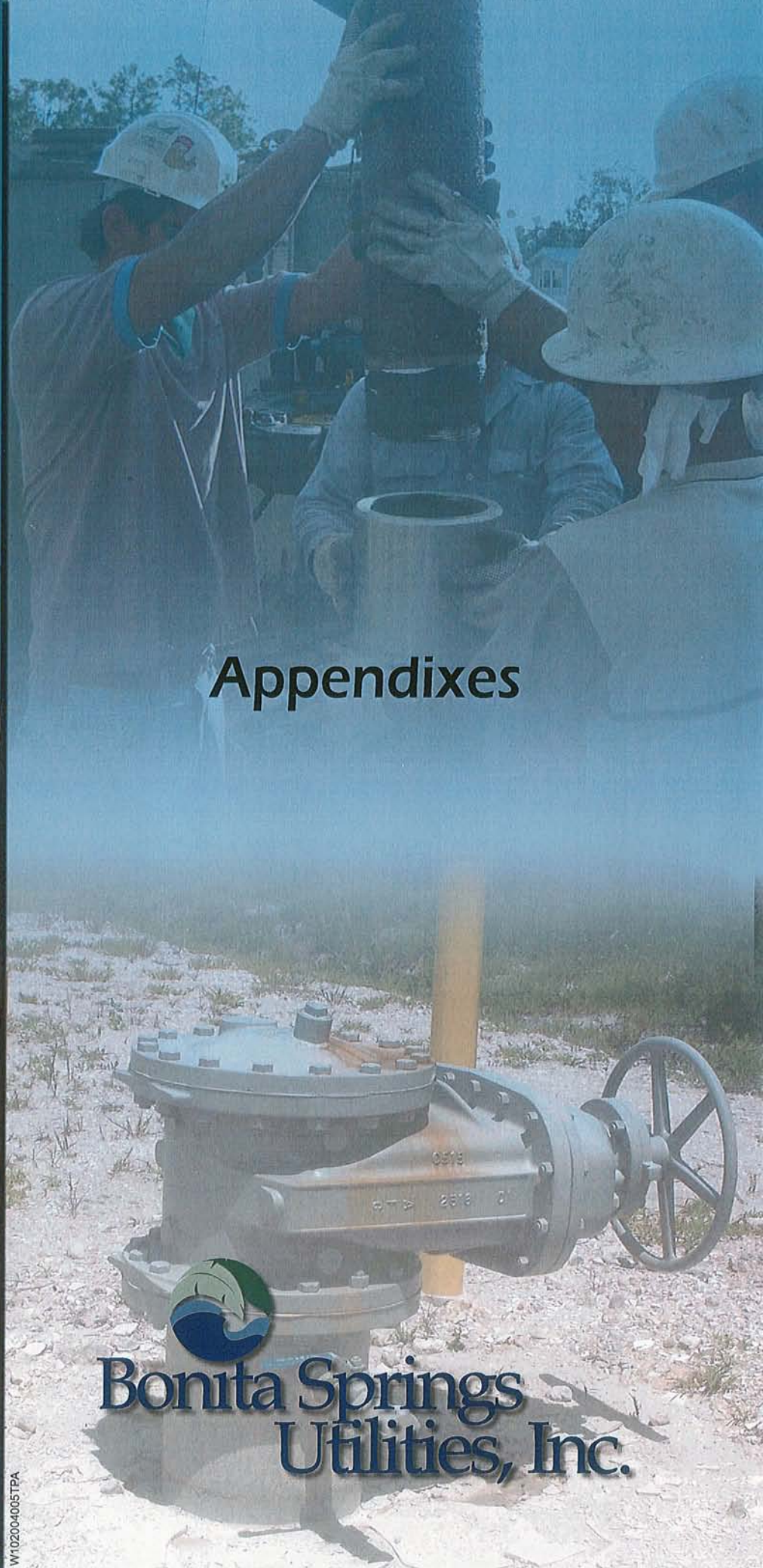
**CH2MHILL**

October 2004

W102004005TPA







# Appendixes



**Bonita Springs  
Utilities, Inc.**



## **List of Appendices**

### **Volume I**

- A WRF IW Construction Permit
- B Summary of Construction Activity at WRF IW-1 and WRF DZMW-1
  - B.1 WRF IW-1 Summary of Construction Activity
  - B.2 WRF DZMW-1 Summary of Construction Activity
- C Weekly Construction Summaries
- D Well Casing Mill Certificates
- E Pad Monitoring Well Water Quality Data
- F Well Lithologic Descriptions
  - F.1 WRF IW-1 Lithologic Descriptions
  - F.2 WRF DZMW-1 Lithologic Descriptions
- G Water Quality Laboratory Results During Reverse-Air Drilling and Packer Tests
  - G.1 WRF IW-1 Reverse-Air Water Quality Results
  - G.2 WRF DZMW-1 Reverse-Air Water Quality Results
- H Core Laboratory Results
- I Packer Testing Water Level Plots
- J Packer Test Analysis
  - J.1 Cooper Jacob Analysis Curves
  - J.2 This Recovery Analysis Curves
- K Packer Test Aquifer Analysis Curves
  - K.1 WRF IW-1 Packer Test Water Quality Results
  - K.2 WRF DZMW-1 Packer Test Water Quality Results

- L Full Scale Geophysical Logs (Volume II)
  - L.1 WRF IW-1 Full Scale Geophysical Logs
    - L.1.1 Logging Event 1 - C, NGR, DI, and SP Logs
    - L.1.2 Logging Event 2 - C, NGR Logs
    - L.1.3 Logging Event 3 - C, NGR, SP, SFC, SFT, SFM, BSC/VDL, DFC, DFT, and DFM Logs
    - L.1.4 Logging Event 5 - C, NGR Logs
    - L.1.5 Logging Event 6 - C, NGR, SP, SFC, SFT, SFM, BSC/VDL, DFC, DFT, and DFM Logs
    - L.1.6 Logging Event 7 - C, NGR Logs
    - L.1.7 Logging Event 8 - SFT Cement Stage Log
    - L.1.8 Logging Event 9 - CBL Log
    - L.1.9 Logging Event 10 - C, NGR Logs
    - L.1.10 Logging Event 11 - RTS, SFT Logs
  - L.2 WRF DZMW-1 Full Scale Geophysical Logs
    - L.2.1 Logging Event 1 - C, NGR, DI, and SP Logs
    - L.2.2 Logging Event 2 - C, NGR Logs
    - L.2.3 Logging Event 3 - C, NGR, DI, SP, SFC, SFT, SFM, BCS/VDL, DFC, DFT, and DFM Logs
    - L.2.4 Logging Event 4 - C, NGR Logs
    - L.2.5 Logging Event 5 - C, NGR, DI, SP, SFC, SFT, SFM, BCS/VDL, DFC, DFT, and DFM Logs
    - L.2.6 Logging Event 6 - C, NGR Logs
- M Video Log Survey Summaries
- N Video Survey - Video Tapes (Volume III)
- O Geophysical Combination Logs (TDS Derived Logs)
  - O.1 WRF IW-1 Geophysical Combination Log
  - O.2 WRF DZMW-1 Geophysical Combination Log
- P Ambient Water Quality Data - FDEP Primary and Secondary Drinking Water Quality Standards
  - P.1 WRF IW-1 Ambient Water Quality Data
  - P.2 WRF DZMW-1 Upper Zone Ambient Water Quality Data
  - P.3 WRF DZMW-1 Lower Zone Ambient Water Quality Data
- Q Casing Pressure Test Data and Pressure Gauge Calibration Certificates
  - Q.1 WRF IW-1 Casing Pressure Test Data
  - Q.2 WRF DZMW-1 Casing Pressure Test Data
  - Q.3 Pressure Gauge Calibration Certificates



APPENDIX A

# WRF IW Construction Permit

---





# Department of Environmental Protection

Jeb Bush  
Governor

South District  
P.O. Box 2549  
Fort Myers, Florida 33902-2549

David B. Struhs  
Secretary

## BY ELECTRONIC MAIL:

In the Matter of an  
Application for Permit by:

Fred Partin, General Manager  
Bonita Springs Utilities  
11860 East Terry Street  
Bonita Springs, FL 34135-0000  
[Fpartin@bonitaspringsutilities.com](mailto:Fpartin@bonitaspringsutilities.com)

Lee County – UIC/DW  
FDEP File No. 190919-001-UC  
Bonita Springs Utilities WRF  
IW-1 Class I Injection Well

## NOTICE OF PERMIT ISSUANCE

Enclosed is Permit Number 190919-001-UC to construct one Class I injection well, issued pursuant to Section(s) 403.087, Florida Statutes.

Any party to this Order (permit) has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The Notice of Appeal must be filed within 30 days from the date this Notice is filed with the Clerk of the Department.

Executed in Fort Myers, Florida.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION

A handwritten signature in black ink, appearing to read "R. W. Cantrell", is written over a horizontal line.

Richard W. Cantrell  
Director of  
District Management



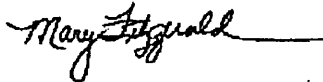
CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this PERMIT and all copies were mailed by certified mail before the close of business on November 12th, 2002 to the listed persons.

Clerk Stamp

**FILING AND ACKNOWLEDGMENT**

**FILED**, on this date, pursuant to Section 120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.



Clerk

11/12/02  
Date

RWC/JBM/mjf

Enclosures

Copies furnished to:

William Beddow, P.E. [bbeddow@ch2m.com](mailto:bbeddow@ch2m.com)  
Joe Haberfeld, TAC [joe.haberfeld@dep.state.fl.us](mailto:joe.haberfeld@dep.state.fl.us)  
Nancy March, USEPA [marsh.nancy@epa.gov](mailto:marsh.nancy@epa.gov)  
Steve Anderson, SFWMD [sanderso@sfwmd.gov](mailto:sanderso@sfwmd.gov)  
Ron Reese, USGS [rsreese@usgs.gov](mailto:rsreese@usgs.gov)





Jeb Bush  
Governor

# Department of Environmental Protection

South District  
P.O. Box 2549  
Fort Myers, Florida 33902-2549

David B. Struhs  
Secretary

## PERMIT

### PERMITTEE:

Fred Partin, General Manager  
Bonita Springs Utilities  
11860 East Terry Street  
Bonita Springs, FL 34135-0000  
[fpartin@bonitaspringsutilities.com](mailto:fpartin@bonitaspringsutilities.com)

Permit/Certification  
Number: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007  
County: Lee  
Latitude: 26° 22' 23" N  
Longitude: 81° 48' 14" W  
Section/Town/Range: 21/T47S/R25E  
Project: Bonita Springs Utilities Water  
Reclamation Facility IW-1 Class I  
Injection Well

This permit is issued under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Rules 62-4, 62-520, 62-528, 62-550, 62-600, and 62-601. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawing(s), plans, and other documents, attached hereto or on file with the Department and made a part hereof and specifically described as follows:

Construct a nominal 16-inch diameter Class I injection well (IW-1), with cemented 16" steel casing to approximately 2,500 feet below land surface (bls) and a total depth of approximately 3,200 feet bls. Injection is into the Oldsmar Formation within the Lower Floridan Aquifer for the disposal of secondary treated domestic effluent from the Bonita Springs Utilities WRF, for a maximum disposal of 7.9 million gallons per day (MGD). The maximum injection rate shall not exceed 5,508 gpm. The IW-1 dual-zone monitoring well (DZMW-1) will be completed from approximately 1,000 to 1,100 feet bls and 1,600 to 1,650 feet bls.

The Application to Construct/Operate/Abandon Class I, III, or V Injection well System, DEP Form 62-528.900(1), was received on October 25, 2001, with supporting documents and additional information last received on June 24, 2002. The Certificate of Demonstration of Financial Responsibility was approved May 3, 2002. Project is located at the Bonita Springs Utilities Water Reclamation Facility at 25051 Tamiami Trail, Bonita Springs, Florida.

Subject to Specific Conditions 1-13.



PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

1. GENERAL CRITERIA

a. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application.

b. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

c. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

d. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures.

e. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation or reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

f. When requested by the Department, the permittee shall furnish, within the time specified, any information needed to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit.

g. Signatories and Certification Requirements

(1) All reports and other submittals required to comply with this permit shall be signed by a person authorized under Rules 62-528.340(1) or (2), F.A.C.

(2) In accordance with Rule 62-528.340(4), F.A.C., all reports shall contain the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

h. The permittee shall notify the Department and obtain approval or to any physical alterations or additions to the injection or monitor well, including removal of the well head.

i. The permittee shall give advance notice to the Department of any planned changes in the permitted facility or injection activity that may result in noncompliance with permit requirements.

j. The permittee shall report any noncompliance which may endanger health or the environment, including:

(1) Any monitoring or other information which indicates that any contaminant may cause an endangerment to an underground source of drinking water; or

(2) Any noncompliance with a permit condition or malfunction of the injection system that may cause fluid migration into or between underground sources of drinking water.

PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

(3) Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within five days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

k. No underground injection is allowed that causes or allows movement of fluid into an underground source of drinking water.

l. The permittee shall retain all records concerning the nature and composition of injected fluid until five years after completion of any plugging and abandonment specified under Rule 62-528.435, F.A.C. The permittee shall deliver the records to the Department office that issued the permit at the conclusion of the retention period unless the permittee elects to continue retention of the records.

m. If injection is to continue beyond the expiration date of this permit the permittee shall apply for, and obtain an operation permit. If necessary to complete the two-year operational testing period, the permittee shall apply for renewal of the construction permit at least 60 days prior to the expiration date of this permit.

## 2. Site Requirements

a. A drilling pad shall be provided to collect spillage of contaminants and to support the heaviest load that will be encountered during drilling.

b. The disposal of drilling fluids, cuttings, formation water or waste shall be in a sound environmental manner that avoids violation of surface and ground water quality standards. The disposal method shall be approved by the Department prior to start of construction.

c. Specific drilling pad dimensions and design details shall be provided to and approved by the Department prior to commencing construction (and shortly after selection of drilling contractor).

d. The four water table monitoring wells surrounding the injection well pad shall be sampled and analyzed prior to drilling this injection well and then weekly thereafter. Sampling shall include specific conductance, pH, chloride, temperature and water level.

e. Pursuant to Rule 62-528.455(1)(c)6., F.A.C., a survey indicating the exact location in metes and bounds of all wells authorized by this permit shall be provided prior to issuance of an operating permit.

## 3. Construction and Testing Requirements

a. The permittee shall contact the Technical Advisory Committee (TAC) chairman so that he may schedule progress review meetings at appropriate times with the TAC, the U.S. Environmental Protection Agency (USEPA), and permittee for the purpose of reviewing the results of tests, geophysical logging, surveys, drilling records and construction problems.

b. All drilling shall be inside a blow out preventer upon penetration of the Floridan Aquifer.

c. Mechanical integrity testing is a two part demonstration which includes a pressure test to demonstrate that no leaks are present in the casing, tubing or packer and a temperature or noise log and radioactive tracer survey to demonstrate the absence of leaks behind the casing. Verification of pressure gauge calibration must be provided at the scheduled tests.



PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

d. Department approval and Technical Advisory Committee (TAC) and USEPA review pursuant to F.A.C. Rule 62-528 is required for the following stages of construction:

- (1) Intermediate casing seat selection.
- (2) Final casing seat selection.
- (3) Prior to operational (long term) testing with effluent.
- (4) Monitor zone selection (intermediate and final casing seats for dual zone monitor well)

The permittee shall submit all necessary supporting documentation/data, with interpretation, to the TAC and USEPA for review.

e. The cementing program, as required in Section 62-528.410(5), Florida Administrative Code, shall be submitted to the Department, the USEPA, and the Technical Advisory Committee for review. Cementing shall not commence prior to approval being granted.

f. All temperature surveys (except for mechanical integrity demonstration) shall be run within 48 hours after cementing.

g. TAC meetings are scheduled on the first Tuesday of each month subject to a 5 working day prior notice and timely receipt of critical data by all TAC members and the USEPA. Emergency meetings may be arranged when justified to avoid undue construction delay.

h. The Permittee shall insure that safe internal pressures are maintained during the cementing of all casings.

i. The background water quality of the injection zone shall be established prior to commencement of any injection testing. Parameters to be measured are the primary and secondary drinking water standards and minimum criteria. Dioxin, asbestos, acrylamide, and epichlorhydrin need not be included in the primary standards.

Minimum Criteria for Sewage Effluent

Toluene  
1,2 Dichlorobenzene  
Chloroform,  
1,2 Dichloroethylene  
Chloroethane  
Aldrin  
Dieldrin  
Diethylphthalate  
Dimethylphthalate  
Butybenzylphthalate  
Napthalene  
Anathracene  
Phenanthrene  
Phenol  
2,4,6-Trichlorophenol  
2-Chlorophenol  
Ammonia  
Organic Nitrogen  
Total Kjeldahl Nitrogen  
Nitrite (as N)  
Total Nitrogen

PERMITEE:  
Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

Soluble Orthophosphate  
Total Phosphorus  
Antimony

j. The injection and monitor well(s) at the site shall be abandoned when no longer usable for their intended purpose, or when posing potential threat to the quality of the waters of the State. Within 180 days of well abandonment, the permittee shall submit to the Department, the USEPA, and the TAC the proposed plugging method, pursuant to Rule 62-528.435, F.A.C.

k. All salt used in well drilling shall be stored in an environmentally sound manner. Accurate records shall be kept on the amount of salt used.

l. All dual induction, sonic and caliper geophysical logs run on the pilot holes of the injection well shall be submitted with scales of one inch equals one hundred feet (1"=100'), two inches equals one hundred feet (2"=100'), and five inches equals one hundred feet (5"=100').

#### 4. Quality Assurance/Quality Control Requirements

a. This permit approval is based upon evaluation of the data contained in the application dated October 25, 2001, and the plans and/or specifications submitted in support of the application. Any proposed modifications to this permit shall be submitted in writing to the UIC program manager, the TAC, and USEPA for review and clearance prior to implementation. Changes of negligible impact to the environment and staff time will be reviewed by the program manager, cleared when appropriate and incorporated into this permit. Changes or modifications other than those described above will require submission of a completed application and appropriate processing fee as per Rule 62-4.050, F.A.C.

b. A professional engineer registered per to Chapter 471, Florida Statutes shall be retained throughout the construction period to be responsible for the construction operation and to certify the application, specifications, completion report and other related documents. The Department shall be notified immediately of any change of engineer.

c. Where required by Chapter 471 (P.E.) or Chapter 492 (P.G.) F.S., applicable portions of permit applications and supporting documents that are submitted to the Department for public record shall be signed and sealed by the professional(s) who approved or prepared them.

d. The Department shall be notified immediately of any problems that may seriously hinder compliance with this permit, construction progress, or good construction practice. It may require a detailed written report describing the problem, remedial measures taken to assure compliance, and measures taken to prevent recurrence of the problem.

e. Issuance of a Class I Test/Injection well construction and testing permit does not obligate the Department to authorize operation of the injection well system, unless the wells qualify for an operation permit applied for by the permittee and issued by the Department.

#### 5. Reporting Requirements

a. All reports and surveys required by this permit must be submitted concurrently to all the members of the TAC and the USEPA. The TAC and USEPA consists of representatives from these agencies:

Florida Department of Environmental Protection  
South District  
2295 Victoria Avenue, Suite 364  
Fort Myers, FL 33901



PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

Florida Department of Environmental Protection  
Bureau of Water Facilities Regulation  
UIC Program, MS 3530  
2600 Blair Stone Rd.  
Tallahassee, FL 32399-2400

South Florida Water Management District  
Post Office Box 24680  
West Palm Beach, FL 33416-4680

United States Environmental Protection Agency, Region IV  
UIC Section  
61 Forsythe Street, SW  
Atlanta, Georgia 30303-8909

United States Geological Survey  
9100 NW 36<sup>th</sup> Street, Suite 107  
Miami, FL 33178

b. Members of the TAC and the USEPA shall receive a weekly summary of the daily log kept by the contractor. The weekly reporting period shall run Friday through Thursday and reports shall be mailed each Friday. The report shall include but is not limited to the following:

- (1) Description of daily footage drilled by diameter of bit or size of hole opener or reamer being used;
- (2) Description of formation and depth encountered; and specific conductance of water samples collected during drilling. Description of work during installation and cementing of casings; include amounts of casing and actual cement used versus calculated volume required.
- (3) Lithological description of drill cuttings collected every ten (10) feet or at every change in formation. Description of work and type of testing accomplished, geophysical logging, pumping tests, and coring results.
- (4) Description of any construction problems that develop and their status to include a description of what is being done or has been done to correct the problem.
- (5) Description of the amount of salt used.
- (6) Results of any water quality analyses performed as required by this permit, including pad monitor wells
- (7) Copies of the driller's log are to be submitted with the weekly summary.

c. The Department must be notified seventy-two (72) hours prior to all testing for mechanical integrity on the injection well. Testing should begin during daylight hours Monday through Friday.

d. Annotated copies of geophysical logs, lithologic descriptions and logs and water quality data (from drilling and packer tests) must be submitted to TAC and the USEPA, with interpretation, for intermediate and final casing seat selection approvals by the Department.

e. An interpretation of all test results must be submitted with all test data and geophysical logs.

f. After completion of construction and testing, a final report shall be submitted to the Department, the TAC, and the USEPA. The report shall include, but not be limited to, all information and data collected under Rule 62-528.450(2) and Rule 62-528.450(3), F.A.C., with appropriate interpretations. Mill certificates for the casing(s)

PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC

Date of Issue: November 12, 2002

Expiration Date: November 11, 2007

shall be included in this report. To the extent possible, the transmissivity of the injection zone and maximum injection rate within safe pressure limits shall be estimated.

6. The construction permit includes a period of temporary injection operation for the purposes of long term testing. Prior to commencement of operational testing:

a. Construction of the injection well shall be complete and the permittee shall submit a notice of completion of construction to the Department signed and sealed by the engineer of record.

b. Each well shall first be tested for integrity of construction, and shall be followed by a short-term injection test of such duration to allow for the prediction of the operating pressure.

c. The permittee shall submit the following information to each member of the Technical Advisory Committee:

- (1) A copy of the borehole television survey(s)
- (2) Geophysical logs
- (3) Mechanical integrity test data
- (4) Data obtained during the short term injection testing conducted pursuant to Rules 62-528.405(3)(a) and 62-528.410(7)(e), and 62-528.450(3)(a)2., F.A.C., above
- (5) Confining zone data
- (6) Background water quality data for the injection and monitor zones
- (7) Waste stream analysis for the primary and secondary drinking water standards (except dioxin, asbestos, acrylamide, and epichlorhydrin) and the minimum criteria listed in specific condition 3.i.
- (8) As-built well construction specifications
- (9) Draft operation and maintenance manual with emergency procedures, and
- (10) Other data obtained during well construction needed by the Department to evaluate whether the well will operate in compliance with Department rules.

d. The emergency discharge method shall be fully operational and no emergency discharge shall occur until the permittee has obtained all necessary permits.

e. Any corrective action required under Rule 62-528.300(5)(c)2., F.A.C., has been completed.

f. Written authorization shall be obtained from the Department. Authorization shall be for up to two years or the expiration date of the construction permit, whichever is less, and is nonrenewable. The authorization shall specify the conditions under which operational testing is approved. The authorization shall include:

- (1) Injection pressure limitation,
- (2) Injection flow rate limitation,
- (3) Monthly specific injectivity testing,
- (4) Reporting requirements, and

PERMITEE:  
 Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
 Date of Issue: November 12, 2002  
 Expiration Date: November 11, 2007

(5) An expiration date for the operational testing period not to exceed two years.

g. Before authorizing operational testing the Department shall conduct an inspection of the facility to determine if the conditions of the permit have been met.

7. Operational Testing Requirements

a. Operational Testing Conditions - Injection Well System

The injection system shall be monitored in accordance with rule 62-528.425(1)(g) and 62-528.430(2), F.A.C. The following injection well performance data shall be recorded and reported at the frequency indicated from the injection well instrumentation in the Monthly Operating Report as indicated below. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall use continuous indicating and recording devices to monitor injection flow rate and injection pressure. In the case of operational failure of any of these instruments for a period of more than 48 hours, the permittee shall report to the Department in writing the remedial action to be taken and the date when the failure will be corrected.

INJECTION WELL IW-I

The proposed specifications for the injection well are as follows:

<u>Casing Diameter (OD)</u>	<u>Depth (bls) Cased</u>	<u>Open Hole (bls)</u>
38" Steel	400'	
26" Steel	1,350'	
16" Steel	2,500'	2,500'-3,200'

<u>Parameters</u>	<u>Reporting Frequency</u>
Injection Pressure (p.s.i)	Daily/Monthly
Maximum Injection Pressure	Daily/Monthly
Minimum Injection Pressure	Daily/Monthly
Average Injection Pressure	Daily/Monthly
Flow Rate (g.p.m.)	Daily/Monthly
Maximum Flow Rate	Daily/Monthly
Average Flow Rate	Daily/Monthly
Minimum Flow Rate	Daily/Monthly
Total Volume WWTP Effluent Injected (gallons)	Daily
Total Volume WWTP Effluent Injected (gallons)	Monthly

**WWTP Effluent Water Quality**

TKN (mg/L)	Monthly
Ammonia as N (mg/L)	Monthly
Nitrate and Nitrite as N (mg/l)	Monthly

b. Operational Testing Conditions - Monitor Well System

The monitor well system will consist of one dual-zone monitor well as described below:



PERMITEE:

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

Bonita Springs Utilities WRF

<u>Well Number</u>	<u>Casing Dia. (OD)</u>	<u>Depth (bls) Cased/Total</u>
DZMW-1	16" Steel 6" FRP	1,000' / 1,100' 1,600' / 1,650'

All monitor wells shall be monitored in accordance with rule 62-528.615, F.A.C. The following monitor well performance data shall be recorded and reported at the frequency indicated from the monitor well instrumentation in the Monthly Operating Report as indicated below. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The permittee shall use continuous indicating and recording devices to monitor the monitor zone pressures or water levels. In the case of operational failure of any of these instruments for a period of more than 48 hours, the permittee shall report to the Department in writing the remedial action to be taken and the date when the failure will be corrected.

<u>Parameters</u>	<u>Reporting Frequency</u>
Maximum Water Level/Pressure	Daily/Monthly
Minimum Water Level/Pressure	Daily/Monthly
Average Water Level/Pressure	Daily/Monthly

**Water Quality**

TKN (mg/L)	Weekly
Ammonia as N (mg/L)	Weekly
Specific Conductivity (µmhos/cm)	Weekly
Total Dissolved Solids (mg/L)	Weekly
pH (std. units)	Weekly
Chloride (mg/L)	Weekly
Sulfate (mg/L)	Weekly
Field Temperature (°C)	Weekly
Nitrate as N (mg/l)	Monthly
Total Phosphorous (mg/l)	Monthly
Sodium (mg/L)	Monthly
Calcium (mg/L)	Monthly
Potassium (mg/L)	Monthly
Magnesium (mg/L)	Monthly
Iron (mg/L)	Monthly
Carbonate (mg/L)	Monthly
Bicarbonate (mg/L)	Monthly

Water quality data may be reduced to monthly analyses after a minimum six months of data if the conditions of Rule 62-528.450(3)(d), F.A.C., have been met and with Department approval.

c. The permittee shall calibrate all pressure gauge(s), flow meter(s), chart recorder(s), and other related equipment associated with the injection well system on a semi-annual basis. The permittee shall maintain all monitoring equipment and shall ensure that the monitoring equipment is calibrated and in proper operating condition at all times. Laboratory equipment, methods, and quality control will follow EPA guidelines as expressed in Standard Methods for the Examination of Water and Wastewater. The pressure gauge(s), flow meter(s), and chart recorder(s) shall be calibrated using standard engineering methods.

d. The permittee shall submit monthly to the Department the results of all injection well and monitor well data required by this permit no later than the last day of the month immediately following the month of record. The results shall be sent to the Department of Environmental Protection, P.O. Box 2549, Fort Myers, Florida 33902-

PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC

Date of Issue: November 12, 2002

Expiration Date: November 11, 2007

2549. A copy of this report shall also be sent to the Department of Environmental Protection, Underground Injection Control Program, MS 3530, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.

e. The Engineer of Record or designated qualified representative must be present for the start-up operations and the Department must be notified in writing of the date operational testing commenced for the well.

#### 8. Abnormal Events

a. In the event the permittee is temporarily unable to comply with any conditions of this permit due to breakdown of equipment, power outages, and destruction by hazard of fire, wind, or by other cause, the permittee shall notify the Department. Notification shall be made in person, by telephone or by telegraph within 24 hours of breakdown or malfunction to the UIC Program staff, South District office.

b. A written report of any noncompliance referenced in 1) above shall be submitted to the South District office within five days after its occurrence. The report shall describe the nature and cause of the breakdown or malfunction, the steps being taken or planned to be taken to correct the problem and prevent its reoccurrence, emergency procedures in use pending correction of the problem, and the time when the facility will again be operating in accordance with permit conditions.

#### 9. Emergency Disposal

a. All applicable federal, state and local permits must be in place to allow for any alternate discharges due to emergency or planned outage conditions.

b. Any changes in emergency disposal methods must be submitted for Technical Advisory Committee (TAC) and USEPA review and Department approval.

c. The permittee shall notify the Department within 24 hours whenever an emergency discharge has occurred (Rule 62-528.415(4)(c)1., F.A.C.). Written notification shall be provided to the Department within 5 days after each occurrence. The Permittee shall indicate the location and duration of the discharge and the volume of fluid discharged.

#### 10. Financial Responsibility

a. The permittee shall maintain the resources necessary to close, plug and abandon the injection and associated monitor wells, at all times (Rule 62-528.435(9), F.A.C.).

a. The permittee shall review annually the plugging and abandonment cost estimates. The permittee shall resubmit documentation necessary to demonstrate financial responsibility using the revised cost estimates on or before March 31 of each year.

b. In the event that the mechanism used to demonstrate financial responsibility should become invalid for any reason, the permittee shall notify the Department of Environmental Protection in writing within 14 days of such invalidation. The permittee shall, within 30 days of said notification, submit to the Department for approval, new financial documentation in order to comply with Rule 62-528.435(9), F.A.C., and the conditions of this permit.

#### 11. Mechanical Integrity

a. Injection is prohibited until the permittee affirmatively demonstrates that the well has mechanical integrity. Prior to operational testing the permittee shall establish, and thereafter maintain, mechanical integrity of the well at all times.

b. If the Department determines that the injection well lacks mechanical integrity, written notice shall be given to the permittee.

PERMITEE:

Bonita Springs Utilities WRF

Permit/Cert. No: 190919-001-UC  
Date of Issue: November 12, 2002  
Expiration Date: November 11, 2007

c. Unless the Department requires the immediate cessation of injection, within 48 hours of receiving written notice from the department that the well lacks mechanical integrity the permittee shall cease injection into the well unless the Department allows continued injection pursuant to (d) below.

d. The Department may allow the permittee to continue operation of a well that lacks mechanical integrity if the permittee demonstrates that fluid movement into or between underground sources of drinking water is not occurring.

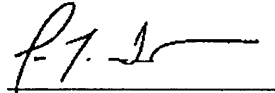
12. The permittee is reminded of the necessity to comply with the pertinent regulations of any other regulatory agency, as well as any county, municipal, and federal regulations applicable to the project. These regulations may include, but not limited to, those of the Federal Emergency Management Agency in implementing flood control measures. This permit should not be construed to imply compliance with the rules and regulations of other regulatory agencies.

13. The permittee shall be aware of and operate under the general conditions in Rule 62-528.307(1)(a) through (x) and Rule 62-528.307(2)(a) through (f), F.A.C. These general conditions are binding upon the permittee and enforceable pursuant to Chapter 403 of the Florida Statutes.

**Note:** In the event of an emergency the permittee shall contact the Department by calling (800) 320-0519. During normal business hours, the permittee shall call (239) 332-6975.

Issued this 12<sup>th</sup> day of November 2002.

STATE OF FLORIDA DEPARTMENT  
OF ENVIRONMENTAL PROTECTION



Richard W. Cantrell  
Director of  
District Management

RWC/JBM/mjf



APPENDIX B

**Summary of Construction Activity at  
WRF IW-1 and WRF DZMW-1**

---

APPENDIX B.1

## **IW-1 Summary of Construction Activity**

---

**Bonita Springs Utilities  
Summary of Construction Activities**

Date	Deep Injection Well WRF IW-1 Construction Activity
5/7/03	Drilling of 12.25-inch pilot hole was advanced to 500 feet bls using mud-rotary.
5/8/03	The pilot hole was geophysically logged to 500 feet bls. Logs performed include caliper, gamma, dual induction, and spontaneous potential. The pilot hole was reamed to 30 feet bls using a 46.5-inch bit.
5/9/03	The 46.5-inch reamed hole was advanced to 134 feet bls.
5/10/03	The 46.5-inch reamed hole was advanced to 175 feet bls.
5/11/03	The 46.5-inch reamed hole was advanced to 277 feet bls.
5/12/03	The 46.5-inch reamed hole was advanced to 340 feet bls.
5/13/03	The 46.5-inch reamed hole was advanced to 455 feet bls.
5/14/03	The 46.5-inch reamed hole was geophysically logged to 455 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
5/15/03	The 38-inch steel surface casing was installed to 450 feet bls. A total of 300 bbls of 4% gel cement followed by 80 bbls of neat cement were used to pressure grout the casing to land surface.
5/18/03	A 12.25-inch pilot hole was advanced to 640 feet bls using reverse-air.
5/19/03	The pilot hole was advanced to 1,120 feet bls. Specific capacity tests were conducted at 720 feet bls, 800 feet bls, 880 feet bls, 960 feet bls, 1,040 feet bls, and 1,120 feet bls. Respective specific capacities were 16 gpm/ft, 23 gpm/ft, 36 gpm/ft, 59 gpm/ft, 59 gpm/ft, and 61 gpm/ft.
5/20/03 to 5/21/03	The pilot hole was dredging loose fill. No advancement of the pilot hole was reported.
5/22/03	The pilot hole was advanced to 1,200 feet bls and a specific capacity test was conducted. The specific capacity at 1,200 feet bls is 36 gpm/ft. Dredging of loose fill was encountered at the end of the specific capacity test.
5/23/03	The pilot hole was advanced to 1,280 feet bls and a specific capacity test was conducted. The specific capacity at 1,280 feet bls is 71 gpm/ft. Dredging of loose fill was encountered at the end of the specific capacity test.
5/24/03	The pilot hole was advanced to 1,300 feet bls. Advancement of the pilot hole was stopped for coring.
5/25/03 to 5/26/03	The pilot hole was conditioned in preparation of coring at 1,300 feet bls. Periodic dredging of loose fill was reported.
5/27/03	A core sample was attempted between 1,300 feet and 1,315 feet bls. Zero-percent recovery efficiency was reported. The pilot hole was advanced to 1,355 feet bls.
5/28/03	The pilot hole was advanced to 1,410 feet bls. Advancement of the pilot hole was stopped for coring. A specific capacity test was conducted at 1,360 feet bls. The specific capacity is 52 gpm/ft.
5/29/03	The pilot hole was conditioned in preparation of coring at 1,410 feet bls. Periodic dredging of loose fill was reported.
5/30/03	A core sample was attempted between 1,410 feet and 1,425 feet bls. Twenty-percent recovery efficiency was reported.
5/31/03	The pilot hole was advanced to 1,440 feet bls. Advancement of the pilot hole was stopped for coring.
6/1/03	A core sample was attempted between 1,440 feet and 1,455 feet bls. Fifty-percent recovery efficiency was reported. The pilot hole was advanced to 1,510 feet bls. Advancement of the pilot hole was stopped for coring.
6/2/03	The core bit broke off the core barrel assembly and fell to the bottom of the pilot hole. The pilot hole was advanced to 1,520 feet bls.
6/3/03	The pilot hole was conditioned using reverse air development.
6/4/03	An unsuccessful attempt was made to fish out the core bit. A core sample was attempted between 1,520 feet and 1,535 feet bls. Zero-percent recovery efficiency was

	reported.
6/5/03	The pilot hole was advanced to 1,540 feet bls. The loose core bit was retrieved from the bottom of the well. A core sample was attempted between 1,540 and 1,555 feet bls. Sixty-seven-percent recovery efficiency was reported.
6/6/03	The pilot hole was advanced to 1,600 feet bls. A core sample was attempted between 1,600 feet and 1,615 feet bls. Twenty-percent recovery efficiency was reported.
6/7/03	The pilot hole was advanced to 1,637 feet bls. A core sample was attempted between 1,637 feet and 1,649 feet bls. Eighty-three-percent recovery efficiency was reported.
6/8/03	The pilot hole was advanced to 1,680 feet bls. Advancement of the pilot hole was stopped for coring. A specific capacity test was conducted at 1,680 feet bls. The specific capacity is 37 gpm/ft.
6/9/03	A core sample was attempted between 1,680 feet and 1,695 feet bls. Fifty-percent recovery efficiency was reported. The pilot hole was advanced to 1,750 feet bls.
6/10/03/ to 6/11/03	The pilot hole was conditioned in preparation of geophysical logging.
6/12/03	Static geophysical logs were performed to 1,747 feet bls. Logs performed include caliper, gamma, dual induction, spontaneous potential, flow meter, fluid resistivity, fluid temperature, sonic porosity/variable density, and borehole televiewer. Dynamic logs were not performed due to unstable borehole conditions.
6/13/03 to 6/24/03	The pilot hole was dredging loose fill as several attempts were made to condition the borehole.
6/25/03	The pilot hole was geophysically logged to 1,675 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
6/26/03	The pilot hole was conditioned in preparation of plugging back the pilot hole with cement.
6/27/03	Plugged back the pilot hole with 188 bbls of 12% gel cement (with 3% CaCl additive) for Stage 1. The Stage 1 cement was tagged at 1,369 feet bls. Plugged back the pilot hole with 187 bbls of 12% gel cement (with 3% CaCl additive) for Stage 2. The Stage 2 cement was tagged at 1,009 feet bls.
6/28/03	Began reaming the pilot hole using a 34.75-inch reamer bit. The reamed hole was advanced to 521 feet bls.
6/29/03	The 34.75-inch reamed hole was advanced to 540 feet bls. Dredging of loose fill was reported between 521 feet and 540 feet bls.
6/30/03	The reamed hole was dredging loose fill. No advancement of the reamed hole was reported.
7/1/03	The 34.75-inch reamed hole was advanced to 900 feet bls.
7/2/03	The 34.75-inch reamed hole was advanced to 935 feet bls. Dredging of loose fill was reported between 900 feet and 935 feet bls.
7/3/03	The 34.75-inch reamed hole was advanced to 980 feet bls. Dredging of loose fill was reported between 900 feet and 980 feet bls.
7/4/03	The 34.75-inch reamed hole was advanced to 1,030 feet bls. Dredging of loose fill was reported between 900 feet and 1,030 feet bls.
7/5/03 to 7/7/03	Shut down for repairs to the drill rig.
7/8/03	The 34.75-inch reamed hole was advanced to 1,056 feet bls. Dredging of loose fill was reported between 900 feet and 1,056 feet bls.
7/9/03	The 34.75-inch reamed hole was advanced to 1,237 feet bls.
7/10/03	The 34.75-inch reamed hole was advanced to 1,401 feet bls.
7/11/03	The 34.75-inch reamed hole was advanced to 1,521 feet bls.
7/12/03	The 34.75-inch reamed hole was advanced to 1,633 feet bls.
7/13/03	The 34.75-inch reamed hole was advanced to 1,655 feet bls.
7/14/03	The 34.75-inch reamed hole was conditioned after filling in to 1,135 feet bls.
7/15/03	The 34.75-inch reamed hole was conditioned. Dredging of loose fill was reported between 900 feet and 1,135 feet bls.
7/16/03	The 34.75-inch reamed hole was conditioned. Dredging of loose fill was reported



	between 900 feet and 1,135 feet bls.
7/17/03	The 34.75-inch reamed hole was conditioned. Dredging of loose fill was reported between 900 feet and 1,135 feet bls.
7/18/03	Shut down for repairs to the drill rig.
7/19/03	The 34.75-inch reamed hole was conditioned. Dredging of loose fill was reported between 900 feet and 1,135 feet bls.
7/20/03	The 34.75-inch reamed hole was geophysically logged to 1,655 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
7/21/03	The 26-inch steel intermediate casing was installed to 1,650 feet bls.
7/22/03	Begin cementing of the 26-inch casing. Stage 1: 425 bbls of 4% gel cement followed by 90 bbls of neat cement. Tagged Stage 1 cement at 992 feet bls. Resumed cementing – Stage 2: 224 bbls of 4% gel cement.
7/23/03	Tagged Stage 2 cement at 944 feet bls. Resumed cementing – Stage 3: 200 bbls of 4% gel cement. Tagged Stage 3 cement at 921 feet bls. Resumed cementing – Stage 4: 220 bbls of 4% gel cement. Tagged Stage 4 cement at 914 feet bls. Resumed cementing – Stage 5: 182 bbls of 4% gel cement.
7/24/03	Tagged Stage 5 cement at 912 feet bls. Resumed cementing – Stage 6: 192 bbls of 4% gel cement. Tagged Stage 6 cement at 907 feet bls. Resumed cementing – Stage 7: 100 bbls of 4% gel cement. Tagged Stage 7 cement at 906.5 feet bls. Resumed cementing – Stage 8: 200 bbls of 4% gel cement.
7/25/03	Tagged Stage 8 cement at 900 feet bls. Install 1200 cubic feet of gravel. Tagged gravel at 856.5 feet bls.
7/26/03	Resumed cementing – Stage 9: 20 bbls of neat cement. Tagged Stage 9 cement at 843 feet bls. Resumed cementing – Stage 10: 75 bbls of 4% gel cement. Tagged Stage 10 cement at 807 feet bls. Resumed cementing – Stage 11: 200 bbls of 4% gel cement.
7/27/03	Tagged Stage 11 cement at 620 feet bls. Resumed cementing – Stage 12: 192 bbls of 4% gel cement. Tagged Stage 12 cement at 502 feet bls. Resumed cementing – Stage 13: 200 bbls of 12% gel cement.
7/28/03	Tagged Stage 13 cement at 294 feet bls. Resumed cementing – Stage 14: 196 bbls of 12% gel cement.
7/29/03	Drilled out the cement plug and advanced a 12.25-inch pilot hole to 1,830 feet bls using reverse-air drilling methods.
7/30/03	A core sample was attempted between 1,830 and 1,843 feet bls. 77 percent recovery efficiency was reported. Advanced the pilot hole to 1,920 feet bls. Specific capacity tests were attempted at 1,840 and 1,920 feet bls.
7/31/03	A core sample was attempted between 1,920 and 1,932 feet bls. 50 percent recovery efficiency was reported. Advanced the pilot hole to 1,932 feet bls.
8/1/03	Advanced the pilot hole to 2,072 feet bls. A core sample was attempted between 2,072 and 2,082 feet bls. 100 percent recovery efficiency was reported.
8/2/03	Advanced the pilot hole to 2,180 feet bls. A specific capacity test was conducted at 2,080 feet bls. The specific capacity is 4 gpm/ft.
8/3/03	Advanced the pilot hole to 2,326 feet bls. Specific capacity tests were conducted at 2,280 and 2,320 feet bls. The specific capacities are 4 gpm/ft and 3 gpm/ft, respectively. A core sample attempt was started between 2,326 and 2,339 feet bls.
8/4/03	A core sample attempt was completed between 2,326 and 2,339 feet bls. 77 percent recovery efficiency was reported. Started repairs to the drill rig.
8/5/03	Completed repairs to the drill rig. Advanced the pilot hole to 2,387 feet bls. A core sample was started between 2,387 and 2,402 feet bls.
8/6/03	A core sample attempt was completed between 2,387 and 2,402 feet bls. 100 percent recovery efficiency was reported. Advanced the pilot hole to 2,423 feet bls. A specific capacity test was conducted at 2,400 feet bls. The specific capacity is 327 gpm/ft.
8/7/03	Advanced the pilot hole to 2,567 feet bls. A specific capacity test was conducted at 2,400 feet bls. The specific capacity is too great to measure.
8/8/03	Advanced the pilot hole to 2,700 feet bls. A specific capacity test was conducted at 2,640 feet bls. The specific capacity is too great to measure.

8/9/03	Advanced the pilot hole to 2,840 feet bls. Specific capacity tests were conducted at 2,720 and 2,800 feet bls. The specific capacities are 3,700 gpm/ft and 1,589 gpm/ft, respectively.
8/10/03	Advanced the pilot hole to 2,967 feet bls. Specific capacity tests were conducted at 2,880 and 2,960 feet bls. The specific capacities are 2,247 gpm/ft and 1,589 gpm/ft, respectively.
8/11/03	Advanced the pilot hole to 3,120 feet bls. A specific capacity test was conducted at 3,040 feet bls. The specific capacity is 5,561 gpm/ft.
8/12/03 to 8/14/03	Shut down for repairs to the drill rig.
8/15/03	Advanced the pilot hole to 3,165 feet bls. A specific capacity test was conducted at 3,120 feet bls. The specific capacity is 5,084 gpm/ft.
8/16/03	Advanced the pilot hole to 3,180 feet bls.
8/17/03	Advanced the pilot hole to 3,200 feet bls. A specific capacity test was conducted at 3,200 feet bls. The specific capacity is 4,943 gpm/ft.
8/18/03	Advanced the pilot hole to 3,220 feet bls.
8/19/03	Conducted wiper passes on the pilot hole in preparation of geophysical logging.
8/20/03	Static geophysical logs were performed to 3,220 feet bls. Logs performed include caliper, gamma, dual induction, spontaneous potential, fluid resistivity, fluid temperature, and sonic porosity/variable density. The sonic logging was not completed due to loss of tool while logging. Obstruction in borehole noted at 2,548 which caused loss of sonic tool. Started cleaning out obstruction after conducting video to depth of obstruction.
8/21/03	Static geophysical logs were performed to 2,763 feet bls. Logs performed include video and static flowmeter. Unable to reach total depth due to obstruction located at 2,763 feet bls. Air developed well in preparation of conducting dynamic geophysical logging.
8/22/03	Dynamic geophysical logs were performed to 2,763 feet bls. Logs performed include fluid resistivity, fluid temperature, and flowmeter.
8/23/03	The Packer Test 1 monitor interval (1,920 to 1,970 feet bls) was air developed at a rate of 30 gpm. Started Packer Test 1 at a rate of 15 gpm.
8/24/03	Completed Packer Test 1. The observed drawdown was 43 feet, yielding a specific capacity of 0.35 gpm/ft.
8/25/03	Attempt to install straddle packer assembly to monitor interval of 2,400 to 2,428 feet bls and hit obstruction at 2,400 feet bls. Remove obstruction from well with 12.25-inch drill bit.
8/26/03	Attempt packer test on monitor intervals of 2,400 to 2,428 feet bls and 2,395 to 2,423 feet bls. Development rate of 60 gpm in each interval was too high for determining confinement in the intervals. The Packer Test 2 monitor interval (2,290 to 2,318 feet bls) was air developed at a rate of 15 gpm.
8/27/03	Started Packer Test 2 at a rate of 6 gpm.
8/28/03	Completed Packer Test 2. The observed drawdown was 120 feet, yielding a specific capacity of 0.05 gpm/ft. The Packer Test 3 monitor interval (2,215 to 2,243 feet bls) was air developed at a rate of 3.5 gpm.
8/29/03	The Packer Test 3 monitor interval (2,215 to 2,243 feet bls) was air developed at a rate of 15 gpm.
8/30/03	Conducted Packer Test 3 at a rate of 1.5 gpm. The observed drawdown was 120 feet, yielding a specific capacity of 0.0125 gpm/ft.
8/31/03	The Packer Test 4 monitor interval (2,100 to 2,128 feet bls) was air developed at a rate of 1.5 gpm.
9/1/03	The Packer Test 4 monitor interval (2,100 to 2,128 feet bls) was air developed at a rate of 1.5 gpm.
9/2/03	Conducted recovery of Packer Test 4 monitor interval after air development.
9/3/03	Started Packer Test 4 at a rate of 0.75 gpm.
9/4/03	Completed Packer Test 4. The observed drawdown was 152 feet, yielding a specific capacity of 0.005 gpm/ft.

9/5/03	The Packer Test 5 monitor interval (1,870 to 1,898 feet bls) was air developed at a rate of 2 gpm.
9/6/03	The Packer Test 5 monitor interval (1,870 to 1,898 feet bls) was air developed at a rate of 2 gpm.
9/7/03	The Packer Test 5 monitor interval (1,870 to 1,898 feet bls) was air developed at a rate of 2 gpm.
9/8/03	Conducted preliminary test of Packer Test 5 monitor interval and then allowed to recover.
9/9/03	Started Packer Test 5 at a rate of 0.25 gpm.
9/10/03	Completed Packer Test 5. The observed drawdown was 74 feet, yielding a specific capacity of 0.003 gpm/ft.
9/11/03	Conduct wiper pass of pilot hole to depth of 3,180 feet bls in preparation of conducting Packer Test 6.
9/12/03	Conducted Packer Test 6 monitor interval (2,495 to 3,220 feet bls) at a rate of 250 gpm. The observed drawdown was negligible, thus not allowing a specific capacity to be calculated.
9/13/03	Drillable bridge plug set at 2,490 feet bpl. Plugged back the pilot hole with 4 bbls of neat cement (with 3% CaCl additive) for Stage 1. The Stage 1 cement was tagged at 2,490 feet bls. Plugged back the pilot hole with 5 bbls of 12% gel cement (with 3% CaCl additive) for Stage 2. The Stage 2 cement was tagged at 2,490 feet bls.
9/14/03	15 cubic yds of gravel installed. Tagged gravel at 2,482 feet bls. Plugged back the pilot hole with 4 bbls of neat cement (with 3% CaCl additive) for Stage 3. The Stage 3 cement was tagged at 2,480 feet bls. Plugged back the pilot hole with 25 bbls of 12% gel cement (with 3% CaCl additive) for Stage 4. The Stage 4 cement was tagged at 2,455 feet bls. Plugged back the pilot hole with 11 bbls of neat cement (with 3% CaCl additive) for Stage 5. The Stage 5 cement was tagged at 2,430 feet bls. Plugged back the pilot hole with 10 bbls of neat cement (with 3% CaCl additive) for Stage 6.
9/15/03	The Stage 6 cement was tagged at 2,395 feet bls. Drillable bridge plug set at 2,335 feet bpl. Plugged back the pilot hole with 4 bbls of neat cement (with 3% CaCl additive) for Stage 7. The Stage 7 cement was tagged at 2,325 feet bls. Drillable bridge plug set at 2,335 feet bpl. Plugged back the pilot hole with 21 bbls of neat cement (with 3% CaCl additive) for Stage 8. The Stage 8 cement was tagged at 2,273 feet bls. Plugged back the pilot hole with 62 bbls of 12% gel cement (with 3% CaCl additive) for Stage 9.
9/16/03	The Stage 9 cement was tagged at 2,097 feet bls. Plugged back the pilot hole with 62 bbls of 12% gel cement (with 3% CaCl additive) for Stage 10. The Stage 10 cement was tagged at 1,940 feet bls. Plugged back the pilot hole with 110 bbls of 12% gel cement (with 3% CaCl additive) for Stage 11. The Stage 11 cement was tagged at 1,692 feet bls. Plugged back the pilot hole with 16 bbls of 12% gel cement (with 3% CaCl additive) for Stage 12.
9/17/03	The Stage 12 cement was tagged at 1,670 feet bls. The 24.5-inch reamed hole was advanced to 1,780 feet bls.
9/18/03	The 24.5-inch reamed hole was advanced to 1,870 feet bls.
9/19/03	The 24.5-inch reamed hole was advanced to 1,963 feet bls.
9/20/03	The 24.5-inch reamed hole was advanced to 2,053 feet bls.
9/21/03	The 24.5-inch reamed hole was advanced to 2,168 feet bls.
9/22/03	The 24.5-inch reamed hole was advanced to 2,250 feet bls.
9/23/03	The 24.5-inch reamed hole was advanced to 2,359 feet bls.
9/24/03	The 24.5-inch reamed hole was advanced to 2,409 feet bls.
9/25/03	The 24.5-inch reamed hole was advanced to 2,436 feet bls.
9/26/03	The 24.5-inch reamed hole was advanced to 2,474 feet bls.
9/27/03	The 24.5-inch reamed hole was advanced to 2,492 feet bls.
9/28/03	The 24.5-inch reamed hole was geophysically logged to 2,492 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma. The installation of the 16-inch steel casing was started and installed to 1,135 feet bls.
9/29/03	Installation of 16-inch casing advanced to 1,375 feet bls and then suspended due to

	inclement weather.
9/30/03	Installation of 16-inch casing completed to 2,490 feet bls. Begin cementing of the 16-inch casing. Stage 1: 202 bbls of neat cement.
10/1/03	Tagged Stage 1 cement at 2,374 feet bls. Resumed cementing – Stage 2: 42 bbls of neat cement. Tagged Stage 2 cement at 2,369 feet bls. Resumed cementing – Stage 3: 43 bbls of 4% gel cement.
10/2/03	Tagged Stage 3 cement at 2,304 feet bls. Resumed cementing – Stage 4: 183 bbls of 4% gel cement. Tagged Stage 4 cement at 1,922 feet bls. Resumed cementing – Stage 5: 150 bbls of 4% gel cement. Tagged Stage 5 cement at 1,607 feet bls. Resumed cementing – Stage 6: 187 bbls of 12% gel cement.
10/3/03	Tagged Stage 6 cement at 1,111 feet bls. Resumed cementing – Stage 7: 168 bbls of 12% gel cement. Tagged Stage 7 cement at 660 feet bls. Resumed cementing – Stage 8: 168 bbls of 12% gel cement.
10/4/03	Tagged Stage 8 cement at 206 feet bls.
10/5/03	Drilled out the cement plug and advanced a 14.5-inch reamed hole to 2,560 feet bls using reverse-air drilling methods.
10/6/03	The 14.5-inch reamed hole was advanced to 2,618 feet bls.
10/7/03	The 14.5-inch reamed hole was advanced to 2,689 feet bls.
10/8/03	The 14.5-inch reamed hole was advanced to 2,743 feet bls.
10/9/03	The 14.5-inch reamed hole was advanced to 2,786 feet bls.
10/10/03	The 14.5-inch reamed hole was advanced to 2,827 feet bls.
10/11/03	The 14.5-inch reamed hole was advanced to 2,885 feet bls.
10/12/03	The 14.5-inch reamed hole was advanced to 2,946 feet bls.
10/13/03	The 14.5-inch reamed hole was advanced to 3,017 feet bls.
10/14/03	The 14.5-inch reamed hole was advanced to 3,120 feet bls.
10/15/03	The 14.5-inch reamed hole was advanced to 3,215 feet bls.
10/16/03	The 14.5-inch reamed hole was conditioned in preparation of geophysical logging.
10/17/03	The 14.5-inch reamed hole was conditioned in preparation of geophysical logging.
10/18/03	The well was static for 24 hours in preparation of geophysical logging.
10/19/03	Static and dynamic geophysical logs were conducted to 3,200 feet bls. Static logs performed include caliper, gamma, flow meter, fluid resistivity, and fluid temperature. Dynamic logs performed include flow meter, fluid resistivity, and fluid temperature. A cement bond log was also conducted on the 16-inch casing. Started development of well.
10/20/03	Well development completed. Collected background primary and secondary water samples from the injection zone. Completed cementing of 16-inch casing to land surface.
1/6/04	Installed packer assembly for the 16-inch steel casing packer pressure test.
1/7/04	Conducted 16-inch steel casing packer pressure test.
1/8/04	Borehole video log conducted to 3,200 feet bls.
1/9/04	Geophysical logs were conducted to 3,200 feet bls. Logs performed include static fluid temperature and external Radioactive Tracer Survey (RTS).

bls – below land surface  
gpm/ft – gallons per minute per foot of drawdown  
bbls – barrels  
cf – cubic feet  
FRP – fiber reinforced plastic  
psi – pounds per square inch



APPENDIX B.2

## **DZMW-1 Summary of Construction Activity**

---

**Bonita Springs Utilities  
Summary of Construction Activities**

Date	Dual-Zone Monitor Well WRF DZMW-1 Construction Activity
10/27/04	Drilling of 12.25-inch pilot hole was advanced to 328 feet using mud-rotary drilling method.
10/28/03	Drilling of 12.25-inch pilot hole was advanced to 502 feet bls using mud-rotary. The pilot hole was geophysically logged to 500 feet bls. Logs performed include caliper, gamma, dual induction, and spontaneous potential.
10/29/03	The pilot hole was reamed to 178 feet bls using a 42.5-inch bit.
10/30/03	The 42.5-inch reamed hole was advanced to 320 feet bls.
10/31/03	The 42.5-inch reamed hole was advanced to 383 feet bls.
11/1/03	The 42.5-inch reamed hole was advanced to 452 feet bls.
11/3/03	The 42.5-inch reamed hole was geophysically logged to 454 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
11/4/03	The 36-inch steel surface casing was installed to 450 feet bls. A total of 202 bbls of 4% gel cement followed by 74 bbls of neat cement were used to pressure grout the casing to land surface.
11/6/03	A 12.25-inch pilot hole was advanced to 625 feet bls using mud-rotary.
11/7/03	The pilot hole was advanced to 1,105 feet bls.
11/8/03	The pilot hole was geophysically logged to 1,105 feet bls. Logs performed include caliper, gamma, dual induction, and spontaneous potential. The 32.5-inch reamed hole was advanced to 588 feet bls.
11/9/03	The 32.5-inch reamed hole was advanced to 836 feet bls.
11/10/03	The 32.5-inch reamed hole was advanced to 1,080 feet bls.
11/11/03	The 32.5-inch reamed was advanced to 1,115 feet bls. The 32.5-inch reamed hole was geophysically logged to 454 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
11/12/03	The 24-inch steel casing was installed to 1,110 feet bls. Begin cementing of the 24-inch casing. Stage 1: 220 bbls of 4% gel cement followed by 202 bbls of neat cement.
11/13/03	Tagged Stage 1 cement at 602 feet bls. Resumed cementing – Stage 2: 202 bbls of 4% gel cement. Tagged Stage 2 cement at 213 feet bls.
11/14/03	Resumed cementing – Stage 3: 130 bbls of 12% gel cement.
11/15/03	A 12.25-inch pilot hole was advanced to 1,360 feet bls using reverse-air. Specific capacity tests were conducted at 1,200 feet bls, 1,280 feet bls, and 1,360 feet bls.
11/16/03	A 12.25-inch pilot hole was advanced to 1,710 feet bls. Specific capacity tests were conducted at 1,440 feet bls, 1,520 feet bls, 1,600 feet bls and 1,680 feet bls.
11/17/03	The pilot hole was advanced to 1,755 feet bls. Specific capacity test was conducted at 1,755 feet bls, Specific capacities was 5.5 gpm/ft.
11/18/03 to 11/19/03	The pilot hole was conditioned using reverse air development.
11/20/03	Geophysical logs were performed to 1,747 feet bls. Logs performed include caliper, gamma, dual induction, spontaneous potential, static flow meter, static fluid conductivity, static fluid temperature, sonic porosity/variable density, dynamic fluid temperature, dynamic fluid conductivity, and dynamic flow meter. The Packer Test #1 monitor interval (1,450 to 1,480 feet bls) was air developed at a rate of 4 gpm.
11/21/03	Packer Test #1 monitor interval (1,450 to 1,480 feet bls) was air developed at a rate of 4 gpm. Conducted Packer Test #1 at 2 gpm. The observed drawdown was 136 feet, yielding a specific capacity of 0.015 gpm/ft.
11/22/03 to 11/23/03	Packer Test #2 monitor interval (1,520 to 1,550 feet bls) was air developed at a rate of 1 gpm.
11/24/03	Packer Test #2 monitor interval (1,520 to 1,550 feet bls) recovered from air

	development to static head level
11/25/03	Conducted Packer Test #2 at a rate of 1 gpm. The observed drawdown was 89 feet, yielding a specific capacity of 0.011 gpm/ft. Packer Test #2a monitor interval (1,610 to 1,640 feet bls) monitor interval was air developed at a rate of 20 gpm.
11/26/03	Packer Test #2a was aborted due to high production during development. Packer Test #3 monitor interval (1,680 to 1,710 feet bls) at a rate of 20 gpm. Conducted Packer Test #3 at a rate of 11 gpm. The observed drawdown was 138 feet, yielding a specific capacity of 0.08 gpm/ft.
11/27/03	Shut down for Thanksgiving holiday.
11/28/03 to 11/30/03	Packer Test #4 monitor interval (1,643 to 1,658 feet bls) was air developed at a rate of ¼ gpm.
12/1/03 to 12/2/03	Packer Test #4 monitor interval (1,643 to 1,658 feet bls) recovered from air development to static head level
12/3/03	Conducted Packer Test #4 at a rate of ½ gpm. The observed drawdown was 112 feet, yielding a specific capacity of 0.04 gpm/ft (Note: drawdown had not stabilized).
12/4/03	Packer Test #5 monitor interval (1,430 to 1,460 feet bls) was air developed at a rate of 3.5 gpm.
12/5/03	Conducted Packer Test #5 at a rate of 2 gpm. The observed drawdown was 127 feet, yielding a specific capacity of 0.016 gpm/ft. Packer Test #6 monitor interval (1,255 to 1,285 feet bls) was air developed at a rate of 60 gpm. Conducted Packer Test #6 at a rate of 55 gpm. The observed drawdown was 18 feet, yielding a specific capacity of 3 gpm/ft.
12/6/03 to 12/10/03	Shut down awaiting FDEP approval of upper and lower monitor zones
12/11/03	The pilot hole was conditioned using reverse air development.
12/12/03	Conducted geophysical logging on the 12.25-inch pilot hole. Log performed was dual induction. Packer Test #7 monitor interval (1,110 to 1,197 feet bls) was pumped developed at a rate of 100 gpm. Conducted Packer Test #7 at a rate of 100 gpm. The observed drawdown was 60 feet, yielding a specific capacity of 1.67 gpm/ft.
12/13/03	The pilot hole was conditioned using reverse air development.
12/14/03	Shut down while awaiting delivery of Contractor equipment.
12/15/03	Conducted geophysical logging on the 12.25-inch pilot hole. Logs performed include caliper and gamma logs. The 22-inch reamed hole was advanced to 1,200 feet bls.
12/16/03	The 22-inch reamed hole was advanced to 1,248 feet bls. The 22-inch reamed hole was geophysically logged to 1,250 feet bls. Logs performed include caliper (with borehole calculated volume) and gamma.
12/17/03	Conducted video survey on the 22-inch reamed hole.
12/18/03	The 16-inch steel upper monitor zone casing was installed to 1,250 feet bls. Neat cement cap #1 placed on top of K-packer using 1 bbl of neat cement with 3% CaCl additive.
12/19/03	Tagged cement cap #1 stage at 1,242 feet bls. Resumed placing cement cap - #2; 1 bbl of neat cement with 3% CaCl additive. Tagged #2 cement cap at 1,239 feet bls. Resumed cementing – Stage 1; 10 bbls of neat cement. Tagged Stage 1 cement at 1,202 feet bls.
12/20/03	Resumed cementing – Stage 2; 50 bbls of neat cement. Tagged Stage 2 cement at 1,085 feet bls. Resumed cementing – Stage 3; 110 bbls of 12% gel cement.
12/21/03	Tagged Stage 3 cement at 716 feet bls. Resumed cementing – Stage 4; 111 bbls of 12% gel cement. Tagged Stage 4 cement at 294 feet bls. Resumed cementing – Stage 5; 76 bbls of 12% gel cement.
12/22/03	Shut down awaiting 24-hour cement cure time.
12/23/03	The 12.25-inch pilot hole was cleaned out from 1,250 to 1,755 feet bls using reverse-air.
12/24/03	The 6.625-inch FRP casing was installed to 1,570 feet bls.
12/25/03	Shut down for Christmas holiday.
12/26/03	Begin cementing of the 6.625-inch FRP casing. Neat cement cap #1 placed on top of

	K-packer using 3 bbls of neat cement with 3% CaCl additive. Tagged cement cap #1 stage at 1,562 feet bls. Resumed placing cement cap - #2; 3 bbls of neat cement with 3% CaCl additive. Tagged #2 cement cap at 1,546.5 feet bls. Resumed cementing – Stage 1; 40 bbls of neat cement.
12/27/03	Tagged Stage 1 cement at 1,365 feet bls. Resumed cementing – Stage 2; 15 bbls of neat cement. Tagged Stage 2 cement at 1,285 feet bls.
12/28/03	Plugged back the pilot hole with 14 bbls of neat cement with 3% CaCl additive.
12/29/03	Tagged top of cement pumped for plug back of pilot hole at 1,642 feet bls.
1/6/04	Conduct geophysical logging of completed well. Log conducted include caliper log.
1/7/04	Conduct pump development of lower monitor zone (1,570 to 1,640 feet bls)
1/8/04	Installed packer assembly for the 6.625-inch FRP casing packer pressure test.
1/9/04	Conducted 6.625-inch FRP casing packer pressure test.
1/10/04 to 1/13/04	Conducted air development of lower monitor zone (1,570 to 1,640 feet bls)
1/14/04	Conducted video survey of completed well inside 6.625-inch FRP casing for lower monitor zone.
1/21/04 to 1/23/04	Conducted well development of both upper (1,250 to 1,285 feet bls) and lower (1,570 to 1,640 feet bls) monitor zones.
1/27/04	Collected background primary and secondary water samples from both monitor zones.

bls – below land surface  
gpm/ft – gallons per minute per foot of drawdown  
bbls – barrels  
cf – cubic feet  
FRP – fiber reinforced plastic  
psi – pounds per square inch

APPENDIX C

**Weekly Construction Summaries**

---



## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** May 9, 2003

**SUBJECT:** Weekly Summary No. 1  
May 2 through May 8, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

No drilling or testing activities were performed from May 2<sup>nd</sup> through May 6<sup>th</sup>. On Wednesday, May 7<sup>th</sup>, a 12.25-inch diameter pilot hole was advanced to 500 feet below pad level (bpl) using mud-rotary methods. The next day, geophysical logs were performed from 500 feet bpl to land surface. Logs performed include caliper, gamma ray, dual induction, and spontaneous potential. After logging activities were complete, the pilot hole was reamed to 30 feet bpl using a 46.5-inch diameter reamer bit. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the 46.5-inch diameter reamed borehole will be advanced to 455 feet bpl and the 38-inch diameter steel surface casing will be installed and cemented to land surface. Reverse-air pilot hole drilling will commence thereafter.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Lithologic Descriptions  
Deviation Survey Record  
Pad Monitor Well Water Quality

MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** May 19, 2003

**SUBJECT:** Weekly Summary No. 2  
May 9 through May 15, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, May 9<sup>th</sup>, the 12.25-inch diameter pilot hole was reamed between 30 feet below pad level (bpl) and 134 feet bpl using a 46.5-inch diameter drill bit. Reaming activities continued from Saturday through Wednesday. The total depth of reaming reached by Wednesday was 455 feet bpl. On Thursday, a caliper log was performed to verify the reamed hole characteristics. After logging was complete, the 38-inch diameter steel surface casing was installed to 450 feet bpl and pressure grouted in place using 300 barrels (bbls) of 4-percent gel cement followed by 80 bbls of neat cement. Cement returns were noted at land surface. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that reverse-air pilot hole drilling will commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Pad Monitor Well Water Quality

MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** May 23, 2003

**SUBJECT:** Weekly Summary No. 3  
May 16 through May 22, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

No drilling or testing activities were performed on Friday, May 16<sup>th</sup> or Saturday, May 17<sup>th</sup>, as the Contractor was preparing for reverse-air drilling activities. On Sunday, a 12.25-inch diameter pilot hole was advanced from 500 feet to 640 feet below pad level (bpl). The pilot hole was advanced to 1,120 feet bpl by Monday. Periodic dredging of quartz sand and sandy limestone (between 880 feet and 1,120 feet bpl) was reported from Tuesday through Thursday. The pilot hole was advanced to 1,200 feet bpl during the Thursday night shift. No progress in pilot hole drilling was reported beyond this depth as the Contractor resumed dredging of the borehole.

During next week's reporting period, it is anticipated that the pilot hole will be advanced to 1,700 feet bpl. Four 4-inch diameter core samples will be collected during pilot hole drilling to evaluate the confining properties of the penetrated aquifer.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Lithologic Descriptions  
Deviation Survey Record  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** June 2, 2003

**SUBJECT:** Weekly Summary No. 4  
May 23 through May 29, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

On Friday, May 23<sup>rd</sup>, the 12.25-inch diameter pilot hole was advanced between 1,200 feet and 1,280 feet below pad level (bpl). The following day, the pilot hole was advanced to 1,300 feet bpl. On Sunday and Monday, the Contractor reverse-air developed the pilot hole in preparation of coring. A core sample was attempted between 1,300 feet and 1,315 feet bpl on Tuesday. Zero-percent recovery efficiency was reported. After coring activities were complete, the pilot hole was advanced to 1,355 feet bpl. The pilot hole was advanced to 1,410 feet bpl by Wednesday. On Thursday, a core sample was attempted between 1,410 feet and 1,425 feet bpl. Twenty-percent recovery efficiency was reported. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the pilot hole drilling and coring activities will continue to 1,700 feet bpl. Static and dynamic geophysical logs will be conducted thereafter.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Lithologic Descriptions  
Deviation Survey Record  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** June 9, 2003

**SUBJECT:** Weekly Summary No. 5  
May 30 through June 5, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, May 30<sup>th</sup>, a 4-inch diameter core was attempted between 1,410 feet and 1,425 feet below pad level (bpl). Twenty-percent recovery efficiency was reported. The 12.25-inch diameter pilot hole was advanced between 1,440 feet bpl by Saturday. A core sample was attempted between 1,440 feet and 1,455 feet bpl the next day. Fifty-percent recovery efficiency was reported. After coring, the pilot hole was advanced to 1,510 feet bpl. On Monday, a core sample was attempted at 1,510 feet bpl. However, the core attempt was unsuccessful as the coring bit broke loose from the core barrel and fell to the bottom of the well. The pilot hole was subsequently advanced to 1,520 feet bpl. On Tuesday, the pilot hole was reverse-air developed in preparation of coring at 1,520 feet bpl. The following day, an unsuccessful attempt was made to fish out the core bit. It was then decided to core between 1,520 feet and 1,535 feet bpl. Zero-percent recovery was reported. On Thursday, the core bit was successfully retrieved from the bottom of the well. After the core bit retrieval, a core was attempted between 1,540 feet and 1,555 feet bpl. Sixty-seven-percent recovery efficiency was reported. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the pilot hole drilling and coring activities will continue to 1,750 feet bpl. Static and dynamic geophysical logs will be conducted thereafter.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Lithologic Descriptions  
Deviation Survey Record  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** June 16, 2003

**SUBJECT:** Weekly Summary No. 6  
June 6 through June 12, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

On Friday, June 6<sup>th</sup>, the 12.25-inch diameter pilot hole was advanced between 1,540 feet and 1,600 feet below pad level (bpl). A 4-inch diameter core sample was then attempted between 1,600 feet and 1,615 feet bpl. Twenty-percent recovery efficiency was reported. On Saturday, the pilot hole was advanced between 1,615 feet and 1,637 feet bpl. A core sample was then attempted between 1,637 feet and 1,649 feet bpl. Eighty-three-percent recovery efficiency was reported. The next day, the pilot hole was advanced to 1,680 feet bpl. On Monday, a core sample was attempted between 1,680 feet and 1,695 feet bpl. Fifty-percent recovery efficiency was reported. After coring activities were complete, the pilot hole was advanced to 1,750 feet bpl. The Contractor spent all of Tuesday reverse-air developing the pilot hole in preparation of geophysical logging. No drilling or testing activities were performed on Wednesday. The pilot hole was geophysically logged on Thursday. Logs performed include caliper, natural gamma ray, dual induction, spontaneous potential, borehole compensated sonic/variable density, static fluid temperature, static fluid resistivity, and static flow meter. An attempt was made to log the pilot hole under dynamic conditions. However, the pilot hole collapsed during pumping and dynamic logs were temporarily abandoned. Copies of the static logs will be submitted to the FDEP after the dynamic logs have been completed.

It is anticipated that the Contractor will spend all of next week reverse-air developing/dredging the pilot hole. After the well bore integrity is secure and free from sand, the dynamic geophysical logs will be completed and packer testing shall subsequently commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Lithologic Descriptions  
Deviation Survey Record  
Pad Monitor Well Water Quality



MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** June 23, 2003

**SUBJECT:** Weekly Summary No. 7  
June 13 through June 19, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

The entire week was spent reverse-air developing (dredging) loose fill from the pilot hole between approximately 900 feet and 1,750 feet below pad level (bpl). The loose fill is comprised of quartz sand, sandstone, and trace amounts of limestone formation. No other drilling or testing activities were performed during this week's reporting period.

It is anticipated that dredging operations will continue through next week's reporting period or until the borehole integrity is maintained. Dynamic geophysical logs and packer testing will subsequently commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM

---



**TO:** Mike Liggins/BSU Ron Reese/USGS  
Jack Myers/FDEP Bill Beddow/CH2M HILL  
Joe Haberfeld/FDEP Don Klose/CH2M HILL  
Nancy Marsh/USEPA Gary Giordano/CH2M HILL  
Steve Anderson/SFWMD

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** June 30, 2003

**SUBJECT:** Weekly Summary No. 8  
June 20 through June 26, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

From Friday, June 20<sup>th</sup> through Tuesday, June 24<sup>th</sup>, the Contractor reverse-air developed (dredged) loose fill from the pilot hole between approximately 900 feet and 1,750 feet below pad level (bpl). On Wednesday, it was decided to discontinue dredging operations and conduct a caliper log of the pilot hole to 1,750 feet bpl. The caliper tool was unable to reach beyond 1,675 feet bpl as the pilot hole was filled back with loose debris during logging. Thursday was spent reverse-air developing the bottom portion of the pilot hole. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated the pilot hole will be plugged back with cement between 1,750 feet and +/- 1,000 feet bpl (or up to the base of the dredge zone) and reaming of the pilot hole will commence. A letter will be submitted to the FDEP presenting the modifications to the construction and testing requirements of the injection and monitor well, and the approval request for the proposed IW-2 intermediate casing seating depth of +/- 1,650 feet bpl. Copies of the static geophysical logs will be submitted in concurrence with the letter.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD  
Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** July 7, 2003

**SUBJECT:** Weekly Summary No. 9  
June 27 through July 3, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, June 27<sup>th</sup>, the 12.25-inch diameter pilot hole was plugged back with 12-percent bentonite cement between the interval of 1,750 feet and 1,009 feet below pad level (bpl). Reaming of the pilot hole, using a 34.75-inch diameter drill bit, commenced the following day. The depth of reaming reached at the end of Saturday night shift was 520 feet bpl. Reaming continued from Sunday through Thursday. The depth of reaming reached at the end of Thursday night shift was 980 feet bpl. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the reamed hole will be advanced to +/- 1,650 feet bpl. After conducting a caliper log of the open hole, the 26-inch diameter intermediate casing will be installed and cemented to land surface.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** July 14, 2003

**SUBJECT:** Weekly Summary No. 10  
July 4 through July 10, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, July 4<sup>th</sup>, the injection well pilot hole was reamed between 980 feet and 1,030 feet below pad level (bpl) using a 34.75-inch diameter drill bit. No progress in reamed hole advancement was reported on Saturday as the borehole was dredging loose fill at approximately 1,030 feet bpl. The drilling rig was shut down for repairs on Sunday and Monday. Reaming activities resumed on Tuesday and continued through Thursday. The total depth of reaming reached on Thursday was 1,401 feet bpl. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the reamed hole will be advanced to +/- 1,655 feet bpl. After conducting a caliper log of the open hole, the 26-inch diameter intermediate casing will be installed and cemented to land surface.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** July 21, 2003

**SUBJECT:** Weekly Summary No. 11  
July 11 through July 17, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, July 11<sup>th</sup>, the injection well pilot hole was reamed between 1,401 feet and 1,521 feet below pad level (bpl) using a 34.75-inch diameter drill bit. Reaming activities continued on Saturday and Sunday. A total depth of 1,655 feet bpl was reached on Sunday. The reamed hole was reverse-air developed from Monday through Thursday as the borehole continued to dredge loose fill between approximately 900 feet and 1,050 feet bpl. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated reverse-air development of the reamed hole will continue until the well bore integrity can be maintained. After reverse-air development is complete, a caliper log will be conducted on the reamed hole and the 26-inch diameter intermediate casing will be installed to +/- 1,650 feet bpl.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** July 28, 2003

**SUBJECT:** Weekly Summary No. 12  
July 18 through July 24, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

No drilling or testing activities were performed on Friday, July 18<sup>th</sup>, as the drilling rig was shut down for repairs. The Contractor spent Saturday conditioning the 34.75-inch diameter reamed borehole. On Sunday, the reamed borehole was geophysically logged to evaluate the reamed hole characteristics. Logs performed include X-Y caliper (with borehole calculated volume) and natural gamma ray. On Monday and Tuesday, the 26-inch diameter intermediate steel casing was installed to 1,650 feet below pad level (bpl) and pressure grouted in place. Cementing of the casing continued on Wednesday and Thursday, via the annular tremie method. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the intermediate casing will be cemented to land surface. After a 24-hour cure period, reverse-air pilot hole drilling and coring activities will commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** August 4, 2003

**SUBJECT:** Weekly Summary No. 13  
July 25 through July 31, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

On Friday, July 25<sup>th</sup>, cementing of the 26-inch diameter intermediate casing continued, via the annular tremie method. Cementing operations continued between Saturday and Sunday. By Monday, the casing was cemented to +/- 10 feet below pad level (bpl). After a 24-hour cure period, the 12.25-inch diameter pilot hole was advanced to 1,830 feet bpl. On Wednesday, a core sample was attempted between 1,830 feet and 1,843 feet bpl. A recovery efficiency of 77-percent was reported. After coring, the pilot hole was advanced to 1,920 feet bpl. An additional core sample was attempted between 1,920 feet and 1,935 feet bpl. A recovery efficiency of 50-percent was reported. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that pilot hole/coring activities will continue to +/- 3,200 feet bpl. Geophysical logging of the pilot hole will commence thereafter.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Lithologic Descriptions  
Pad Monitor Well Water Quality



## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Dan Jablonski and Mike Weatherby/CH2M HILL

**DATE:** August 11, 2003

**SUBJECT:** Weekly Summary No. 14  
August 1 through August 7, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

On Friday, August 1<sup>st</sup>, the 12.25-inch diameter pilot hole was advanced between 1,932 feet and 2,072 feet below pad level (bpl). A core sample was then attempted between 2,072 feet and 2,082 feet bpl. A recovery efficiency of 100-percent was reported. The following day, the pilot hole was advanced to 2,187 feet bpl. On Sunday, the pilot hole was advanced to 2,326 feet bpl. A core sample was then attempted between 2,326 feet and 2,339 feet bpl. A recovery efficiency of 77-percent was reported. The pilot hole was advanced to 2,387 feet bpl by Tuesday. A final core sample was attempted between 2,387 feet and 2,402 feet bpl. A recovery efficiency of 100-percent was reported. The pilot hole was advanced to 2,567 feet bpl by the end of the Thursday night shift. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the pilot hole will be advanced to +/- 3,200 feet bpl. Geophysical logging and packer testing activities will subsequently commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Lithologic Descriptions  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD  
Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** August 19, 2003

**SUBJECT:** Weekly Summary No. 15  
August 8 through August 14, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, August 8<sup>th</sup>, the drilling of the 12.25-inch diameter pilot hole continued from a depth of 2,567 feet below pad level (bpl) and was advanced to a depth of 3,120 feet bpl by the morning of Tuesday, August 11<sup>th</sup>. The drilling was stopped due to hydraulic problems with the drill rig and no other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the pilot hole will be advanced to +/- 3,200 feet bpl. Geophysical logging and packer testing activities will subsequently commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Lithologic Descriptions  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** August 25, 2003

**SUBJECT:** Weekly Summary No. 16  
August 15 through August 21, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, August 15<sup>th</sup>, the drilling of the 12.25-inch diameter pilot hole continued from a depth of 3,120 feet below pad level (bpl) and was advanced to a depth of 3,220 feet bpl by the morning of Monday, August 18<sup>th</sup>. The remainder of the day and all of Tuesday, August 19<sup>th</sup>, was spent conducting wiper passes of the pilot hole. On Wednesday, August 20<sup>th</sup>, geophysical logging was started and continued through Thursday, August 21<sup>st</sup>, due to obstructions in the borehole. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the pilot hole geophysical logging will be completed. Packer testing activities will subsequently commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Deviation Survey Record  
Lithologic Descriptions  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** September 2, 2003

**SUBJECT:** Weekly Summary No. 17  
August 22 through August 28, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, August 22<sup>nd</sup>, the dynamic geophysical logging of the 12.25-inch pilot hole was completed. The straddle packer assembly was also installed on Friday, to the test interval of 1,920 to 1,970 feet below pad level (bpl). The testing of this interval continued through Sunday, August 24<sup>th</sup>. On Monday, August 25<sup>th</sup>, installation of the straddle packer assembly to the interval of 2,400 to 2,428 feet bpl, was unsuccessfully attempted due to an obstruction in the borehole at 2,380 feet bpl. The remainder of the day was spent removing the obstruction with the 12.25-inch drill bit. Two tests were attempted at the depths of 2,400 to 2,428 feet bpl and 2,395 to 2,423 feet bpl, but were not conducted due to the high rate, 60 gpm, of air development at both intervals, on Tuesday, August 26<sup>th</sup>. Also on Tuesday, the packer assembly was moved to the test interval of 2,290 to 2,318 feet bpl. The testing of this interval continued until Thursday, August 28<sup>th</sup>. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the packer testing activities will be completed.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** September 8, 2003

**SUBJECT:** Weekly Summary No. 18  
August 29 through September 4, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)**

On Friday, August 29<sup>th</sup>, the packer assembly was moved to the test interval of 2,215 to 2,243 feet below pad level (bpl). The testing of this interval continued until Sunday, August 31<sup>st</sup>, when the packer assembly was moved to the test interval of 2,100 to 2,128 feet bpl. Testing of this interval was still ongoing at the end of this reporting period. Both intervals tested during this period exhibit good confinement characteristics. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the packer testing activities will be completed.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** September 15, 2003

**SUBJECT:** Weekly Summary No. 19  
September 5 through September 11, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : Deep Injection Well (IW-2)

On Friday, September 5<sup>th</sup>, the testing of the straddle packer interval of 2,100 to 2,128 feet below pad level (bpl) was completed. The packer assembly was then moved, also on Friday, to the test interval of 1,870 to 1,898 bpl. The testing of this interval continued until Wednesday, September 10<sup>th</sup>. Upon completion of the test, the straddle packer assembly was removed from the borehole and a wiper pass of the entire pilot hole was conducted on Thursday, September 11<sup>th</sup>, in preparation of installing a single packer to the depth of 2,500 feet bpl. Both intervals tested during this period exhibit good confinement characteristics. No other drilling or testing activities were performed during this week's reporting period.

During next week's reporting period, it is anticipated that the packer testing activities will be completed and the backplugging of the pilot hole will begin.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** September 25, 2003

**SUBJECT:** Weekly Summary No. 20  
September 12 through September 18, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)

On Friday, September 12<sup>th</sup>, the testing of the single packer interval of 2,495 to 3,220 feet below pad level (bpl) was started and completed. The packer assembly was then removed from the well. The backplugging of the pilot hole from 2,495 to 1,630 feet bpl was started on Saturday, September 13<sup>th</sup> and completed on Wednesday, September 17<sup>th</sup>. Also on Wednesday, the reaming, using a 24.5-inch drill bit, was started and had reached a depth of 1,870 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the reaming will be completed to the depth of 2,492 feet bpl.

No salt was used to kill the injection well this reporting period.

Attachments: Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality



## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** September 30, 2003

**SUBJECT:** Weekly Summary No. 21  
September 19 through September 25, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)

On Friday, September 19<sup>th</sup>, the reaming, using a 24.5-inch drill bit, continued from 1,870 feet below pad level (bpl) and had reached a depth of 2,436 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the reaming will be completed to the depth of 2,492 feet bpl and the 16-inch casing will be installed.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** October 7, 2003

**SUBJECT:** Weekly Summary No. 22  
September 26 through October 2, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)**

On Friday, September 26<sup>th</sup>, the reaming, using a 24.5-inch drill bit, continued from 2,436 feet below pad level (bpl) and reached the desired depth of 2,492 feet bpl on Saturday, September 27<sup>th</sup>. The installation of the 16-inch steel casing was started on Sunday, September 28<sup>th</sup> and completed on Tuesday, September 30<sup>th</sup>. There was a suspension of activities on Monday, September 29<sup>th</sup>, due to inclement weather. Upon completion of the installation of the casing, the grouting in place was started and had reached 1,111 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the grouting will be completed and the drilling of the reamed borehole beneath the 16-inch casing will be started.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Geophysical Logs

MEMORANDUM



TO: Mike Liggins/BSU Ron Reese/USGS  
Jack Myers/FDEP Bill Beddow/CH2M HILL  
Joe Haberfeld/FDEP Don Klose/CH2M HILL  
Nancy Marsh/USEPA Gary Giordano/CH2M HILL  
Steve Anderson/SFWMD Kevin Greuel/YBI

FROM: Mark Schilling and Mike Weatherby/CH2M HILL

DATE: October 13, 2003

SUBJECT: Weekly Summary No. 23  
October 3 through October 9, 2003

PROJECT: **Bonita Springs Utilities WRF Deep Injection Well System**  
**FDEP UIC Permit Number 190919-001-UC**

**Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)**

On Friday, October 3<sup>rd</sup>, the grouting of the 16-inch casing continued from 1,111 feet below pad level (bpl) and was completed to a depth of 206 feet bpl on Saturday, October 4<sup>th</sup>. The cement was not brought to pad level at this time to allow the cement bond log to be conducted at a future date. After the completion of the specified 24-hour cure time, the drilling out of the cement plug in the base of the casing and the injection zone beneath the casing was started on Sunday, October 5<sup>th</sup>. The drilling had reached a depth of 2,786 feet bpl by the end of the reporting period.

During next week's reporting period, it is anticipated that the drilling of the reamed borehole beneath the 16-inch casing will continue. It is not anticipated that the drilling will be completed due to the slow penetration rate caused by the formation material being encountered.

No salt was used to kill the injection well this reporting period.

Attachments: Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Geophysical Logs

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** October 20, 2003

**SUBJECT:** Weekly Summary No. 24  
October 10 through October 11, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)

On Friday, October 10<sup>th</sup>, the drilling out the injection zone beneath the 16-inch casing, with a 14.5-inch drill bit, continued from a depth of 2,786 feet below pad level (bpl) and had reached the total depth of 3,215 feet bpl on Wednesday, October 15<sup>th</sup>. The remainder of the reporting period was spent conditioning the borehole by conducting wiper passes with the drill stem.

During next week's reporting period, it is anticipated that the geophysical logging of the completed borehole will be conducted. Development of the well is also anticipated to be completed. Upon completion of the well development, the mobilization of the drill rig to the dual-zone monitor well location will commence.

No salt was used to kill the injection well this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU Ron Reese/USGS  
Jack Myers/FDEP Bill Beddow/CH2M HILL  
Joe Haberfeld/FDEP Don Klose/CH2M HILL  
Nancy Marsh/USEPA Gary Giordano/CH2M HILL  
Steve Anderson/SFWMD Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** October 27, 2003

**SUBJECT:** Weekly Summary No. 25  
October 17 through October 23, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)**

On Friday, October 17<sup>th</sup>, the conditioning of the borehole by conducting wiper passes with the drill stem was completed. Geophysical logging was conducted on Sunday, October 19<sup>th</sup> after the well was static for 24 hours on Saturday, October 18<sup>th</sup>. Development of the well was also started on Sunday and completed on Monday, October 20<sup>th</sup>. Also on Monday, the background water quality samples were collected and the annulus between the 26-inch and the 16-inch casings was cemented from the depth of 206 feet below pad level (bpl) to pad level. The remainder of the reporting period was spent demobilizing the drill rig from the IW-1 location and mobilizing it to the Dual-Zone Monitor Well (DZMW-1) location.

During next week's reporting period, it is anticipated that the mobilization of the drill rig to the DZMW-1 location will be completed and the pilot hole drilling will commence.

No salt was used to kill the injection well this reporting period.

Attachments: Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Geophysical Logs

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** November 4, 2003

**SUBJECT:** Weekly Summary No. 26  
October 24 through October 30, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)

The mobilization of the drill rig to the Dual-Zone Monitor Well (DZMW-1) location continued from Friday, October 24<sup>th</sup>, and was completed on Sunday, October 26<sup>th</sup>. On Monday, October 27<sup>th</sup>, the drilling of the 12.25-inch diameter pilot hole, using mud rotary methods, was started from pad level and reached the depth of 500 feet below pad level on Tuesday, October 28<sup>th</sup>. Geophysical logging of the pilot hole was also conducted on Tuesday. The reaming of the pilot hole, using a 42.5-inch diameter bit was started on Wednesday, October 29<sup>th</sup> and had reached a depth of 320 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the reaming of the pilot hole will be completed to a depth of 455 feet bpl and the 36-inch casing will be installed to a depth of 450 feet bpl.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Lithologic Descriptions  
Deviation Survey Record  
Geophysical Logs

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** November 11, 2003

**SUBJECT:** Weekly Summary No. 27  
October 31 through November 6, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)**

The reaming of the pilot hole, using a 42.5-inch diameter bit was continued on Friday, October 31<sup>st</sup> from a depth of 320 feet bpl and reached the desired depth of 454 feet below pad level (bpl) on Sunday, November 2<sup>nd</sup>. Monday, November 3<sup>rd</sup> was spent conditioning the borehole and the 36-inch casing was installed to a depth of 450 feet bpl and cemented to pad level on Tuesday, November 4<sup>th</sup>. While allowing the cement to cure, preparations to resume pilot hole drilling were conducted on Wednesday, November 5<sup>th</sup>. On Thursday, November 6<sup>th</sup>, the pilot hole drilling, using a 12.25-inch diameter bit was started from the base of the 36-inch casing at 450 feet bpl and reached a depth of 625 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the pilot hole drilling will be completed to a depth of approximately 1,100 feet bpl, followed by the reaming in preparation of the installation of the 24-inch casing will be started.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Lithologic Descriptions  
Deviation Survey Record  
Geophysical Logs

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** November 17, 2003

**SUBJECT:** Weekly Summary No. 28  
November 7 through November 13, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### Summary of Engineer's/Driller's Log : WRF Deep Injection Well (IW-1)

On Friday, November 7, the pilot hole drilling, using a 12.25-inch diameter bit, continued from a depth of 625 feet below pad level (bpl) and reached the desired depth of 1,105 feet bpl at the end of the day. The pilot hole was geophysically logged on Saturday, November 8. The reaming of the pilot hole, using a 32.5-inch diameter bit, was also started on Saturday. The reaming was completed to a depth of 1,115 feet bpl on Tuesday, November 10. On Wednesday, November 11, the 24-inch steel casing was installed to a depth of 1,110 feet bpl. The grouting of the casing had advanced to a depth of 219 feet bpl at the end of the reporting period.

During next week's reporting period, it is anticipated that the grouting of the 24-inch casing will be completed and the resumption of pilot hole drilling below the 24-inch casing, using reverse-air methods, will be take place.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Lithologic Descriptions  
Deviation Survey Record  
Geophysical Logs



## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** November 25, 2003

**SUBJECT:** Weekly Summary No. 29  
November 14 through November 20, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, November 14, the grouting of the 24-inch casing was completed to land surface. Pilot hole drilling, using closed circulation reverse-air methods, from the base of the 24-inch casing was started on Saturday, November 15 and completed to a depth of 1,755 feet below pad level (bpl) on Monday, November 17. On Tuesday, November 18, geophysical logging was attempted after allowing the well to remain static for approximately 24 hours. The logging was aborted due to an obstruction and the borehole was reconditioned for the remainder of the day. No work was conducted on the well on Wednesday, November 19, as the well remained static. On Thursday, November 20, geophysical logging of the borehole was conducted after the well was static for 24 hours. After the completion of the logging, packer testing was started.

During next week's reporting period, it is anticipated that the packer testing will continue for the entire reporting period.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Lithologic Descriptions  
Deviation Survey Record  
Geophysical Logs

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** December 2, 2003

**SUBJECT:** Weekly Summary No. 30  
November 21 through November 27, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, November 21, the packer testing was ongoing and continued through Wednesday, November 26. A total of 3 packer tests were conducted during this period. The intervals tested were 1,450 to 1,480 feet below pad level (bpl); 1,520 to 1,550 feet bpl; and 1,680 to 1,710 feet bpl. No work was conducted on Thursday, November 27 due to the Thanksgiving holiday.

During next week's reporting period, it is anticipated that the packer testing will continue for the entire reporting period.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** December 12, 2003

**SUBJECT:** Weekly Summary No. 31  
November 28 through December 4, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, November 28, the packer testing was ongoing and continued throughout this reporting period. The only interval fully tested was from 1,643 to 1,658 feet below pad level (bpl) with the testing of the interval from 1,430 to 1,460 feet bpl still in process at the end of the reporting period.

During next week's reporting period, it is anticipated that the packer testing will be completed and the recommendation of the proposed upper and lower monitor zones will be submitted to FDEP.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** December 15, 2003

**SUBJECT:** Weekly Summary No. 32  
December 5 through December 11, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, December 5, the packer testing was completed. The intervals tested were from 1,430 to 1,460 feet below pad level (bpl) and 1,255 to 1,285 feet bpl. There was no work conducted from Saturday, December 6 through Wednesday, December 10, while awaiting approval of the upper and lower monitor zones by FDEP. On Thursday, December 11, air development of the well was started in preparation of conducting further geophysical logging to assist in the approval process of the upper and lower monitor zones. No other work was conducted till in process at the end of the reporting period.

During next week's reporting period, it is anticipated that the geophysical logging will be completed and the results submitted for the approval of the proposed upper and lower monitor zones by FDEP.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

## MEMORANDUM

---



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** January 5, 2004

**SUBJECT:** Weekly Summary No. 33  
December 12 through December 18, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

### **Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, December 12, the dual-induction geophysical logging was conducted. Packer Test #7 on the interval of 1,110 to 1,200 feet below pad level (bpl) was also conducted on Friday. The borehole was conditioned on Saturday, December 13, with no work conducted on Sunday, December 14. On Monday, December 15, geophysical logging was conducted followed by the start-up of the reaming of the pilot hole. The reaming was completed to a depth of 1,248 feet bpl on Tuesday, December 16. A video survey was conducted on Wednesday, December 17. The 16-inch casing was installed on Thursday, December 18 and the grouting of the casing was also started. No other work was conducted during this reporting period.

During next week's reporting period, it is anticipated that the grouting of the casing will be completed and the pilot hole below the 16-inch casing will be backplugged from 1,755 to 1,640 feet bpl.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Geophysical Logs

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** January 5, 2004

**SUBJECT:** Weekly Summary No. 34  
December 19 through December 25, 2003

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : WRF Dual-Zone Monitor Well (DZMW-1)**

On Friday, December 19, the grouting of the 16-inch casing continued and was completed to land surface on Sunday, December 21. No work was conducted on Monday, December 22, while waiting on the 24-hour cement cure time. On Tuesday, December 23, the pilot hole below the base of the 16-inch casing was cleaned out to a depth of 1,755 feet below pad level. The 6.625-inch FRP casing was installed on Wednesday, December 24. No other work was conducted during this reporting period due to the Christmas holiday.

During next week's reporting period, it is anticipated that the grouting of the 6.625-inch FRP casing will be completed and the pilot hole below the 6.625-inch FRP casing will be backplugged from 1,755 to 1,640 feet bpl.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality  
Geophysical Logs

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** January 6, 2004

**SUBJECT:** Weekly Summary No. 35  
December 26 through January 1, 2004

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Dual-Zone Monitor Well (DZMW-1)**

On Friday, December 26, the grouting of the 6.625-inch FRP casing was started and completed to the depth of 1,285 feet below pad level (bpl), the base of the upper monitor zone, on Saturday, December 27. The pilot hole below the base of the 6.625-inch FRP casing was backplugged to the depth of 1,642 feet bpl, the base of the lower monitor zone on Sunday, December 28. The demobilization of the drill rig was started on Monday, December 29 and continued through Wednesday, December 31. No other work was conducted during this reporting period due to the New Year's holiday.

During next week's reporting period, it is anticipated that the demobilization of the drill rig will continue. It is also anticipated that the Mechanical Integrity Testing (MIT) will be conducted on the Injection Well (IW-1)

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Pad Monitor Well Water Quality

MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD  
Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** January 13, 2004

**SUBJECT:** Weekly Summary No. 36  
January 2 through January 8, 2004

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Injection Well (IW-1) and Dual-Zone Monitor Well (DZMW-1)**

On Friday, January 2, the demobilization of the rig continued and was completed on Sunday, January 4. On Monday, January 5, the MIT rig was brought to site and preparations for the IW-1 16-inch casing pressure test were started and the official test was conducted on Wednesday, January 7. On Tuesday, January 6, geophysical logging was conducted in DZMW-1 lower monitor zone. Geophysical logging was conducted in IW-1 on Thursday, January 8. No other work was conducted at the site during this reporting period.

During next week's reporting period, it is anticipated that the RTS logging will be completed in IW-1. In DZMW-1, it is anticipated that the 6.625-inch FRP casing pressure test will be conducted and the upper and lower monitor zones developed.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Geophysical Logs



MEMORANDUM



**TO:** Mike Liggins/BSU  
Jack Myers/FDEP  
Joe Haberfeld/FDEP  
Nancy Marsh/USEPA  
Steve Anderson/SFWMD

Ron Reese/USGS  
Bill Beddow/CH2M HILL  
Don Klose/CH2M HILL  
Gary Giordano/CH2M HILL  
Kevin Greuel/YBI

**FROM:** Mark Schilling and Mike Weatherby/CH2M HILL

**DATE:** January 20, 2004

**SUBJECT:** Weekly Summary No. 37  
January 9 through January 15, 2004

**PROJECT:** Bonita Springs Utilities WRF Deep Injection Well System  
FDEP UIC Permit Number 190919-001-UC

**Summary of Engineer's/Driller's Log : Injection Well (IW-1) and Dual-Zone Monitor Well (DZMW-1)**

On Friday, January 9, the RTS logging was conducted in IW-1 and the 6.625-inch FRP casing pressure test was successfully conducted in DZMW-1. Air development of the lower monitor zone in DZMW-1 was started on Saturday, January 10 and concluded on Wednesday, January 14. The final video survey of the lower monitor zone was also completed on Wednesday. The remainder of the reporting period was spent on installing the DZMW-1 wellhead.

During next week's reporting period, it is anticipated that the upper monitor zone of DZMW-1 will be developed. Upon completion of the development, the collection of background water quality samples will be conducted from both monitor zones.

No salt was used to kill the injection well or the monitor well during this reporting period.

**Attachments:** Engineer's Daily Reports  
Driller's Daily Reports  
Geophysical Logs

APPENDIX D

## **Well Casing Mill Certificates**

---

TELEPHONE: (416) 263-1113  
 FAX: (416) 263-0991

# CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF (194781) ONTARIO LIMITED  
 289 HORNER AVENUE  
 ETOBICOKE, ONTARIO,  
 CANADA  
 M8Z 4Y4

## LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE April 3/03 CUSTOMER \_\_\_\_\_  
 SPECIFICATION A1398 CUSTOMER'S P.O. 7026  
 DIA. & WALL 38" O.D. X .375 WT PHOENIX REF.# 03-3876A  
 HYDROTEST 555 PSI FOR 10 Sec.

### PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST		% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
		YIELD	TENSILE			
2300716	2	54000	72800	28.3	76300	PM

### LADLE ANALYSIS      CHEMICAL COMPOSITION

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
2300716	.21	.82	.002	.011	.020					.029

The material listed on this report has been tested in accordance with the specification shown above.

  
 \_\_\_\_\_  
 Authorized Approval

TELEPHONE: (416) 299-1113  
 FAX: (416) 299-0851

# CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1648791 ONTARIO LIMITED  
 289 HORNER AVENUE  
 ETOBICOKE, ONTARIO,  
 CANADA  
 M8Z 4Y4

## LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Sept. 6/02 CUSTOMER \_\_\_\_\_  
 SPECIFICATION A139B CUSTOMER'S P.O. 6921  
 DIA. & WALL 36" O.D. X .375 WT PHOENIX REF.# 02-3825  
 HYDROTEST 555 PSI FOR 10 Sec.

### PHYSICAL PROPERTIES

HEAT NO.	PIPE NO.	LONGITUDINAL TEST		% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
		YIELD	TENSILE			
T013314	2	52300	71000	31.0	74400	PM
T013031	5	49300	67300	31.0	71600	PM
T023232	8	50400	70500	29.0	74100	PM
T023263	15	48000	67700	30.0	74500	PM

### LADLE ANALYSIS CHEMICAL COMPOSITION

HEAT NO.	C	MN	S	P	SI	CR	NI	CU	MO	AL
T013314	.16	.70	.03	.025	.20					
T013031	.15	.70	.029	.024	.22					
T023232	.17	.73	.030	.017	.18					
T023263	.17	.70	.028	.013	.21					

The material listed on this report has been tested in accordance with the specification shown above.

  
 Authorized Approval

Shipper:

# Youngquist Bros.



158 Third Street  
Mineola, NY 11501  
Phone 516 741 8398  
Toll Free 800 272 8277  
Fax 516 741 8210

### BILL OF LADING-PACKING LIST

Ref # 28430

Ref Date 4-4-03

Released by

Freight  Prepaid  Collect

Invoice Date

P.O. # 218039-

To:

Bonita Spr. Utilities, WRF Site  
25051 S. Tamiami Trail  
Bonita Spr., Fl.  
**See Map**

Date Shipped 4-11

I.O.B. Point Bonita Springs

Sales Person S

Terms 30

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via *CF*

Freight

Meas

Quantity	DESCRIPTION OF PIPE TO BE RELEASED			B/L #	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R					
<i>160.8</i>	<i>-</i>	<i>4</i>	<i>40.2</i>	<i>38" APE-375W A139B Spiralweld</i>	<i>✓</i>			

Special Instructions:

Received in good condition by

PRINT NAME

SIGNATURE

DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

MTN 101 2968 4-11-03 4800 FILE MV 0021 5 54 0

**Submittal Data**  
**FROM**  
**Youngquist Brothers, Inc.**  
15465 Pine Ridge Rd.  
Ft. Myers, FL. 33908  
239-489-4444 Fax: 239-489-4545

*Project*  
**Bonita Springs Utilities**  
**WTP-Reverse Osmosis Injection Well**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: October 20, 2003 Number of Copies: 9

Submittal Number: 02674-11-A

Specification Section Number: 02674

Item Submitted: Additional 24" Mill Certs

New Submittal: X Resubmitted: \_\_\_\_\_

Youngquist Brothers, Inc. Representative:

Marybeth Rios

Marybeth Rios

Transmittal Date: \_\_\_\_\_

<input type="checkbox"/>	Approved
<input type="checkbox"/>	Approved with changes
<input type="checkbox"/>	Rejected, Revise & Resubmit
<input type="checkbox"/>	Not Reviewed

By: \_\_\_\_\_

Firm: \_\_\_\_\_

Date: \_\_\_\_\_

**Bakrie Pipe Industries**

Jl. Raya Perjuangan  
Medan Satria 17131  
Bekasi, Indonesia

Serie B No. : 992378

**MILL'S INSPECTION CERTIFICATE**

Article Specification : NEW PRIME ERW STEEL PIPE PER API 5LX-42(PSL 1)/API 5LB(PSL 1)/  
ASTH A53B/ASME SA53B QUADRUPLE STENCILED, BLACK PLAIN END ~  
BEVELED (30 DEGREE) BLACK VARNISH COATED ~

SMB No. : 0.3.1472/ ✓  
M/C No. : 2331/QAE/IV/03  
Date : April 23, 2003

Customer :

Contract No. :

Shipper : HV-AURORA AMETHYST V.007 ✓

Item No.	Mill Work No.	Test No.	Ordered Sizes			Delivered Quantity		Description of Inspection & Test								
			Inside/Outside Diameter	Thickness	Length	No. of Pieces & Total Length	Net Weight	Surface & Dimension	Hydrostatic Kg/cm <sup>2</sup> /PSUBAR	Flattening	Ultrasonic	Weld Ductility	Impact	Ratio Yield to Tensile Strength	Heat Treatment	
1 to 100		✓	24" ~ or 609.6mm	0.375" ~ or 9.52mm	42. Feet per Piece	100 Pcs 200.000 Feet	180,438 Kgs	Sound	Sound	Sound	Sound	Sound	-	-	Sound	
Test No.	Heat No.	Yield Strength PSI/MPa	Tensile Strength PSI/MPa	Gauge Length In	Elongation %	Hardness (HRB/HV 10)	Chemical Analysis (%)								Remarks	
							C	SI	Mn	P	S	Mo	Cr	V		Ni
							See Attachment to Mill's Inspection Certificate Attachment Products Analysis									
Standard	MAX															
	MIN															

We hereby certify that material described herein has been duly inspected in accordance with the above specification.

PT. Bakrie Pipe Industries



PT. BAKRIE  
PIPE  
INDUSTRIES  
JAKARTA

*Ir. Endang Kusnadi*  
QA / QC Manager

CUSTOMER (ORIGINAL)

PT. BAKRIE PIPE INDUSTRIES  
 Jl. Raya Peluang  
 Medan Sabra 17131 Bekasi, Indonesia

SPMB : 8.3.1472  
 Mill No. : 2331/QAE/IV/03  
 Date : April, 23, 2003  
 Page : 2 of 3

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No.	Test Number	Heat Number	Yield Strength (Psi)	Tensile Strength (Psi)			Gauge Length (inc)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)														
				Long	Trans	Weld				C	Si	Mn	P	S	Cu	Cr	NI	Mo	V	Ti	Nb	I		
9	431527 000026 000558	83148Q	45405	-	72659	76499	2	38.83	1180	0.150	0.230	0.893	0.011	0.001	0.018	0.021	0.036	0.005	0.017	0.001	0.002	0.002	0.002	0.092
10	431527 000030 000624	83150Q	42831	-	66315	76006	2	39.39	1180	0.140	0.231	0.871	0.011	0.001	0.018	0.018	0.036	0.005	0.017	0.001	0.003	0.003	0.003	0.089
11	431527 000031 000642	83151Q	42019	-	63171	75945	2	40.16	1180	0.110	0.203	0.838	0.008	0.008	0.017	0.020	0.040	0.003	0.014	0.001	0.008	0.008	0.001	0.081
12	431527 000033 000661	83155Q	43442	-	67524	74784	2	39.57	1180	0.110	0.234	0.830	0.008	0.005	0.020	0.020	0.040	0.003	0.013	0.001	0.006	0.006	0.006	0.095
13	431527 000034 000681	83156Q	42730	-	66869	72189	2	40.46	1180	0.120	0.208	0.865	0.007	0.003	0.016	0.028	0.039	0.003	0.010	0.001	0.006	0.006	0.006	0.093
14	431527 000037 000748	83157Q	42802	-	67054	74152	2	39.78	1180	0.150	0.230	0.878	0.008	0.004	0.016	0.028	0.038	0.003	0.010	0.002	0.008	0.008	0.001	0.091
15	431527 000041 000821	83736Q	43001	-	67453	74983	2	37.40	1180	0.110	0.227	0.864	0.008	0.004	0.013	0.022	0.038	0.003	0.010	0.002	0.008	0.008	0.004	0.083
16	431527 000042 000833	83857Q	44622	-	71484	74451	2	40.16	1180	0.180	0.228	0.879	0.008	0.003	0.014	0.025	0.033	0.003	0.010	0.002	0.005	0.007	0.007	0.108
										0.170	0.228	0.872	0.006	0.006	0.016	0.036	0.038	0.003	0.010	0.001	0.007	0.007	0.007	0.100
Standard API 6LB		MAX								0.280	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-	-	-
2000 year edition		MIN	35000		60000			28.00																
Standard API 6LX-42		MAX								0.260	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-	-	-
2000 year edition		MIN	42000		60000			28.00																
Standard ASTM A53B		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	-	1.000	
2000 year edition		MIN	35000		60000			28.00																
Standard ASME SA33B		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	-	1.000	
2000 year edition		MIN	35000		60000			28.00																





PT. BAKRIE PIPE INDUSTRIES  
 JL. Raya Pejangan  
 Medan Satria 17131 Bekasi, Indonesia

SPMB : B.3.1472 -  
 Mill No. : 2331/QAEM/003 -  
 Date : April, 23, 2003  
 Page : 1 of 3

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No.	Test Number	Heat Number	Yield Strength (Psi)	Tensile Strength (Psi)			Gauge Length (In)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)												
				Long	Trans	Weld				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Ti	Nb	T
1	431527-000001 000007	06310Q	43242	-	70753	74508	2	37.20	1180	0.130	0.196	0.856	0.006	0.007	0.012	0.026	0.037	0.005	0.012	0.001	0.003	0.087
2	431527 000002 000044	06324Q	42389	-	70113	73029	2	38.18	1180	0.130	0.193	0.853	0.006	0.006	0.012	0.025	0.036	0.006	0.012	0.001	0.003	0.086
3	431527 000006 000133	50089Q	47851	-	73486	77287	2	38.66	1180	0.110	0.236	0.863	0.010	0.007	0.026	0.029	0.036	0.005	0.009	0.001	0.002	0.100
4	431527 000008 000208	50688Q	43029	-	70687	72901	2	40.16	1180	0.140	0.205	0.859	0.008	0.004	0.016	0.020	0.034	0.005	0.019	0.003	0.004	0.090
5	431527 000013 000302	50671Q	45547	-	71777	71435	2	38.09	1180	0.140	0.205	0.859	0.008	0.004	0.016	0.020	0.036	0.008	0.019	0.002	0.004	0.093
6	431527 000017 000390	50676Q	44992	-	69097	71834	2	40.35	1180	0.120	0.199	0.801	0.008	0.006	0.015	0.017	0.037	0.005	0.009	0.001	0.003	0.078
7	431527 000020 000448	50677Q	47382	-	70283	74684	2	38.39	1180	0.140	0.207	0.863	0.006	0.004	0.016	0.022	0.036	0.008	0.019	0.002	0.004	0.074
8	431527 000026 000535	63148Q	43470	-	66363	72317	2	38.29	1180	0.140	0.207	0.863	0.006	0.004	0.016	0.022	0.036	0.008	0.019	0.002	0.004	0.076
Standard API 5LX		MAX								0.260	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-
2000 year edition		MIN	35000		60000			28.00														
Standard API 5LX-42		MAX								0.260	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-
2000 year edition		MIN	42000		60000			28.00														
Standard ASTM A53B		MAX								0.300	-	1.200	0.030	0.045	0.400	0.400	0.400	0.150	0.060	-	-	1.000
2000 year edition		MIN	35000		60000			28.00														
Standard ASME SA53B		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.060	-	-	1.000
2000 year edition		MIN	35000		60000			28.00														



M. 503

PT. BAKRIE PIPE INDUSTRIES  
 J.L. Raya Pejang  
 Medan Satria 17131 Bekasi, Indonesia

SPMB : B.3.1472  
 Mill No. : 2331/QAE/IV/03  
 Date : April, 23, 2003  
 Page : 3 of 3

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No.	Test Number	Heat Number	Yield Strength (Psi)	Tensile Strength (Psi)			Gauge Length (In)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)												
				Long	Trans	Weld				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Ti	Nb	1
17	431527 000043 000693	95658Q	43129	-	67397	73484	2	39.76	1180	0.100	0.224	0.883	0.008	0.008	0.011	0.029	0.036	0.003	0.008	0.001	0.005	0.082
18	431527 000047 000927	06318Q	42735	-	67852	73413	2	37.60	1180	0.100	0.225	0.888	0.008	0.010	0.011	0.028	0.038	0.003	0.008	0.001	0.008	0.081
19	431527 000052 001013	60674Q	44488	-	68477	73811	2	40.35	1180	0.130	0.211	0.899	0.008	0.008	0.016	0.027	0.039	0.003	0.006	0.001	0.005	0.090
20	431527 000059 001143	83153Q	46870	-	63797	73413	2	36.58	1180	0.150	0.228	0.883	0.008	0.002	0.013	0.022	0.037	0.003	0.011	0.001	0.004	0.083
21	431527 000062 001196	85684Q	45390	-	70638	74437	2	33.78	1180	0.150	0.219	0.911	0.008	0.004	0.018	0.027	0.038	0.004	0.013	0.001	0.005	0.087
	Standard API 5LB 2000 year edition	MAX MIN								0.280	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-
	Standard API 5LX-42 2000 year edition	MAX MIN	35000 42000		60000			28.00		0.260	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-
	Standard ASTM A33B 2000 year edition	MAX MIN	35000		60000			28.00		0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000
	Standard ASME SA-53B 2000 year edition	MAX MIN	35000		60000			28.00		0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000

Note 1 -> Cu+Cr+Ni+V = 1.000 %

The materials has been manufactured, sampled tested, and inspected in accordance with this specification (including year of issue), and has been found to meet the requirements.

PT. Bakrie Pipe Industries  
**P.T. BAKRIE  
 PIPE  
 INDUSTRIES  
 JAKARTA**  
 ( Ir. Endang Kusnadi )  
 QA/QC Manager



**Bakrie Pipe Industries**

Jl. Raya Perjuangan  
Medan Satria 17131  
Bekasi, Indonesia

Series B No. : 992386

**MILL'S INSPECTION CERTIFICATE**

Article Specification : **NEW PRIME ERW STEEL PIPE PER API 5LX-42(PSL 1)/API 5LB(PSL 1)/  
ASTM A53B/ASME SA53B QUADRUPLE STENCILED, BLACK PLAIN END  
BEVELED (30 DEGREE) BLACK VARNISH COATED**

Customer :  
Contract No. :

SPMB No.: B.2.4433/  
M/C No. : 2141/QAE/IV/03  
Date : April 18, 2003

Shipper : **AURORA AMETHYST V.AOE.007**

Item No.	Mill Work No.	Test No.	Ordered Sizes			Delivered Quantity		Description of Inspection & Test:								
			Inside/Outside Diameter	Thickness	Length	No. of Pieces & Total Length	Net Weight	Surface & Dimension	Hydrostatic K/cm <sup>2</sup> /PSI/BAR	Flattening	Ultrasonic	Weld Ductility	Impact	Ratio Yield to Tensile Strength	Heat Treatment	
1 to 116		✓	24" or 609.6mm	0.375" or 9.52mm	42 Feet per Piece	116 Pcs 4,872.000 Feet	209,308 Kgs	Sound	Sound	Sound	Sound	Sound	-	-	Sound	
Test No.	Heat No.	Yield Strength	Tensile Strength	Gauge Length	Elongation	Hardness (HRB/MV 10)	Chemical Analysis (%)								Remarks	
		PSI/MPa	PSI/MPa	In	%		C	Si	Mn	P	S	Mo	Cr	V		Ni
							See Attachment to Mill's Inspection Certificate Attachment Products Analysis									
Standard	MAX															
	MIN															

We hereby certify that material described herein has been duly inspected in accordance with the above specification



PT. Bakrie Pipe Industries  
**P.T. BAKRIE PIPE INDUSTRIES**  
JAKARTA

*Tr. Endang Kusnadi*  
QA / QC Manager

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No.	Test Number	Heat Number	Yield Strength (Psi)	Tensile Strength (Psi)			Gauge Length (Inch)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)												
				Long	Trans	Weld				C	Si	Mn	P	S	Cl	Cr	Ni	Mo	V	Ti	Nb	T
11	430203 000017 000288	62723Q	42968	-	89999	78172	2	39.78	1180	0.140	0.150	0.789	0.010	0.004	0.078	0.051	0.028	0.003	0.005	0.002	0.004	0.180
12	430203 000019 000336	62337Q	45082	-	72388	80852	2	36.29	1180	0.140	0.146	0.795	0.011	0.004	0.074	0.051	0.029	0.003	0.005	0.002	0.004	0.159
13	430203 000020 000351	50319Q	43740	-	71502	74308	2	37.30	1180	0.140	0.142	0.826	0.008	0.003	0.029	0.048	0.031	0.001	0.001	0.002	0.002	0.110
14	430203 000024 000412	62327Q	48073	-	70696	73496	2	37.80	1180	0.120	0.165	0.828	0.018	0.012	0.072	0.058	0.033	0.002	0.003	0.001	0.002	0.167
15	430203 000028 000482	62334Q	48021	-	77723	74593	2	36.42	1180	0.150	0.122	0.825	0.008	0.008	0.042	0.035	0.025	0.004	0.003	0.002	0.002	0.105
16	430203 000030 000625	60239Q	43883	-	73413	74693	2	40.35	1180	0.130	0.122	0.851	0.007	0.007	0.027	0.052	0.032	0.002	0.002	0.001	0.004	0.113
17	430203 000034 000695	50317Q	47898	-	73898	79090	2	37.20	1180	0.140	0.148	0.817	0.010	0.005	0.030	0.052	0.032	0.001	0.004	0.003	0.002	0.118
18	430203 000036 000628	62328Q	42617	-	68491	74784	2	40.18	1180	0.150	0.144	0.789	0.008	0.002	0.028	0.036	0.031	0.002	0.003	0.002	0.003	0.100
19	430203 000042 000740	50318Q	44437	-	69430	75790	2	37.50	1180	0.150	0.133	0.780	0.006	0.004	0.028	0.037	0.032	0.004	0.001	0.001	0.002	0.068
Standard API 5L8 2000 year edition		MAX								0.280	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-
		MIN	35000		60000			28.00														
Standard API 5LX-42 2000 year edition		MAX								0.280	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-
		MIN	42000		60000			28.00														
Standard ASTM A53B 2000 year edition		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000
		MIN	35000		60000			28.00														
Standard ASME SA53B 2000 year edition		MAX								0.300	-	1.200	0.060	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000
		MIN	35000		60000			28.00														

Note 1-> C+Cr+Ni+V = 1.000 %

The materials has been manufactured, sampled tested, and inspected in accordance with this specification (including year of issue), and has been found to meet the requirements.

PT. Bakrie Pipe Industries



PT. BAKRIE  
 PIPE  
 INDUSTRIES  
 JAKARTA

*[Signature]*  
 ( Ir. Endang Kusno )  
 QVQC Manager

PT. BAKRIE PIPE INDUSTRIES  
 Jl. Raya Perjuangan  
 Medan Satria 17131 Bekasi, Indonesia

SPMB : B.2.4438  
 Mill No: 2141/QAE/T/03  
 Date : April 16, 2003  
 Page : 1 of 2

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No.	Test Number	Heat Number	Yield Strength (Psi)	Tensile Strength (Psi)			Gauge Length (inc)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)													
				Long	Trans	Weld				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Ti	Nb	1	
1	430203 000001 000015	82027Q	46885	-	80017	72303	2	36.22	1180	0.150	0.163	0.784	0.006	0.003	0.011	0.032	0.032	0.000	0.001	0.001	0.000	0.000	0.076
2	430203 000002 000019	50232Q	42745	-	77097	74806	2	34.45	1180	0.150	0.164	0.788	0.006	0.002	0.011	0.036	0.034	0.000	0.001	0.001	0.000	0.000	0.082
3	430203 000003 000043	50231Q	43456	-	75401	76926	2	36.28	1180	0.150	0.163	0.795	0.004	0.002	0.018	0.039	0.029	0.001	0.002	0.002	0.000	0.000	0.069
4	430203 000004 000068	82333Q	43584	-	71593	75945	2	36.32	1180	0.140	0.174	0.789	0.009	0.003	0.031	0.048	0.032	0.001	0.001	0.001	0.001	0.002	0.112
5	430203 000005 000076	82335Q	46429	-	76442	75504	2	34.55	1180	0.180	0.149	0.805	0.007	0.002	0.030	0.038	0.037	0.002	0.001	0.001	0.001	0.002	0.111
6	430203 000008 000138	82336Q	48557	-	73598	73967	2	36.29	1180	0.150	0.142	0.803	0.008	0.003	0.036	0.048	0.025	0.004	0.002	0.002	0.002	0.002	0.111
7	430203 000010 000175	50237Q	47624	-	70497	73668	2	38.32	1180	0.150	0.145	0.820	0.006	0.004	0.031	0.038	0.034	0.002	0.003	0.004	0.004	0.004	0.104
8	430203 000013 000227	82328Q	42332	-	67879	73664	2	36.19	1180	0.130	0.143	0.770	0.006	0.002	0.044	0.060	0.033	0.003	0.002	0.002	0.002	0.002	0.120
9	430203 000015 000255	50235Q	43299	-	71094	74256	2	36.32	1180	0.130	0.150	0.774	0.006	0.002	0.043	0.060	0.033	0.003	0.002	0.002	0.002	0.002	0.120
10	430203 000016 000281	50234Q	42617	-	70084	77182	2	38.48	1180	0.160	0.133	0.789	0.004	0.003	0.039	0.038	0.033	0.001	0.002	0.001	0.001	0.001	0.110
										0.180	0.139	0.770	0.004	0.003	0.040	0.038	0.029	0.001	0.002	0.001	0.001	0.001	0.107
										0.140	0.153	0.832	0.007	0.004	0.028	0.049	0.034	0.002	0.001	0.001	0.001	0.002	0.118
										0.160	0.155	0.782	0.005	0.003	0.021	0.034	0.028	0.002	0.001	0.001	0.001	0.001	0.084
										0.150	0.158	0.773	0.005	0.003	0.025	0.034	0.028	0.002	0.001	0.001	0.001	0.001	0.088
Standard API 5LB		MAX								0.280	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-	-
2000 year edition		MIN	35000		80000			26.00															
Standard API 6LX-42		MAX								0.280	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-	-
2000 year edition		MIN	42000		80000			26.00															
Standard ASTM A53B		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	-	1.000
2000 year edition		MIN	35000		80000			26.00															
Standard ASME SA53B		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	-	1.000
2000 year edition		MIN	35000		80000			26.00															

 PT. BAKRIE  
 PIPE  
 INDUSTRIES  
 JAKARTA

NO. 4704 7 12

# 검사 증명서 (A)

## MILL INSPECTION CERTIFICATE



\* 회사·공장 : 울산광역시 북구 연포동 265번지, 하이코 (7111)  
 HEAD OFFICE : 265, Yeonpo-dong, Buk-gu, Ulsan, Korea  
 ULSAN PLANT : TEL : (052)280-0114 FAX : (052)287-85-6  
  
 \* 서울사무소 : 서울특별시 중랑구 계동 140-2번지, 하이코 (71965)  
 SEOUL OFFICE : 140-2, Aye-dong, Chunggo-gu, Seoul, Korea  
 TEL : (02) 746-1114 FAX : (02) 775-7095

검사서 번호 : E38060      페이지 : 1  
 CERTIFICATE NO.      PAGE  
 발행 일자 : AUG. 8. 2003.      E4310104  
 DATE OF ISSUE  
 계약서 번호 :  
 CONTRACT (PAO) NO.  
 품명 : E.R.W. STEEL PIPE  
 COMMODITY  
 규격 : API 5L X42/API 5LX PSL1/ASTM A536/ASME SA538      수은기  
 SPECIFICATION      CUSTOMER

품명 DIMENSION (OUTDIA * THICK * LENGTH)	수량 QUANTITY (PCS)	중량 WEIGHT (KG)	수입시험 HYDRO- STATIC TEST MPa PSI	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	도막시험 COATING TEST		인장시험 TENSILE TEST			화학성분(%) CHEMICAL COMPOSITION										충격시험 IMPACT Joule %			
																			도막 두께 COAT THICKNESS	도막 종류 COAT TYPE	항복강도 YIELD STRENGTH	인장강도 TENSILE STRENGTH	신장률 ELONGATION	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V		Nb	Al	Other
																			HRB	HV	PSI	MPa	%	> 100	> 1000	> 100	> 1000	> 1000	> 1000	ZONE	%						
NR 24" x .375" x 20.000' ( 610.0mm x 9.53mm x 6.096M )	51	43.738	83																	470296	31.3	48.4	50.8	37	18	1	77	14	9	2	2	1	2	r			
NR 24" x .375" x 40.000' ( 610.0mm x 9.53mm x 12.192M )	11	18.867	83																	470294	31.4	48.9	51.2	38	18	3	76	16	8	1	2	2	1	r			
																				470296	32.3	49.7	52.0	36	18	2	78	18	7	2	1	1	1	r			
																				470301	35.1	51.7	53.5	36	17	1	75	15	8	2	1	2	1	r			
NR 24" x .375" x 42.000' ( 610.0mm x 9.53mm x 12.802M )	55	99.053	83																	470296	32.3	49.7	52.4	39	18	2	78	18	7	2	1	2	1	r			
TOTAL ->	117	161.658	1180																		45900	70700	74500														

REMARK \* RESIDUAL MAGNETISM TEST : GOOD  
 THESE MILL TEST REPORTS APPLY TO  
 YOUR P.O. # 218039-32  
 BARTOW STEEL REF. # 2008796

- |  |  |  |   |  |
|--|--|--|---|--|
| 11 Type of pipe End 관종<br>B: Black<br>G: Galvanized<br>E: Enamelled<br>V: Varnish<br>R: Removal Varnish<br>D: Dying Coating<br>PE: PE Coating<br>C: Coal Tar Coating<br>A: Asphalt Coating | XX PE: Plain End<br>BE: Bevel End<br>TE: Thread End<br>TC: Thread Coupling<br>BE: Bell End<br>SE: Swaging End<br>VJ: Victaulic Joint | 2 NB: Nominal Bore 호칭경-O: Outside Diameter<br>5 G: Good<br>8 Weld Ductility Test 문헌부 인정시험<br>11 Flaring Test 합격시험<br>14 Heat Treatment 열처리<br>17 H: High(Ladle)Analysis 열연분석 Product Analysis 제품분석 | 3 Unit Dim (M: mm, I: inch)<br>6 Visual & Dimension Test 육안 및 치수검사<br>8 Nondestructive Test 비파괴검사<br>12 Crush Test 충격시험<br>15 Base Metal 조직 | 4 Unit Dim (M: mm, I: Feet, I: Inch)<br>7 Flaring or Bending Test 편위 또는 굽힘시험<br>10 Drift Test 관통시험<br>13 Reverse Flaring Test 역가시험<br>16 Weld Part 용접부 |
|--|--|--|---|--|

본 제품은 전라규격에 합격되었음을 보증합니다.

Richard J. [Signature]

**Submittal Data  
FROM  
Youngquist Brothers, Inc.  
15465 Pine Ridge Rd.  
Ft. Myers, FL. 33908  
239-489-4444 Fax: 239-489-4545**

*Project*  
**Bonita Springs Utilities  
WTP-Reverse Osmosis Injection Well**

I have reviewed this submittal for general conformance with the design concepts and contract documents. Generally no conflict with materials or dimensions will arise from the approval of this shop drawing submittal.

Date: December 16, 2003 Number of Copies: 9

Submittal Number: 02674-12-E

Specification Section Number: 02674

Item Submitted: Additional 16" Mill Certs

New Submittal: X Resubmitted: \_\_\_\_\_

Youngquist Brothers, Inc. Representative:

*Marybeth Rios*

**Marybeth Rios**

Transmittal Date: \_\_\_\_\_

- |                          |                             |
|--------------------------|-----------------------------|
| <input type="checkbox"/> | Approved                    |
| <input type="checkbox"/> | Approved with changes       |
| <input type="checkbox"/> | Rejected, Revise & Resubmit |
| <input type="checkbox"/> | Not Reviewed                |

By: \_\_\_\_\_  
Firm: \_\_\_\_\_  
Date: \_\_\_\_\_



**Bakrie Pipe Industries**

Jl. Raya Pejuang  
Medan Selria 17131  
Bekasi, Indonesia

Serie B No.: 984127

Form No.: 18A  
Revision: 5

**MILL'S INSPECTION CERTIFICATE**

Article Specification: *NEW PRIME ERW STEEL PIPE PER API 5LX-42(PSL 1)/API 5LX/  
ASTM A53B/ASME SA53B QUADRUPLE STENCILLED,  
BLACK PLAIN BEVELLED END, BLACK VARNISH COATED*

Customer:

Contract No.:

SPMB No.: B.2.1600/ ✓  
M/C No.: 3824/QAE/VI/02  
Date: June 15, 2002

Shipper: ANGARA V.007

Item No.	Mill Work No.	Test No.	Ordered Sizes			Delivered Quantity		Description of Inspection & Test							
			Inside/Outside Diameter	Thickness	Length	No. of Pieces & Total Length	Net Weight	Surface & Dimension	Hydrostatic Kilon/PSI/BAR	Flattening	Ultrasonic	Weld Ductility	Impact	Ratio Yield to Tensile Stranght	Heat Treatment
1 E 84		✓	16" or 406.4mm	0.375" or 9.52mm	42 Feet per Piece	84 Pcs 3,528,000 Feet	100,243 Kgs	Sound	Sound	Sound	Sound	Sound	-	Sound	Sound
Test No.	Heat No.	Yield Strength	Tensile Strength	Gauge Length	Elongation	Hardness (HRB/HV 10)	Chemical Analysis (%)							Remarks	
		PSIMPA	PSIMPA	In	%		C	Si	Mn	P	S	Mo	Cr		V
		See Attachment to Mill's Inspection Certificate Attachment Products Analysis													
Standard	MAX														
	MIN														

We hereby certify that material described herein has been duly inspected in accordance with the above specification.

PT. Bakrie Pipe Industries

**YOUNGQUIST BROTHERS, INC.**  
Has Received This Shop Drawing/Submittal  
YBI/Section No# 02674-12E  
Date: 12-16-03  
Signature: [Signature]



**PT. BAKRIE  
PIPE  
INDUSTRIES  
JAKARTA**

*Ir. Endang Kusnadi*  
QA / QC Manager

CUSTOMER (ORIGINAL)

MILL'S INSPECTION CERTIFICATE

MILL'S INSPECTION CERTIFICATE



PT. BAKRIE PIPE INDUSTRIES  
 Jl. Raya Pejangan  
 Medan Satria 17131-Bekasi, Indonesia

SPMB : B.2.1800  
 Mill No. : 3824/QAEN/102  
 Date : June, 15, 2012  
 Page : 1 of 1

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No	Test Number	Heat Number	Yield Strength (Psi)	Tensile (Psi)			Gauge Length (In)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)												
				Long	Trans	Weid				C	Si	Mn	P	S	Cu	Cr	Ni	Mo	V	Ti	Nb	1
1	621519 000001 000004	60861P	46267	-	74342	79562	2	38.42	1670	0.110	0.235	0.898	0.019	0.005	0.058	0.100	0.045	0.016	0.005	0.004	0.006	0.208
2	621519 000004 000057	60862P	50505	-	71028	78931	2	32.68	1670	0.120	0.233	0.898	0.018	0.005	0.058	0.099	0.044	0.016	0.008	0.004	0.006	0.207
3	621519 000005 000074	59004K	43186	-	67017	74271	2	40.16	1670	0.130	0.238	0.905	0.019	0.005	0.059	0.083	0.044	0.016	0.006	0.003	0.005	0.202
4	621519 000811 000176	81362P	53193	-	70859	74556	2	38.28	1670	0.110	0.249	0.862	0.008	0.003	0.049	0.022	0.034	0.010	0.006	0.003	0.010	0.111
Standard API 5LB 2000 year edition		MAX								0.260	-	1.200	0.030	0.030	-	-	-	-	-	-	-	-
		MIN	35000		80000			28.00														
Standard API 5LX-42 2000 year edition		MAX								0.260	-	1.300	0.030	0.030	-	-	-	-	-	-	-	-
		MIN	42000		80000			28.00														
Standard ASTM A53B 2000 year edition		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000
		MIN	35000		80000			28.00														
Standard ASME SA53B 2000 year edition		MAX								0.300	-	1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080	-	-	1.000
		MIN	35000		80000			28.00														

Note : Cu+Cr+Ni+V = 1.000 %

The material has been manufactured, sampled tested, and inspected in accordance with this specification (including year of issue), and has been found to meet the requirements.



PT. BAKRIE PIPE INDUSTRIES  
 JAKAR (E. Sudana Kusnad)  
 QA/QC Manager

NO. 4002 F. 2



**Manufacturer:**  
**PETROTUB S.A ROMAN, 5550 ROMAN,**  
**SOSEAU ROMAN-IASI, KM.333,**  
**JUD. NEAMT, ROMANIA**

**MILL TEST REPORT**  
 acc. to E.N. 10204/3.1.B/91

**NO.**  
**B 2882**

**Date:**  
 09.11.2002

**BUYER:**

**Description of goods:**  
**PRIME QUALITY, NEWLY PRODUCED SEAMLESS STEEL PIPES IN**  
**STRICT CONFORMITY WITH P.O. NBR. SF 2068.**

**Quantity:**  
 149621 KGS

**Total Length:**  
 1604.17 MTRS  
 5263.02 FT

**Contract No.**  
 SF 2068 LOT C

**Standard**  
 API 5L/2000; ASTM A106/1999; ASTM A53/2001  
 ASME SA 106/2001; ASME SA 53/2001; NACE MR 01-75/2000

**131 PCS**

Item	Size [inches] [mm]	Steel	Heat	Pcs	Length [m]	Weight [kg]	Hydro Test [PSI]	Chemical Composition %, on the product													Mechanical Properties						
								C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max. 0.43%	Rp [PSI] :1000	Rm [PSI] :1000	A %	HB max. 236	HRC max. 22	Flats slag Test
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
✓	16" STD (Φ 406.4x 9.53 mm) Lg: DRL (min 80% = 40'±8" max.20% = 36'-42')	Gr.B/ X42 PSL1	P213338	30			1670	18	55	23	12	11	3	2	2	2	0.0	0.0	0.0	0.04	0.28	42.4	66.0	38.4	157;155	7;7	OK
				26				17	56	24	11	10	3	2	2	2	0.0	0.0	0.0	0.04	0.27	44.1	69.4	37.4	158;157	8;7	
				21				18	58	25	24	10	2	2	2	3	0.1	0.0	0.2	0.05	0.29	46.9	73.1	41.6	164;162	6;6	OK
				13				19	58	26	25	9	2	2	2	3	0.1	0.0	0.2	0.05	0.30	45.9	72.2	38.2	161;162	7;7	
				14				18	57	27	26	10	2	2	4	2	0.0	0.1	0.2	0.02	0.29	50.1	68.8	34.4	163;161	8;7	OK
				5				19	57	27	25	11	2	2	4	2	0.0	0.1	0.2	0.02	0.30	53.1	71.5	35.8	162;160	8;8	
				1				21	56	24	23	11	2	3	3	1	0.1	0.0	0.0	0.05	0.32	51.2	70.4	35.4	159;160	6;7	OK
				9				19	51	22	26	12	3	3	5	1	0.0	0.1	0.2	0.03	0.28	52.1	70.6	35.8	158;155	7;6	OK
								19	50	21	25	11	3	3	5	1	0.0	0.1	0.2	0.03	0.28	47.6	65.4	37.0	157;156	7;8	
								21	52	22	28	10	1	2	3	2	0.0	0.0	0.1	0.02	0.31	45.5	70.8	37.4	170;168	7;7	OK
								20	52	23	29	9	1	2	2	2	0.0	0.0	0.1	0.02	0.30	45.1	71.0	36.8	171;169	6;7	
								21	50	21	22	11	2	2	3	3	0.0	0.1	0.2	0.03	0.30	44.7	69.7	37.6	164;161	8;8	OK
								21	50	22	21	12	2	2	3	3	0.0	0.1	0.2	0.03	0.30	47.1	74.2	35.6	162;162	7;7	
								19	56	22	23	10	2	1	1	1	0.2	0.1	0.0	0.03	0.29	45.0	70.0	39.2	173;170	8;7	OK
				19	56	23	23	9	2	1	1	1	0.2	0.0	0.0	0.03	0.29	45.1	70.9	39.4	171;170	6;7					

**REMARKS: Hydrostatic test hold for 5 sec. No leakage noticed.**

**Electromagnetical examination on automatic equipment - satisfactory**

We state on our sole responsibility that this product conforms to the requirements mentioned at "Standard" heading of the present certificate.


**GENERAL MANAGER**  
 Dr. Eng. Marian Romano Dorel

**Chief Inspection Dept.**  
 Eng. Dumca Ioanif

**QA Office**  
 Eng. Marolana

S.M.

2002.11.17.2002 4.0011  
 1400 1.1.1  
 NO. 4089

 <p><b>Manufacturer:</b>  <b>PETROTUB S.A ROMAN, 5550 ROMAN,</b>  <b>SOSEAU ROMAN-IASI, KML333,</b>  <b>JUD. NEAMT, ROMANIA</b></p>	<p><b>MILL TEST REPORT</b>  <b>acc. to E.N. 10204/3.1.B/91</b></p>	<p><b>NO.</b>  <b>B 2882</b></p>	<p><b>Date:</b>  <b>09.11.2002</b></p>
--	--	--------------------------------------	--

Item	Size [inches] [mm]	Steel	Heat	Pcs	Length [m]	Weight [kg]	Hydro Test [PSI]	Chemical Composition %, on the product														Mechanical Properties						
								C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max. 0.43%	Rp [PSI] :1000	Rm [PSI] :1000	A %	HB max 236	HRC max. 22	Flattening Test	
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
✓	16" STD (Φ 406.4x 9.53 mm) Lg: DRL (min 80% = 40'±8" max. 20% = 36'-42')	Gr.B/ X42 PSL1	P224641 ✓	12			1670	19 18	56 57	21 22	27 28	9 8	1 1	1 1	1 1	2 2	0.1 0.1	0.1 0.1	0.0 0.0	0.05 0.05	0.29 0.28	46.4 45.7	72.2 71.9	38.8 37.8	159;156 157;156	8;7 6;7	OK	

Heat No.	GAUGE TRANSVERSAL				Chemical analysis Bulletin no.	Mechanical test Bulletin no.	Hardness test HB Bulletin no.	Hardness test HRC Bulletin no.	Flattening test Bulletin no.
	Standard	Length Inch	Width Inch	Thickness Inch					
P213338	API 5L	2	1.504	0.374	3123	1848;788B	374	883	535
P224616	ASTM/ASME	2	1.501	0.379	3123	1849;789B	375	884	536
	API 5L	2	1.500	0.338					
P213390	ASTM/ASME	2	1.499	0.364	3115	1841;784B	373	880	533
	API 5L	2	1.500	0.354					
P224659	ASTM/ASME	2	1.503	0.388	3115	1841;784B	373	880	533
	API 5L	2	1.500	0.346					
P213332	ASTM/ASME	2	1.503	0.380	3115	1841;784B	373	880	533
	API 5L	2	1.496	0.374					
P213370	ASTM/ASME	2	1.503	0.395	3124	1848;788B	374	883	535
	API 5L	2	1.496	0.350					
P224661	ASTM/ASME	2	1.501	0.370	3123	1848;788B	374	883	535
	API 5L	2	1.504	0.354					
P224642	ASTM/ASME	2	1.503	0.353	3123	1849;789B	375	884	536
	API 5L	2	1.496	0.334					
P224641	ASTM/ASME	2	1.499	0.371	3124	1848;788B	374	883	535
	API 5L	2	1.500	0.342					
	ASTM/ASME	2	1.502	0.365					

<p>We state on our sole responsibility that the product conforms to the requirements mentioned at "Standard" heading of the present certificate.</p>	<p><b>GENERAL MANAGER</b>  <b>Dr. Eng. Efraim Roman Dorel</b></p>  	<p><b>Chief Inspection Dept.</b>  <b>Eng. Dumca Iosif</b></p> 	<p><b>QA PETROTUB S.A.</b>  <b>Eng. Mărojanu M.</b></p> 
--	--	---	---

S.M. / *Strand*

JUN 10 2003 4:01 PM

NO. 4085 P. 0

FAX



A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET • P.O. BOX 583 • MINEOLA • NY 11501

TOLL FREE PHONE # 800-272-8277 PHONE # 516-741-8398 FAX 516-741-8210

TO: Marybeth / <b>KEVIN</b>	DATE: 07-29-03
Co.: Youngquist Bros.	FROM: JT
PHONE #:	SUBJECT: Mtrs & Bill of Lading
FAX #: 239 - 489 - 4545	No. OF PAGES: 6

Enclosed find mtrs & Bill of Lading for your PO# 218039-09  
which has our ord. # 29501 NO (I).

Regards

Shipper:  

---



158 Third Street  
Mineola, NY 11501  
Phone 516 741 8398  
Toll Free 800 272 8277  
Fax 516 741 8210

**BILL OF LADING - PACKING LIST**  
Ref # 29501 W0(I)  
Ref Date 7-22-03  
Released by Rizky  
Freight  Prepaid  Collect

Invoice Date- P.O. # 218039-09  
To:  
**Youngquist Bros @  
Bonita Spr. Utilities, WRF Site  
25051 S. Tamiami Trail  
Bonita Spr., Fl.  
See Map**

Date Shipped 7-25

F.O.B. Point Bonita Springs, Fl

Sales Person S

Terms 30

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via

Freight

Miles

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				MILL	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length S/R or D/R	Size and Type					
562.8	-	14	40.2'	16" DPE-500W APISLBRK42 Smks	CHENGDU	Rel# 5836	✓		

Special Instructions: CALL RECEIVING 24hrs AHEAD

Received in good condition by \_\_\_\_\_  
PRINT NAME SIGNATURE DATE

**SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT**

JUL 29 2003 5:26PM VASS PIPE NO. 8195 P. 6/6

Commodity: SEAMLESS CARBON STEEL PIPE

**MILL TEST REPORTS**  
EN 10204/3.1.B.

Certificate No.: 2000097B2  
Standard: ASTM A53/ASME SA53/  
ASTM A106/ASME SA106/API 5L  
Grade: B  
Date: FEB.15.2001

Pangang Group Chengdu Seamless Steel Tube Co., Ltd.

LOT2 Total: 33 Pcs., 402.34 m, 49599 Kgs

Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)										
		Pcs.	Length(m)	Weight(Kg)		Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	Si	Mn	S	P	Cr	Ni	Mo	Cu	V	
0180528	16"x0.500"xDRL	33	402.34	49599	231020457 A	320	470	46	G			G			0.20	0.23	0.54	0.012	0.016	0.02	0.04	0.01	0.08	0.02
					231020457 B	330	465	46																

Notes:

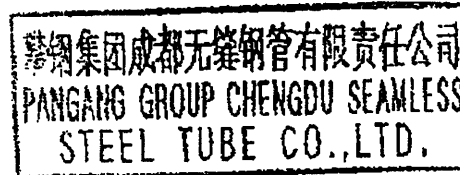
1. Flattening test
2. Bending test
3. Pipe flaring test
4. Hydrostatic test
5. Non-destructive test

Remarks:

1. Condition of supply: hot rolled
2. Tubes delivered in theoretical weight
3. NACE MR01-75(1995) with HRC Max 22.
4. G-----Good
5. The weight is net weight

Inspector: Cheng Yu

WE CONFIRM THAT MATERIAL AND TOLERANCES ARE FULLY IN COMPLIANCE WITH ABOVE.



Contract No. 2021

EN 10204/3, LB.

Specifications: ASTM A53B/A106 GR. B/API 5L  
GR.B/K42 WITH FACE MRO175

Commodity: PRIME BPE SEAMLESS STEEL PIPES

Pangang Group Chengdu Seamless Steel Tube Co Ltd

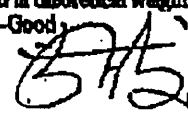
JUL. 29. 2003 5:24PM VASS. PIPE

Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)									
		Pcs.	Length(Feet)	Mt.		Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	SI	Mn	S	P	Cr	NI	Mn	Cu	V
0281919	10"x.500"x.40'	36	1440.00	35.784	142060065 A	365	500	40	G			G	0.15	0.48	1.11	0.013	0.028	0.02	0.05	0.020	0.120	0.01	
					142060065 B	370	510	41															
0281942	6"xSCH80"x40'	50	2000.00	25.950	132060074 A	390	515	36	G			G	0.22	0.20	0.54	0.018	0.012	0.01	0.04	0.010	0.080	0.01	
					132060074 B	365	510	37															
0281957	6"xSCH140"x40'	182	7280.00	62.712	142060080 A	340	495	34	G			G	0.20	0.26	0.58	0.014	0.015	0.03	0.05	0.010	0.080	0.01	
					142060080 B	370	495	31															
0281958	6"xSCH40"x40'	182	7280.00	62.712	142060081 A	345	500	33	G			G	0.20	0.22	0.62	0.018	0.016	0.03	0.06	0.010	0.100	0.01	
					142060081 B	365	505	34															
0282150	8"xSCH80"x40'	24	960.00	18.912	122060275 A	400	510	43	G			G	0.16	0.44	1.38	0.016	0.012	0.03	0.03	0.030	0.080	0.01	
					122060275 B	355	515	44															
0282205	12"x.375"x40'	80	3200.00	72.000	112060322 A	300	495	40	G			G	0.22	0.24	0.53	0.018	0.018	0.03	0.04	0.020	0.080	0.01	
					112060322 B	290	475	35															
0282206	12"x.375"x40'	70	2800.00	63.000	122060323 A	355	480	36	G			G	0.20	0.24	0.60	0.019	0.014	0.02	0.04	0.010	0.080	0.01	
					122060323 B	350	480	37															
0282220	12"x.500"x40'	49	1960.00	58.212	132060329 A	360	510	38	G			G	0.16	0.42	1.12	0.016	0.014	0.03	0.04	0.020	0.080	0.01	
					132060329 B	310	525	38															
0282221	12"x.500"x40'	22	880.00	26.136	132060330 A	335	515	38	G			G	0.14	0.40	1.03	0.017	0.011	0.03	0.03	0.020	0.090	0.01	
					132060330 B	340	530	37															
P0214443	14"x.375"x40'	100	4000.00	99.100	232060809 A	310	450	47	G			G	0.18	0.22	0.46	0.013	0.020	0.01	0.03	0.010	0.030	0.01	
					232060809 B	305	450	44															
P0233363	14"x.375"x40'	51	2120.00	52.523	242060811 A	310	465	43	G			G	0.21	0.22	0.48	0.014	0.017	0.03	0.03	0.010	0.030	0.01	
					242060811 B	315	455	43															
P0234182	14"x.500"x40'	25	1000.00	32.725	212060357 A	295	455	44	G			G	0.18	0.22	0.48	0.010	0.016	0.02	0.04	0.010	0.030	0.01	
					212060357 B	310	465	44															
P0258061	16"x.500"x40'	59	2360.00	88.677	242060636 A	300	455	44	G			G	0.19	0.22	0.50	0.007	0.012	0.02	0.03	0.010	0.030	0.01	
					242060636 B	310	450	47															
S0220946	16"x.375"x40'	27	1080.00	30.672	622060114 A	360	485	40	G			G	0.19	0.22	0.52	0.009	0.013	0.04	0.09	0.010	0.080	0.01	
					622060114 B	350	485	41															
S0220951	16"x.375"x40'	24	960.00	27.264	642060189 A	355	485	39	G			G	0.21	0.24	0.56	0.008	0.019	0.04	0.02	0.010	0.100	0.01	
					642060189 B	350	490	44															
S0120958	16"x.375"x40'	27	1080.00	30.672	612060176 A	360	480	42	G			G	0.18	0.26	0.55	0.014	0.016	0.03	0.02	0.010	0.110	0.01	
					612060176 B	365	480	42															
S0220977	16"x.375"x40'	8	320.00	9.088	622070204 A	340	465	41	G			G	0.21	0.28	0.42	0.014	0.013	0.04	0.03	0.010	0.130	0.01	
					622070204 B	355	470	40															

- Notes:
1. Flattening test
  2. Bending test
  3. Pipe flaring test
  4. Hydrostatic test
  5. Non-destructive test

- Remarks:
1. Condition of supply: hot rolled
  2. Tubes delivered in theoretical weight
  3. G — Good

Inspector: Cheng Yu



攀钢集团成都无缝钢管有限责任公司  
PANGANG GROUP CHENGDU SEAMLESS  
STEEL TUBE CO., LTD.

NO. 8195 P. 3/6

**PANGANG GROUP CHENGDU SEAMLESS  
STEEL TUBE CO., LTD.**

003

0182975	6-3/8"xSTDx40'	182	7280.00	62712	141080258 A	353	310	30	G	G	0.16	0.43	1.05	0.016	0.013	0.04	0.04	0.010	0.020	0.01
					141080258 B	363	320	32												
S0120913	16"xSTDx40'	26	1090.00	29336	631070012 A	370	483	33	G	G	0.20	0.26	0.46	0.014	0.012	0.08	0.11	0.020	0.160	0.01
					631070012 B	365	483	36												
80121057	12-3/4"xSTDx40'	100	4000.00	90000	231080116 A	310	460	48	G	G	0.19	0.24	0.46	0.024	0.017	0.04	0.08	0.010	0.100	0.01
					231080116 B	315	465	41												
S0121206	16"xSTDx40'	26	1040.00	29336	641070221 A	380	383	40	G	G	0.20	0.23	0.51	0.010	0.015	0.05	0.06	0.040	0.100	0.01
					641070221 B	350	423	39												
S0121211	16"xSTDx40'	23	920.00	26128	641070253 A	335	493	38	G	G	0.20	0.23	0.53	0.011	0.010	0.06	0.07	0.020	0.130	0.01
					641070253 B	370	500	42												

Notes:

58000.00

Remarks:

1. Flattening test
2. Bending test
3. Pipe flaring test
4. Hydrostatic test
5. Non-destructive test

1. Condition of supply: hot rolled
2. Tubes delivered in theoretical weight
3. G-----Good

Inspector: Cheng Yu

WE CONFIRM THAT THE MATERIAL MEETS THE SPECIFICATIONS STIPULATED IN TRANSACTION NO. ST-PH 0867.

**攀钢集团成都无缝钢管有限责任公司  
PANGANG GROUP CHENGDU SEAMLESS  
STEEL TUBE CO., LTD.**

JUL 29 2003 5:25PM MASS. PIPE

NO. 8195 P. 4/6



Commodity: SEAMLESS STEEL PIPE

L/C NO.: 115736

MILL TEST CERTIFICATE  
BY 102043.1R.

Certificate No.: Z001141003-1

SPECIFICATION: ASTM-A53ASME SA  
53ASME SA106/API 5L, B/K42 TOLERANCE TO  
A53 ONLY BY SIZES 16" AND ABOVE WITH ALL  
OTHERS TO API.

Pingang Group Chengde Seamless Steel Tube Co., Ltd.

LOT NO. 3

Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)									
		Pcs	Length (Feet)	Weight (Kg)		Y.S. (Q/σs)	T.S. (Mpa)	EL. (%)	1	2	3	4	5	C	Si	Mn	S	P	Cr	Ni	Mo	Cu	V
0182553	14"xXHYx40'	25	1000.00	32725	231080369 A	315	510	45															
					231080369 B	310	505	45	G						0.14	0.49	1.15	0.012	0.025	0.02	0.04	0.020	0.060
0182248	14"xSTDx40'	86	3440.00	85226	231070275 A	305	460	43															
					231070275 B	305	490	40	G						0.21	0.20	0.53	0.021	0.016	0.01	0.06	0.010	0.100
0182336	8-5/8"xSTDx40'	85	3400.00	44098	131080137 A	363	520	48															
					131080137 B	350	520	39	G						0.13	0.42	1.26	0.010	0.012	0.02	0.04	0.010	0.100
0182461	10-3/4"xSTDx40'	7	3000.00	3318	131070145 A	353	510	34															
					131070145 B	365	505	31	H						0.15	0.49	1.10	0.017	0.015	0.03	0.05	0.040	0.120
0182462	10-3/4"xSTDx40'	96	3440.00	70360	131070184 A	350	520	33															
					131070184 B	355	510	32	G						0.15	0.42	1.11	0.011	0.015	0.02	0.05	0.020	0.100
0182466	10-3/4"xXHYx40'	72	2180.00	71568	141070199 A	310	560	40															
					141070199 B	340	515	39	G						0.16	0.42	1.10	0.019	0.013	0.03	0.1	0.030	0.120
0182500	12-3/4"xSTDx40'	50	2000.00	45000	241080123 A	345	495	40															
					241080123 B	325	490	28	G						0.20	0.25	0.54	0.021	0.016	0.04	0.05	0.030	0.130
0182520	10-3/4"xXHYx40'	33	1520.00	32802	131070211 A	330	500	43															
					131070211 B	325	500	44	G						0.13	0.40	1.02	0.015	0.017	0.02	0.04	0.020	0.110
0182507	16"xXHYx40'	38	1520.00	37114	211070718 A	349	510	42															
					211070718 B	340	505	42	G						0.16	0.44	1.05	0.008	0.012	0.02	0.04	0.010	0.070
0182863	8-5/8"xXHYx40'	75	3000.00	59100	111080178 A	350	525	43															
					111080178 B	350	535	40	G						0.14	0.46	1.13	0.013	0.013	0.02	0.05	0.030	0.120
0182161	8-5/8"xSTDx40'	85	3400.00	44098	121080144 A	355	515	41															
					121080144 B	315	530	30	G						0.16	0.40	1.06	0.018	0.014	0.02	0.05	0.010	0.090
0182076	8-5/8"xSTDx40'	135	3000.00	64050	141080139 A	365	525	37															
					141080139 B	365	530	42	G						0.15	0.43	1.07	0.017	0.013	0.03	0.04	0.020	0.090
0182945	6-5/8"xXHYx40'	135	5400.00	70065	121080235 A	345	510	38															
					121080235 B	350	520	35	G						0.14	0.41	1.09	0.012	0.013	0.02	0.03	0.030	0.080
0182965	6-5/8"xSTDx40'	182	7280.00	62712	121080263 A	350	515	38															
					121080263 B	370	525	33	G						0.15	0.42	1.05	0.020	0.013	0.02	0.05	0.010	0.070

Pingang Group Chengde Seamless Steel Tube Co., Ltd.



A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET • P.O. BOX 583 • MINEOLA • NY 11501 • TEL: 516.741.8398 • FAX: 516.741.8210

- \* DATE: 8/7/03
- \* ATTN: Edward McLukles
- \* COMPANY: Youngquist
- \* FAX# 239-489-4545
- \* RE: P.O.# 218039-09 (Rel 29502)

TOTAL NUMBER OF PAGES IN THIS FAX TRANSMISSION: 10 PAGES

Please find mill test reports and tally on the above purchase orders.

THANK YOU

JENNY REYES



# HOUSTON TUBULARS INC



10487 TOWN & COUNTRY WAY  
SUITE 350  
HOUSTON, TEXAS 77024  
TEL: 713-465-6334  
FAX: 713-465-0587

SHIPPER NO: 506924

DATE: 7.25.03

FROM: Vass

RELEASE NO.: 29502 #1

ADDRESS: \_\_\_\_\_

SHIPPED FROM:

TO: Vass

Sea Flourish

ADDRESS: \_\_\_\_\_

G-45 / G-16

SIZE: 16 X 500 WEIGHT: 82.77

GRADE: B/K42 COUPLING: \_\_\_\_\_

RANGE: 3 THREAD: BPE

MAKE: \_\_\_\_\_

	TIER NO.		TIER NO.		TIER NO.		TYPE	
1	40	1	P0255701	/				
2	40	1	P0213121	/				
3	40	1						
4	40	1						
5	40	1						
6	40	1						
7	40	1						
8	40	1						
9	40	1						
10	40	1						
11	40	0						
12	40	0						
13	40	0						
14	40	0						
15								
16								
17								
18								
19								
20								
TL	561	0						

TALLIED BY \_\_\_\_\_

TOTAL JOINTS 14

TOTAL FOOTAGE 561.0 *W*

REMARKS: \_\_\_\_\_

TRUCK NO.: \_\_\_\_\_

DRIVER: ALBERTO E. ESPINO

# HOUSTON TUBULARS



10497 TOWN & COUNTRY WAY  
SUITE 3501  
HOUSTON, TEXAS 77024  
TEL: 713-486-8334  
FAX: 713-486-0587

SHIPPER NO: 507077

DATE: 7/31/03

FROM: Vass

RELEASE NO: 2950212

ADDRESS: -

SHIPPED FROM: Sea Haurish

TO: Vass

ADDRESS: -

SIZE: 16 X 500 WEIGHT: 82.77 GRADE: BK12 COUPLING: G-15/G-16

RANGE: 3 THREAD: BPE MAKE: -

	TIER NO.		TIER NO.	MAKE	TIER NO.	TYPE	
						TIER NO.	TIER NO.
1	40	1	10213121	/			
2	X	14	10255701	/			
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
TL							

TALLIED BY

TOTAL JOINTS 14

TOTAL FOOTAGE 561.4

REMARKS:

TRUCK NO: 32

DRIVER: [Signature]

416.4107+

# HOUSTON TUBULARS



10497 TOWN & COUNTRY WAY  
SUITE 360  
HOUSTON, TEXAS 77024  
TEL: 713-465-6334  
FAX: 713-465-0587

DATE: 8.1.03  
RELEASE NO.: 29502-3

SHIPPER NO.: C7121

FROM: Vass  
ADDRESS:  
TO: Vass  
ADDRESS:

SHIPPED FROM:  
Sea Flourish  
G15/G16

SIZE: 16x500 WEIGHT: 82.77 GRADE: COUPLING:

RANGE: 3 THREAD: MAKE: TYPE:

	TIER NO.		TIER NO.		TIER NO.	TIER NO.		TIER NO.
1	40	1X	PO2	5521	-			
2	14	PS	PO2	3121	-			
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
TL								

TALLIED BY: TOTAL JOINTS: 14 TOTAL FOOTAGE: 561.4

REMARKS:

TRUCK NO.: DRIVER: [Signature]

# HOUSTON TUBULARS



10487 TOWN & COUNTRY WAY  
SUITE 380  
HOUSTON, TEXAS 77024  
TEL: 713-465-8334  
FAX: 713-465-0587

DATE: 8.7.03  
RELEASE NO. 29502

Load  
4.

SHIPPER NO.: 507389

FROM: VASS

SHIPPED FROM: SE. Flourish

ADDRESS: -

TO: VASS

B-15/A-16

ADDRESS: -

SIZE: 16 x 500 WEIGHT: 82.71 GRADE: B142 COUPLING: T

RANGE: 3 THREAD: BPE MAKE: - TYPE: -

	TIER NO.	TIER NO.	TIER NO.	TIER NO.	TIER NO.
1	40	1	P0232	2	✓
2	39	9	P025570	1	✓
3	40	0	P025570		✓
4	40	0	P023124		✓
5	40	1			
6	40	2			
7	40	1			
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TL					

280.4

TALLED BY: \_\_\_\_\_ TOTAL JOINTS: 1 TOTAL FOOTAGE: 280.4

REMARKS: \_\_\_\_\_

TRUCK NO.: \_\_\_\_\_ DRIVER: John Cortez

# HOUSTON TUBULARS INC



10497 TOWN & COUNTRY WAY  
SUITE 350  
HOUSTON, TEXAS 77024  
TEL: 713-485-8334  
FAX: 713-485-0587

DATE: 8.7.03  
RELEASE NO.: 29502

SHIPPER NO.: 5C

FROM: VASS

SHIPPED FROM: Pac Queen

ADDRESS:

TO: VASS

H-14/H-34

ADDRESS:

SIZE: 24x37 WEIGHT: 94.60 GRADE: A53B COUPLING: -

RANGE: 3 THREAD: BPE MAKE: TYPE: -

	TIER NO.	TIER NO.	TIER NO.	TIER NO.	TIER NO.
1	42	2	A39	806	
2	X	6	A39	153	
3			A39	109	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TL					

TALLED BY: TOTAL JOINTS: 6 TOTAL FOOTAGE: 250.2

REMARKS: 239394

TRUCK NO.: DRIVER: John Rodriguez

HTI 001

head  
4

~



# ORIGINAL

Contract No.: 56352

## MILL TEST CERTIFICATE

Certificate No.: 2002109001-1/2

Customer:

EN 10204/3.1.B.

Commodity: PRIME PIPE SEAMLESS STEEL PIPES

Specifications: ASTM A398/A106 GR. B/API 5L GR. B/X42 WITH NACE MR0175

Pangang Group Chengdu Seamless Steel Tube Co Ltd

Date: JULY 25, 2002

Total: 460 Pcs. / 18400.00 Feet / 555.773 Mts /

Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)								
		Pcs.	Length(Feet)	Mt		Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	Si	Mn	S	P	Cr	Ni	Mo	Cu
02R2213	12"x.375"x40'	85	3400.00	76.500	122060325 A	330	505	34	G			G	0.21	0.25	0.56	0.011	0.015	0.03	0.02	0.020	0.090	0.01
					122060325 B	310	480	40														
P0213121	16"x.500"x40'	99	3960.00	148.797	212070325 A	315	475	43	G			G	0.21	0.26	0.48	0.011	0.025	0.02	0.03	0.010	0.030	0.01
					212070325 B	325	470	43														
P02F3192	14"x.375"x40'	73	2920.00	72.343	232060808 A	335	445	47	G			G	0.18	0.25	0.49	0.007	0.016	0.09	0.03	0.010	0.030	0.01
					232060808 B	330	460	42														
P0255701	16"x.500"x40'	75	3000.00	112.725	232070318 A	315	485	43	G			G	0.20	0.24	0.53	0.007	0.019	0.02	0.03	0.010	0.030	0.01
					232070318 B	315	475	42														
S0220913	16"x.375"x40'	23	920.00	26.128	612060109 A	365	495	37	G			G	0.18	0.25	0.57	0.012	0.021	0.04	0.04	0.010	0.080	0.01
					612060109 B	345	475	40														
S0220915	16"x.375"x40'	26	1040.00	29.336	622060111 A	345	480	43	G			G	0.20	0.25	0.56	0.007	0.021	0.04	0.08	0.020	0.090	0.01
					622060111 B	350	475	39														
S0220923	16"x.375"x40'	27	1080.00	30.672	622060112 A	370	490	38	G			G	0.19	0.28	0.56	0.014	0.014	0.02	0.04	0.030	0.110	0.01
					622060112 B	375	505	38														
S0220934	16"x.375"x40'	23	920.00	26.128	632060121 A	365	495	42	G			G	0.20	0.23	0.56	0.008	0.019	0.05	0.08	0.010	0.100	0.01
					632060121 B	370	495	39														
S0220940	16"x.375"x40'	27	1080.00	30.672	632060116 A	365	485	37	G			G	0.20	0.26	0.57	0.006	0.019	0.05	0.09	0.010	0.130	0.01
					632060116 B	360	485	40														
S0220977	16"x.375"x40'	2	80.00	2.272	622070204 A	340	465	41	G			G	0.21	0.28	0.42	0.014	0.013	0.04	0.03	0.010	0.130	0.01
					622070204 B	355	470	40														

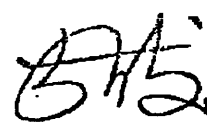
Notes: 460 18400.00 555.773

Remarks:

1. Flattening test
2. Bending test
3. Pipe Baring test
4. Hydrostatic test
5. Non-destructive test

1. Condition of supply: hot rolled
2. Tubes delivered in theoretical weight
3. G-----Good

Inspector: Cheng Xu



攀钢集团成都无缝钢管有限责任公司  
 PANGANG GROUP CHENGDU SEAMLESS  
 STEEL TUBE CO., LTD.

NO. 3794

V800 PIPE

NO. 7.2003 01401W



CERTIFICATE NO. E27136
DATE OF ISSUE: JUL '9. 2000.
COMMODITY: R.R.W. STEEL PIPE
SPECIFICATION: API 5L X42/API 5LB PS1/ASTM A53B/ASME SA53B

MILL INSPECTION CERTIFICATE

본사-공장: 울산광역시 북구 영포동 145번지 (HYSCO - G1000)
HEAD OFFICE: #265, Yeompo-dong, Buk-gu, Ulsan, Korea
TEL: (052)280-8174 FAX: (052)281-8896
서울사무소: 서울특별시 중구 경동 140-2번지 (HYSCO - G2000)
SEOUL OFFICE: 140-2, Kyong-dong, Chung-gu Seoul, Korea
TEL: (02) 748-1114 FAX: (02) 775-7055

수요처: CUSTOMER

HYUNDAI GOOD

Main inspection table with columns for TYPE OF PIPE END, DIMENSION (OD, THICK, LENGTH), QUANTITY, WEIGHT, TENSILE TEST (YIELD, TENSILE, ELONGATION), CHEMICAL COMPOSITION (C, Si, Mn, P, S, Cu, Ni, Cr, Mo, Nb, Al, Nb, Cu, Ni, S, P, Nb, Al, Cu), and IMPACT TEST.

비고 REMARK: INITIAL TOGETHER TEST - GOOD

- Notes section containing codes for pipe end types (B, G, E), manufacturing marks (V, R, O, F, C, A), and inspection codes (X1 to X13).

SURVEYOR

본 제품은 관련규격에 합격되었습니다. WE CERTIFY THAT THE DESCRIBED MATERIAL HAS HEREIN BEEN ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER.

Signature: H. C. Lee. QUALITY ASSURANCE TEAM GENERAL MGR.

HYUNDAI HYSCO



A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET • P.O. BOX 583 • MINEOLA • NY 11501 • TEL: 516.741.8398 • FAX: 516.741.8210

\* DATE: 8/7/03

\* ATTN: Edward McCullers

\* COMPANY: Youngport

\* FAX# 239-489-4545

\* RE: P.O.# 218039-09 (Rel 29565)

TOTAL NUMBER OF PAGES IN THIS FAX TRANSMISSION: 7 PAGES

Please find mill test reports and tally on the above purchase orders.

THANK YOU

JENNY REYES

Ship



159 Third Street  
 Mineola, NY 11501  
 Phone 516 741 8398  
 Toll Free 800 272 8277  
 Fax 516 741 8210

**BILL OF LADING PACKING LIST**

Ref. 29565 HT

Ref Date 7-29-03

Released by Rizky

Freight  Prepaid  Collect

Invoice Date PO # 218039-09

To:  
 Youngquist Bros @  
 Bonita Spr. Utilities, WRF Site  
 25051 S. Tamiami Trail  
 Bonita Spr., FL  
**See Map**

Date Shipped 8/6

F.O.B. Point Bonita Spr. Fla.

Sales Person S

Terms 30

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via *Godwin*

Freight

Notes

**DESCRIPTION OF PIPE TO BE RELEASED**

Quantity	Length			Size and Type	MILL	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	S/R or O/R						
160.8	-	4	40.2	24" BPE SH (375) AS3B ERW	HYS CO	PACQUEEN			
482.4 <sup>**</sup> (12)	-	4	40.2	16" BPE SH (375) APISLB Smk	CHEMSDU	TRUCK IN #28077			

CR57

REMOVED

1002

Special Instructions: **CALL RECEIVING 24hrs AHEAD**

Received in good condition by \_\_\_\_\_  
 SIGNATURE SIGNATURE DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

NO. 3966

# HOUSTON TUBULARS



10497 TOWN & COUNTRY WAY  
SUITE 350  
HOUSTON, TEXAS 77024  
TEL: 713-485-6334  
FAX: 713-485-0587

DATE: 8.6.03  
RELEASE NO.: 29565

SHIPPER NO.: SC7368

FROM: Vass  
ADDRESS:  
TO: Vass  
ADDRESS:

SHIPPED FROM:  
28077  
B-7

SIZE: 16 x 37.5 WEIGHT: 62.58 GRADE: SLB COUPLING: -

RANGE: 3 THREAD: BPE MAKE: - TYPE: -

	TIER NO.	TIER NO.	TIER NO.	TIER NO.	TIER NO.
1	40	2	30220946		
2	X	12	50220958		
3			<del>50220944</del>	no good	
4			50220977		
5			30220946		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TL					

TALLIES PROVIDED BY  
VASS PIPE & STEEL CO.

TALLIED BY: TOTAL JOINTS 12 TOTAL FOOTAGE 482

REMARKS: 30,164-11  
TRUCK NO.: DRIVER: [Signature]  
HTI 001

# HOUSTON TUBULARS



10497 TOWN & COUNTRY WAY  
SUITE 350  
HOUSTON, TEXAS 77024  
TEL: 713-465-6334  
FAX: 713-465-0587

DATE: 8.6.05  
RELEASE NO.: 29565

SHIPPER NO.: 5c7368

FROM: VASS  
ADDRESS: -  
TO: VASS  
ADDRESS: -

SHIPPED FROM:  
Pac Queen  
434/H-14

SIZE: 24 X 37.5 WEIGHT: 94.62 GRADE: A53B COUPLING: -

RANGE: 3 THREAD: BPE MAKE: - TYPE: -

	TIER NO.	TIER NO.	TIER NO.	TIER NO.	TIER NO.
1	40	2	A39707		
2	X	4	A39802		
3			A39153		
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TL					

TALLIES PROVIDED BY  
VASS PIPE & STEEL CO.

TALLIED BY: \_\_\_\_\_ TOTAL JOINTS: 4 TOTAL FOOTAGE: 161.

REMARKS: \_\_\_\_\_

TRUCK NO.: \_\_\_\_\_ DRIVER: [Signature]

Continuity: PRIME PIPE SEAMLESS STEEL PIPES

Pangang Group Chengde Seamless Steel Tube Co Ltd

Specification: ASTM A312/A106 GR. A/B  
 GR. B/A2 WITH WACE MRO175

Date: JULY 25, 2002

Total: 1018 Pcs., 40720.00 Feet, 794.139 Mts

Head No.	Size	Quantity		Test Piece No.	Mechanical Properties			Workmanship Test					Chemical Analysis (%)											
		Pcs.	Length(Feet)		MI	Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	SI	Mn	S	P	Cr	Ni	Mo	Cu	V	
0201919	10"x.500"x40'	36	1440.00	35.784	142060063 A	343	500	40	G			G			0.15	0.40	1.11	0.013	0.020	0.02	0.05	0.020	0.130	0.01
					142060063 B	370	510	41																
0201942	6"x.SCH10"x40'	50	2000.00	25.950	132060074 A	390	515	36	G			G			0.22	0.20	0.54	0.018	0.012	0.01	0.04	0.010	0.080	0.01
					132060074 B	365	510	37																
0201957	6"x.SCH10"x40'	182	7200.00	62.712	142060080 A	340	495	34	G			G			0.20	0.26	0.58	0.014	0.015	0.03	0.05	0.010	0.070	0.01
					142060080 B	370	495	31																
0201958	6"x.SCH10"x40'	182	7200.00	62.712	142060081 A	345	500	33	G			G			0.20	0.22	0.62	0.018	0.014	0.03	0.06	0.010	0.100	0.01
					142060081 B	365	505	34																
0202150	8"x.SCH10"x40'	24	960.00	10.942	122060275 A	400	510	43	G			G			0.16	0.44	1.10	0.016	0.012	0.03	0.03	0.010	0.080	0.01
					122060275 B	355	515	44																
0202203	12"x.375"x40'	80	3200.00	72.000	112060322 A	300	495	40	G			G			0.22	0.24	0.53	0.018	0.018	0.03	0.04	0.020	0.020	0.01
					112060322 B	290	475	35																
0202206	12"x.375"x40'	70	2800.00	63.000	122060323 A	355	460	36	G			G			0.20	0.24	0.60	0.019	0.014	0.02	0.04	0.010	0.080	0.01
					122060323 B	350	480	37																
0202220	12"x.300"x40'	49	1960.00	20.212	132060329 A	360	520	38	G			G			0.16	0.42	1.12	0.016	0.014	0.03	0.04	0.020	0.080	0.01
					132060329 B	310	525	38																
0202221	12"x.300"x40'	21	840.00	26.136	132060330 A	335	515	38	G			G			0.14	0.40	1.05	0.017	0.011	0.03	0.03	0.020	0.090	0.01
					132060330 B	340	530	37																
P0214443	14"x.375"x40'	100	4000.00	99.180	232060809 A	310	450	47	G			G			0.18	0.22	0.46	0.023	0.020	0.01	0.03	0.010	0.030	0.01
					232060809 B	305	450	44																
P0233363	14"x.375"x40'	53	2120.00	52.523	242060811 A	310	465	43	G			G			0.21	0.22	0.48	0.014	0.017	0.03	0.03	0.010	0.030	0.01
					242060811 B	315	455	43																
P0234182	14"x.500"x40'	25	1000.00	32.723	212060317 A	295	455	44	G			G			0.18	0.22	0.48	0.018	0.016	0.02	0.04	0.010	0.030	0.01
					212060317 B	310	465	44																
P0256061	16"x.500"x40'	59	2360.00	20.677	242060636 A	300	455	44	G			G			0.19	0.22	0.50	0.007	0.012	0.02	0.03	0.010	0.030	0.01
					242060636 B	310	450	47																
S0220946	16"x.375"x40'	27	1080.00	30.672	622060114 A	360	485	40	G			G			0.19	0.21	0.52	0.009	0.013	0.04	0.09	0.010	0.080	0.01
					622060114 B	350	485	41																
S0220951	16"x.375"x40'	24	960.00	27.264	642060189 A	355	485	39	G			G			0.21	0.24	0.56	0.008	0.019	0.04	0.02	0.010	0.100	0.01
					642060189 B	350	490	44																
S0220958	16"x.375"x40'	27	1080.00	30.672	612060176 A	360	480	42	G			G			0.19	0.26	0.55	0.014	0.016	0.03	0.02	0.010	0.110	0.01
					612060176 B	365	480	42																
S0220977	16"x.375"x40'	8	320.00	9.000	622070204 A	340	465	41	G			G			0.21	0.28	0.42	0.014	0.013	0.04	0.03	0.010	0.130	0.01
					622070204 B	355	470	40																

- Notes:
1. Flattening test
  2. Bending test
  3. Pipe flaring test
  4. Hydrostatic test
  5. Non-destructive test

- Remarks:
1. Condition of supply: hot rolled
  2. Tubes delivered in theoretical weight
  3. G — Good

Inspector: Cheng Yu

*Signature*

攀钢集团成都无缝钢管有限公司  
 PANANG GROUP CHENGDE SEAMLESS  
 STEEL TUBE CO., LTD.

100AW VASS PIPE NO. 3906



# 검사증명서(A)

## MILL INSPECTION CERTIFICATE



CERTIFICATE NO: **R27136**      페이지: **1**  
 발효일: **JUL. 9. 2012.**      R226302  
 계약번호:  
 CONTRACT (PO) NO:  
 품명: **E.R.W. STEEL PIPE**  
 상품명: **E.R.W. STEEL PIPE**  
 사양명: **API 5L X42/API 5LX FSL1/ASTM A53B/ASME SA53B**  
 SPECIFICATION

수요자:  
 CUSTOMER:

· 본사·금관: 울산광역시 북구 영포동 265번지 (KOR) (KOR)  
 HEAD OFFICE #265, Yeongpo-dong, Buk-gu, Ulsan, Korea  
 (ULSAN PLANT) TEL: (052)769-0114 FAX: (052)281-8916  
 · 서울사무소: 서울특별시 영등포구 계동 140-2번지 (KOR) - (KOR)  
 SEOL OFFICE 140-2, Yeongdeungpo-gu, Seoul, Korea  
 TEL: (02) 766-1114 FAX: (02) 715-7805

8-0000

관종 TYPE OF PIPE END	DIMENSION 외경 x 두께 x 길이 (OUTSIDE DIA. x THICK. x LENGTH)			수량 QUAN- TITY (PCS)	중량 WEIGHT (KG)	수상시험 HYDRO- STATIC TEST MPa Ag. Wall PSI	파괴시험 TENSILE TEST YIELD STRENGTH (MPa)	연신율 ELONGATION (%)	각도 HAND NESS FIBR HV	열처리 HEAT NO.	인장시험 TENSILE TEST				화합성분(%) CHEMICAL COMPOSITION											관종시험 BAPACT 비율(%) % % %		
											인장강도 TENSILE STRENGTH	연신율 ELONGATION	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	Al		Ca	
																												PSI
BYBE	Φ 34"	x .375" x 12.000'	216	389,007	89.4	66.6	66.6	66.6	66.6	66.6	K39153	32.2	48.8	51.6	37	0.0018	1	81	15	7	2	2	1	3	Tr			
	( 610.0mm x 9.53mm x 12.802M )				1150						K39707	45800	59400	73400				1	75	16	9	2	3	1	3	Tr		
											K39709	45200	58700	72500				1	76	16	8	2	3	1	3	Tr		
											K39711	50300	72100	78500				2	75	14	10	2	2	1	3	Tr		
											K39713	44500	57400	71800				1	76	16	10	2	1	1	3	Tr		
											K39802	48100	70900	74700				2	76	16	8	2	3	1	3	Tr		
											K39162	52100	78900	74200				1	79	16	7	2	3	1	3	Tr		
											K39263	49900	66400	70100				3	72	19	8	3	2	1	3	Tr		

비고  
REMARK

\* RESIDUAL THICKNESS TEST : GOOD

주  
NOTE

- [N1] Type of pipe End 명칭
- X B: Blind      X V: Venturi      XX BE: Plain End  
 G: Galvanized      R: Removed Venturi      SE: Serrated End  
 E: Enamelled      O: Open Coating      TE: Thread End  
 F: PE Coating      T: Thread Coupling      TK: Thread Coupling  
 C: Corner Coating      BL: Bell End      SE: Swaging End  
 A: Asphal Coating      VJ: Victrolite Joint
- [X3] SB: Nominal Size 호칭명, OD: Outside Diameter      [X6] Unit 단위 (M: mm, I: inch)  
 [X5] S: Good      [X8] Mass A Dimension Test 측정 및 사유값  
 [X4] Weld Ductility Test 용연부 인성시험      [X9] Hardness Test 경도시험 ( )  
 [X11] Phos Test 인산시험      [X12] Char Test 충격시험      [X10] EPR Test 평판시험  
 [X13] Reversal Flattening Test 역곡시험      [X14] H: Heat Treatment 열처리      [X15] H: Heat(J, sch) Analysis 열분해시험 / Product Analysis 제품분석  
 [X17] H: Heat(J, sch) Analysis 열분해시험 / Product Analysis 제품분석

*H. G. Lee*  
 QUALITY ASSURANCE TEAM, GENERAL MGR.

SURVEYOR

본 지점은 관련규격에 합격되었음을 보증합니다.  
 WE CERTIFY THAT THE DESCRIBED MATERIAL HAS THEREIN BEEN  
 ACCEPTED IN ACCORDANCE WITH THE PRESCRIBED SPECIFICATION AND ORDER.

NO. 3900  
 AUG. 1, 2013 1:29AM  
 VASS 0108

NO. 3900

6





A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET • P.O. BOX 583 • MINEOLA • NY 11501 • TEL: 516.741.8398 • FAX: 516.741.8210

\* DATE: 8/7/03

\* ATTN: Edward McCullers

\* COMPANY: Youngquist / Kain

\* FAX# 239-489-4545

\* RE: P.O.# 218039-09 (Rel 29582)

TOTAL NUMBER OF PAGES IN THIS FAX TRANSMISSION: 4 PAGES

Please find mill test reports and tally on the above purchase orders.

THANK YOU

JENNY REYES

Shipper:



158 Third Street  
 Mineola, NY 11501  
 Phone 516 741 8398  
 Toll Free 800 772 8277  
 Fax 516 741 8210

**BILL OF LADING-PACKING LIST**

Ref # 29582 HT

Ref Date 7-30-03

Released by *Rickey*

Freight  Prepaid  Collect

Invoice Date P.O.# 218039-09

To:  
**Youngquist Bros @  
 Bonita Spr. Utilities, WRF Site  
 25051 S. Tamiami Trail  
 Bonita Spr., Fl.  
 See Map**

Date Shipped *8/6*

FOB Point *Bonita Springs, Fl.*

Sales Person *S*

Terms *30*

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via *Toll* Freight Miles

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				SHIP MILL	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs./DumPs	Length S/R or O/R	Size and Type					
<i>52.6</i>	<i>-</i>	<i>13</i>	<i>40.2'</i>	<i>16" BPE Std (-375w) API 5L B Smks</i>	<i>CHENGDU</i>				

Special Instructions: **CALL RECEIVING 24hrs AHEAD**

Received in good condition by \_\_\_\_\_ SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

**SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT**

# HOUSTON TUBULARS INC



10497 TOWN & COUNTRY WAY  
SUITE 350  
HOUSTON, TEXAS 77024  
TEL: 713-465-6334  
FAX: 713-465-0587

DATE: 8/6/03  
RELEASE NO.: 29582

SHIPPER NO.: <u>507362</u>	SHIPPED FROM: <u>28077</u>
FROM: <u>VASS</u>	
ADDRESS:	
TO: <u>VASS</u>	
ADDRESS:	

SIZE: 16x375 WEIGHT: 62.58 GRADE: SLB COUPLING:  
RANGE: 3 THREAD: BPE MAKE: - TYPE: -

	TIER NO.	TIER NO.	TIER NO.	TIER NO.	TIER NO.
1	<u>40</u>	<u>2</u>	<u>50720946</u>		
2	<u>X</u>	<u>13</u>			
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
TL					

**TALLIES PROVIDED BY  
VASS PIPE & STEEL CO.**

TALLIED BY	TOTAL JOINTS <u>13</u>	TOTAL FOOTAGE <u>522.6</u>
REMARKS:	<u>32,729#</u>	
TRUCK NO.:	DRIVER: <u>[Signature]</u>	

Unit: MTR

Commodity: PRIME PIPE SEAMLESS STEEL TUBES

EN 10203/3.1.6

Pangang Group Chengdu Seamless Steel Tube Co Ltd

Specifications: ASTM A53B/A106 GR. B/API 5L  
GR B/X42 WITHINACE MR0175

Date: JULY 25, 2002

Total: 1018 Pcs, 46720.00 Feet, 796.139 Mtr


Heat No.	Size	Quantity			Test Piece No.	Mechanical Properties			Workability Test					Chemical Analysis (%)								
		Pcs	Length(Feet)	Mt		Y.S.(Mpa)	T.S.(Mpa)	EL.(%)	1	2	3	4	5	C	SI	Mn	S	P	Cr	NI	Mo	Cu
02B1919	10"x500"x40'	36	1440.00	35.784	142060065 A	345	500	40	G			G	0.15	0.48	1.11	0.013	0.020	0.02	0.03	0.020	0.120	0.01
					142060065 B	370	510	41														
02B1942	6"xSCH80x40'	50	2000.00	25.930	132060074 A	390	515	38	G			G	0.22	0.20	0.54	0.018	0.012	0.01	0.04	0.010	0.080	0.01
					132060074 B	365	510	37														
02B1957	6"xSCH40x40'	182	7280.00	62.712	142060080 A	340	495	34	G			G	0.20	0.26	0.58	0.014	0.015	0.03	0.03	0.010	0.080	0.01
					142060080 B	370	495	31														
02B1958	6"xSCH40x40'	182	7280.00	62.712	142060081 A	345	500	33	G			G	0.20	0.22	0.62	0.018	0.016	0.03	0.06	0.010	0.100	0.01
					142060081 B	365	505	34														
02B2150	8"xSCH80x40'	24	960.00	18.912	122060275 A	400	510	43	G			G	0.16	0.44	1.18	0.016	0.012	0.03	0.03	0.030	0.080	0.01
					122060275 B	355	515	44														
02B2209	12"x375"x40'	80	3200.00	72.000	112060322 A	380	485	40	G			G	0.22	0.24	0.53	0.018	0.018	0.03	0.04	0.020	0.080	0.01
					112060322 B	294	475	35														
02B2206	12"x375"x40'	70	2800.00	63.000	122060323 A	355	480	36	G			G	0.20	0.24	0.60	0.019	0.014	0.02	0.04	0.010	0.080	0.01
					122060323 B	350	480	37														
02B2220	12"x500"x40'	49	1960.00	38.212	132060329 A	360	520	38	G			G	0.16	0.42	1.12	0.016	0.014	0.03	0.04	0.020	0.080	0.01
					132060329 B	310	525	38														
02B2221	12"x500"x40'	22	880.00	26.136	132060330 A	333	515	38	G			G	0.14	0.40	1.07	0.017	0.011	0.03	0.03	0.020	0.090	0.01
					132060330 B	340	510	37														
P0214443	14"x375"x40'	100	4000.00	99.100	212060809 A	310	450	47	G			G	0.18	0.22	0.46	0.013	0.020	0.01	0.03	0.010	0.030	0.01
					212060809 B	305	450	44														
P0233363	14"x375"x40'	53	2120.00	52.523	242060811 A	310	465	43	G			G	0.21	0.22	0.48	0.014	0.017	0.03	0.03	0.010	0.030	0.01
					242060811 B	315	455	43														
P0234187	14"x500"x40'	25	1000.00	32.725	212060357 A	295	455	44	G			G	0.18	0.22	0.48	0.010	0.016	0.02	0.04	0.010	0.030	0.01
					212060357 B	310	465	44														
P0256061	16"x300"x40'	39	2360.00	88.677	242060636 A	300	455	44	G			G	0.19	0.22	0.50	0.007	0.012	0.02	0.01	0.010	0.020	0.01
					242060636 B	310	450	47														
S0220946	16"x375"x40'	27	1080.00	38.672	622060114 A	360	485	40	G			G	0.19	0.22	0.52	0.009	0.013	0.04	0.09	0.010	0.080	0.01
					622060114 B	350	485	41														
S0220951	16"x375"x40'	24	960.00	27.264	642060789 A	355	485	39	G			G	0.21	0.24	0.56	0.008	0.019	0.04	0.02	0.010	0.160	0.01
					642060789 B	350	480	41														
S0220958	16"x375"x40'	27	1080.00	30.672	612060176 A	360	480	42	G			G	0.18	0.26	0.55	0.014	0.016	0.03	0.02	0.010	0.110	0.01
					612060176 B	365	480	42														
S0220977	16"x375"x40'	8	320.00	9.088	622070204 A	340	465	41	G			G	0.21	0.28	0.42	0.014	0.013	0.04	0.03	0.010	0.130	0.01
					622070204 B	355	470	40														

- Notes:
1. Flattening test
  2. Bending test
  3. Pipe flaring test
  4. Hydrostatic test
  5. Non-destructive test

- Remarks:
1. Condition of supply: hot rolled
  2. Tubes delivered in theoretical weight
  3. G ————— Good

Inspector: Cheng Yu

攀钢集团成都无缝钢管有限责任公司  
PANGANG GROUP CHENGDU SEAMLESS  
STEEL TUBE CO., LTD.

 Manufacturer: PETROTUB S.A ROMAN, 5550 ROMAN, SOSEAVA ROMAN-EAST, KML333, JUD. NEAMT, ROMANIA	<b>MILL TEST REPORT</b> acc. to E.N. 10204/3.1.B/91		NO. <b>B 2882</b>	Date: 09.11.2002
	BUYER:	Description of goods: PRIME QUALITY, NEWLY PRODUCED SEAMLESS STEEL PIPES IN STRICT CONFORMITY WITH P.O. NBR. SF 2068.		Total Length: 1604.17 METRS 5263.92 FT
Contract No. SF 2068 LOT C	Standard API 5L/2000; ASTM A106/1999; ASTM A53/2001 ASME SA 106/2001; ASME SA 53/2001; NACE MR 01-75/2000		Quantity: 149421 KGS	131 PCS

Item	Size (Inches) (mm)	Steel	Heat	Pcs	Length (m)	Weight (kg)	Hydro Test (PSI)	Chemical Composition % on the product														Mechanical Properties					
								C x100	Mn x100	Si x100	S x10000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CEQ max. 0.45%	Rp (PSI) :1000	Rm (PSI) :1000	A %	HB max 295	HRC max 22	Non slag Test
8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27								
✓	16" STD (Ø 406.4x 9.53 mm) Lg: DRL (min 80% = 40'-48" max. 20% = 36'-42")	Gr. B/ X42 PSL1	P213338	30			1670	18	55	23	12	11	3	2	2	2	0.0	0.0	0.0	0.04	0.28	42.4	66.0	38.4	157;155	7;7	OK
			P224616	26				18	58	24	11	10	3	2	2	2	0.0	0.0	0.0	0.04	0.27	44.1	69.4	37.4	158;157	8;7	OK
			P213390	21				19	58	26	25	9	2	2	2	3	0.1	0.0	0.2	0.05	0.29	46.9	73.1	41.6	164;162	6;6	OK
			P224639	13				18	57	27	26	10	2	2	4	2	0.0	0.1	0.2	0.02	0.29	45.9	72.2	38.2	161;162	7;7	OK
			P213332	14				19	57	27	25	11	2	2	4	2	0.0	0.1	0.2	0.02	0.30	50.1	68.8	34.4	163;161	8;7	OK
			P213370	5				22	56	25	22	10	2	3	3	1	0.1	0.0	0.0	0.35	0.32	53.1	71.5	35.8	162;160	8;8	OK
			P224661	1				21	56	24	23	11	2	3	3	1	0.1	0.0	0.0	0.05	0.31	51.2	70.4	35.4	159;160	6;7	OK
			P224642	9				19	51	22	26	12	3	3	5	1	0.0	0.1	0.2	0.03	0.28	52.1	70.6	35.8	158;155	7;6	OK
								19	50	21	25	11	3	3	5	1	0.0	0.1	0.2	0.03	0.28	47.6	65.4	37.0	157;156	7;8	OK
								21	52	22	28	10	1	2	3	2	0.0	0.0	0.1	0.02	0.31	45.5	70.8	37.4	170;168	7;7	OK
								20	52	23	29	9	1	2	2	2	0.0	0.0	0.1	0.02	0.30	45.1	71.0	36.8	171;159	6;7	OK
								21	50	21	22	11	2	2	3	3	0.0	0.1	0.2	0.03	0.30	44.7	69.7	37.6	164;151	8;8	OK
								21	50	22	21	12	2	2	3	3	0.0	0.1	0.2	0.03	0.30	47.1	74.2	35.6	162;162	7;7	OK
								19	56	22	23	10	2	1	1	1	0.2	0.1	0.0	0.03	0.29	45.0	70.0	39.2	173;170	8;7	OK
					19	56	23	23	9	2	1	1	1	0.2	0.0	0.0	0.03	0.29	45.1	70.9	39.4	171;170	6;7	OK			

REMARKS: Hydrostatic test hold for 5 sec. No leakage noticed.  
 Electromagnetical examination on automatic equipment - satisfactory

We state on our sole responsibility that the product conforms to the requirements mentioned at "Standard" heading of the present certificate.	GENERAL MANAGER Dr. Eng. Adrian Bărbulescu Dorel 	Chief Inspection Dept. Eng. Dumitru Ionel 	QA CONTROL Eng. Marius 
			

S.M. *Morand*

PT. BAKRIE PIPE INDUSTRIES  
 J. Raya Pejung  
 Medan Sabra 17131-Bekasi, Indonesia


SPMB : B.2.1600  
 MH No. : 3824/QAEM/02  
 Date : June.15, 2002  
 Page : 1 of 1

ATTACHMENT TO MILL'S INSPECTION CERTIFICATE (Product Analysis)

No	Test Number	Heat Number	Yield Strength (Psi)	Tensile (Psi)			Gage Length (In)	Elong (%)	Hydro (Psi)	Chemical Analysis (%)											
				Long	Trans	Weld				C	Si	Mn	P	S	Cr	Cr	Ni	Mo	V	Ti	Nb
1	621519 000001 000104	60961P	46267	74342	78682	2	36.42	1670	0.110	0.235	0.898	0.019	0.006	0.058	0.130	0.048	0.016	0.006	0.004	0.006	0.206
2	621519 000004 000057	60962P	50805	71026	76931	2	32.66	1670	0.129	0.233	0.896	0.018	0.006	0.064	0.099	0.044	0.016	0.008	0.004	0.006	0.207
3	621519 000005 000074	59004K	43196	67017	74271	2	40.16	1670	0.130	0.234	0.808	0.019	0.005	0.058	0.102	0.044	0.016	0.008	0.003	0.005	0.202
4	621519 000011 000178	61362P	53183	70658	74536	2	38.29	1670	0.110	0.249	0.862	0.008	0.003	0.048	0.022	0.034	0.010	0.006	0.003	0.010	0.211
									0.119	0.256	0.868	0.009	0.004	0.047	0.035	0.036	0.010	0.008	0.004	0.010	0.223
									0.140	0.291	0.849	0.013	0.005	0.056	0.041	0.032	0.009	0.006	0.003	0.007	0.134
									0.140	0.250	0.941	0.012	0.005	0.055	0.038	0.033	0.009	0.005	0.003	0.007	0.131
	Standard API 5L B 2000 year edition	MAX							0.260		1.200	0.030	0.030								
		MIN	35000	60000			25.00														
	Standard API 5L X-62 2000 year edition	MAX							0.260		1.300	0.030	0.030								
		MIN	42000	60000			25.00														
	Standard ASTM A53 B 2000 year edition	MAX							0.300		1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080			1.000
		MIN	35000	60000			25.00														
	Standard ASME SA335 2000 year edition	MAX							0.300		1.200	0.050	0.045	0.400	0.400	0.400	0.150	0.080			1.000
		MIN	35000	60000			25.00														

Note : Cu+Cr+Ni+V = 1.000 %

The materials has been manufactured, sampled tested, and inspected in accordance with this specification (including year of issue), and has been found to meet the requirements.

PT. Bakrie Pipe Industries  
  
**R. T. BAKRIE**  
 PIPE INDUSTRIES  
 JAKARTA (Eastern Edition)  
 QM/QC Manager



12/18/03 TUE 10:37 FAX 2394884545  
 DEC. 5. 2003 4:52PM VASS PIPE

YOUNGQUIST BROTHERS INC  
 NO. 4085

2002

Form No. : 18A  
 Revision : 5

Set B No. : 984127



**Bakrie Pipe Industries**

Jl. Raya Pejulang  
 Medan Barat 17131  
 Bekasi, Indonesia

**MILL'S INSPECTION CERTIFICATE**

Article Specification : **NEW PRIME ERW STEEL PIPE PER API 5LX-42(PSL 1)/API 5LX/  
 ASTM A53B/ASME SA53B QUADRUPLE STENCILED;  
 BLACK FLAT BEVELED END, BLACK VARNISH COATED**

Customer :

Contract No. :

SPMB No. : **B.2.1600/**  
 M/C No. : **3824/QAE/VT/02**  
 Date : **June 13, 2002**

Shipper : **ANGARA V.007**

Item No.	Mill Work No.	Test No.	Ordered Sizes			Delivered Quantity		Description of Inspection & Test								
			Inside/Outside Diameter	Thickness	Length	No. of Pieces & Total Length	Net Weight	Surface & Dimension	Hydrostatic Kgm/PSI/Bar	Flattening	Ultrasonic	Weld Quality	Impact	Ratio Yield to Tensile Strength	Heat Treatment	
1 EQ 84		✓	16" or 406.4mm	0.375" or 9.52mm	42 Feet per Piece	84 Pcs 5,528,000 Feet	100,243 Kgs	Sound	Sound	Sound	Sound	Sound	Sound	-	Sound	Sound
Test No.	Heat No.	Yield Strength PSMPa	Tensile Strength PSMPa	Gauge Length In	Elongation %	Hardness (HRC/10)	Chemical Analysis (%)								Remarks	
							C	Si	Mn	P	S	Mo	Cr	V		Ni
							See Attachment to Mill's Inspection Certificate Attachment Products Analysis									
Standard	MAX MIN															

We hereby certify that material described herein has been duly inspected in accordance with the above specification.

**YOUNGQUIST BROTHERS, INC.**  
 Has Received This Shop Drawing/Submittal  
 YBI/Section Not  
 Date: 12-14-03  
 Signature: [Signature]



PT. BAKRIE PIPE INDUSTRIES  
 JAKART  
 Ir. Endang Kusnadi  
 QA1 QC Manager

CUSTOMER (ORIGINAL)

**FAX**



A DEPENDABLE SOURCE YOU CAN COUNT ON

158 THIRD STREET • P.O. BOX 583 • MINOLA • NY 11501

TOLL FREE PHONE # 800-272-8277 PHONE # 516-741-8398 FAX 516-741-8210

TO: <i>Marybeth / Kevin</i>	DATE: <i>12-15-03</i>
Co.: <i>Youngquist Bros.</i>	FROM: <i>JT</i>
PHONE #:	SUBJECT: <i>Mrs. Tally sheets &amp; Bill of Lading</i>
FAX #: <i>183-483-4845</i>	No. OF PAGES: <i>9</i>

Enclosed are Mrs, Tally sheets & Bill of Lading for your PO # 218039-09 which has our ref # 30978 HT.

Regards

Shipper:



150 Third Street  
 Mineola, NY 11501  
 Phone 516 741 8398  
 Toll Free 800 272 8277  
 Fax 516 741 8710

BUYER'S LEADING PACKING LIST

MI 30970 HT

Ref Date 12-8-03

Released by *Rickey*

Freight  Prepaid  Collect

Invoice Date 12/21/03 218039-09  
 To: 13262 / 42263  
 Youngquist Bros @  
 Bonita Spr. Utilities, WRF Site  
 25051 S. Tamiami Trail  
 Bonita Spr., Fl.  
 See Map

Date Shipped 12-10 F.O.B. Point *Bonita Springs, Fla.*

Sales Person *S* Terms *30*

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED

Shipped via *D/D* Freight  Air

Quantity	DESCRIPTION OF PIPE TO BE RELEASED				PIPE MILL	Ship Name	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	S/N or DR	Size and type					
282 *	-	7	DR 16"	BPE STEEL (375W) APISLB Smls	PERDOTUS	<del>MANANGARA</del> ALAMAMANT	✓		
4m ***	-	10	42-2' 16"	BPE STEEL (375W) APISLB ERW	BAKRJE	ANGARA (V-07)	✓		

Special Instructions: **CALL RECEIVING 24hrs AHEAD**

Received in good condition by \_\_\_\_\_

SIGNED BY BUYER MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT

12/16/03 TUE 10:39 FAX 294894545  
 DEC 15 2003 4:53PM VASS PIPE  
 YOUNGQUIST BROTHERS INC  
 NO. 4085 P. 9  
 0008

NO. 4085 P. 10

DEC. 15, 2003 4:54PM VASS PIPE

Shipper:	
Date Shipped	F.O.B. Point
Sales Person S	Name



150 Third Street  
Albany, NY 11501  
Phone 516 741 0298  
Toll Free 800 272 8277  
Fax 516 741 8210

<b>BILL OF LADING PACKING LIST</b>
WT 30970 HT
Del Date 12-8-03
Released by Risky
Freight <input checked="" type="checkbox"/> Prepaid <input type="checkbox"/> Collect

Invoice Date	Q.O.# 218039-09	
To: Youngquist Bros @ Bonita Spr. Utilities, WRF Site 26051 S. Tamiami Trail Bonita Spr., FL See Map		
Shipped via (D)	Weight	Notes

ISSUED FOR ACCOUNT OF VASS PIPE & STEEL AS SPECIFIED


Quantity	DESCRIPTION OF PIPE TO BE RELEASED			PIPE MILL	Ship Where	Specific Instructions	Unit Price	Total
	Bundles	Pcs/Bundle	Length 5/8" or 1" R					
* *	-	7	DR 16" DR STD (375#) APISLB Ends	PEIRDTUB	<del>MANASSAS</del>	ALUM AMBNT		

Special Instructions: **CALL RECEIVING 24hrs AHEAD**

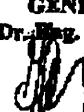
Received in good condition by \_\_\_\_\_  
PRINT NAME SIGNATURE DATE

SIGNED BILL OF LADING MUST ACCOMPANY FREIGHT INVOICE FOR PROMPT PAYMENT



E

 Manufacturer: <b>PETROTUB S.A ROMAN, 5554 ROMAN,                  SOSEAGA ROMAN-LASL, KM.333,                  JUD. NEAMT, ROMANIA</b>							<b>MILL TEST REPORT</b> acc. to E.N. 10204/3.1.B/91										NO. <b>B 2882</b>		Date: 09.11.2002								
Item	Size (Inches) [mm]	Steel	Heat	Pos	Length [m]	Weight [kg]	Hydro Test [Psi]	Chemical Composition %, on the product													Mechanical Properties						
								C x100	Mn x100	Si x100	S x1000	P x1000	Cr x100	Ni x100	Cu x100	Mo x100	V x100	Nb x100	Ti x100	B x100	CBQ mm. 0.03%	Ep [Psi] :1000	Rm [Psi] :1000	A %	HB mm 236	ERC mm. 21	Plate ding Test
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
✓	16" STD (Ø 406.4x 9.53 mm) Lg: DRL (min 80% = 40'±8" max 20% = 36'-42')	Gr.B/ X42 PSL1	P224641 ✓	12			1670	19 18	56 57	21 22	27 28	9 8	1 1	1 1	1 1	2 2	0.1 0.1	0.1 0.1	0.0 0.0	0.05 0.05	0.29 0.28	46.4 45.7	72.2 71.9	38.8 37.8	159;156 157;156	6;7 6;7	OK
GAUGE TRANSVERSAL										Chemical analysis		Mechanical test		Hardness test HB		Hardness test HRC		Flattening test									
Heat No.	Standard	Length Inch	Width Inch	Thickness Inch	Bulletin no.	Bulletin no.	Bulletin no.	Bulletin no.	Bulletin no.																		
P213338	API 5L ASTM/ASME	2	1.504	0.374	3123	1848;788B	374	883	535																		
P224616	API 5L ASTM/ASME	2	1.501	0.379	3123	1849;789B	375	884	536																		
P213390	API 5L ASTM/ASME	2	1.499	0.364	3115	1841;784B	373	880	533																		
P224619	API 5L ASTM/ASME	2	1.503	0.388	3115	1841;784B	373	880	533																		
P213332	API 5L ASTM/ASME	2	1.496	0.374	3115	1841;784B	373	880	533																		
P213370	API 5L ASTM/ASME	2	1.533	0.395	3124	1848;788B	374	883	535																		
P224661	API 5L ASTM/ASME	2	1.501	0.370	3123	1848;788B	374	883	535																		
P224642	API 5L ASTM/ASME	2	1.503	0.343	3123	1849;789B	375	884	536																		
P224641	API 5L ASTM/ASME	2	1.496	0.371	3124	1848;788B	374	883	535																		
		2	1.502	0.365																							

We state on our sole responsibility that the product conforms to the requirements mentioned at "Standard" heading of the present certificate.

GENERAL MANAGER  
 Dr. Eng. Dumitru Dumitrescu Dorel  
  


Chief Inspection Dept.  
 Eng. Dumitru Iosif  


QA CONTROL  
 Eng. Dumitru Iosif  
  


S.M. / *Amiral*

TELEPHONE: (416) 259-1113

FAX: (416) 259-8951

# CANADIAN PHOENIX STEEL PRODUCTS

DIVISION OF 1046791 ONTARIO LIMITED

289 HORNER AVENUE

ETOBICOKE, ONTARIO,

CANADA

M8Z 4Y4

## LABORATORY REPORT AND MILL TEST CERTIFICATE

DATE Sept 4/03

CUSTOMER Pipe & Piling Supplies

SPECIFICATION A139C

CUSTOMER'S P.O. 7100

DIA. & WALL 36" O.D. X .375 WT

PHOENIX REF.# 03-3913

HYDROTEST 585 PSI FOR 10 Sec.

### PHYSICAL PROPERTIES

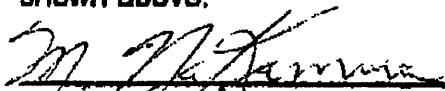
HEAT NO.	PIPE NO.	LONGITUDINAL TEST		% ELONGATION	TRANSVERSE WELD TENSILE	BREAK LOCATION
		YIELD	TENSILE			
J51135	1	53400	71300	26.3	74700	PM
82054	4	58200	74300	26.4	77500	PM
4177339	7	53300	69700	26.8	73300	PM
D43378	11	67400	80300	25.2	83400	PM
81976	48	54600	71300	27.0	74800	PM
D43880	52	54300	72600	27.2	75700	PM

### LADLE ANALYSIS

### CHEMICAL COMPOSITION

HEAT NO	C	MN	S	P	SI	CR	NI	CU	MO	AL
J51135	.20	.39	.002	.010	.040					.040
82054	.064	1.15	.003	.012	.092					.030
4177339	.22	1.07	.006	.012	.23					.002
D43378	.07	1.13	.003	.013	.08					.036
81976	.22	.82	.013	.013	.009					.043
D43880	.07	1.19	.004	.012	.090					.028

The material listed on this report has been tested in accordance with the specification shown above.

  
Authorized Approval

APPENDIX E

## **Pad Monitor Well Water Quality Data**

---

**Bonita Springs Utilities WRF IW-1  
Pad Monitor Well Water Quality Data  
Northeast Monitor Well (NE-2)**

Date	Time	Depth to Water (feet bmp)	Elevation (NGVD)	Depth to Water (NGVD)	Conductivity (µmhos/cm)	Chloride (mg/L)	Temperature (degrees C)	pH (S.U.)	Comments	Sampled By
05/05/2003	1600	8.96	16.22	7.26	1307	130	24.0	7.25	Background Sample	YBI/CH2M HILL
05/08/2003	0900	9.48	16.22	6.74	1334	135	21.5	7.17		YBI/CH2M HILL
05/15/2003	1900	10.27	16.22	5.95	1643	180	22.3	7.29		YBI/CH2M HILL
05/22/2003	1610	10.18	16.22	6.04	1515	115	29.3	7.02		YBI/CH2M HILL
05/29/2003	1430	9.25	16.22	6.97	1312	115	25.2	7.01		YBI/CH2M HILL
06/05/2003	1845	9.10	16.22	7.12	1193	70	28.9	7.21		YBI/CH2M HILL
06/12/2003	1320	9.51	16.22	6.71	1084	106	27.0	7.13		YBI/CH2M HILL
06/21/2003	1030	8.60	16.22	7.62	1023	68	32.0	7.04		YBI/CH2M HILL
06/30/2003	1015	6.49	16.22	9.73	955	115	24.5	7.23		YBI/CH2M HILL
07/04/2003	0800	7.00	16.22	9.22	1021	65	28.9	6.90		YBI/CH2M HILL
07/10/2003	1300	7.18	16.22	9.04	949	58	24.3	7.05		YBI/CH2M HILL
07/17/2003	1100	7.32	16.22	8.90	1120	64	24.7	7.11		YBI/CH2M HILL
07/25/2003	1820	7.20	16.22	9.02	968	52	26.6	7.59		YBI/CH2M HILL
07/31/2003	1710	5.70	16.22	10.52	1135	97	29.9	7.14		YBI/CH2M HILL
08/07/2003	1600	5.56	16.22	10.66	1367	105	26.5	7.04		YBI/CH2M HILL
08/14/2003	1520	5.40	16.22	10.82	1022	68	23.3	7.46		YBI/CH2M HILL
08/21/2003	1215	5.42	16.22	10.80	1515	84	20.9	7.51		YBI/CH2M HILL
08/28/2003	2210	5.50	17.22	11.72	1456	290	25.9	7.57		YBI/CH2M HILL
09/04/2003	1630	5.86	17.22	11.36	1282	241	21.6	7.18		YBI/CH2M HILL
09/11/2003	1645	5.10	17.22	12.12	1467	140	22.4	6.99		YBI/CH2M HILL
09/18/2003	0945	5.24	17.22	11.98	1373	138	24.8	7.21		YBI/CH2M HILL
09/25/2003	1020	6.66	17.22	10.56	1516	145	21.5	7.13		YBI/CH2M HILL
10/02/2003	1545	6.28	17.22	10.94	1478	136	25.3	7.09		YBI/CH2M HILL
10/09/2003	0840	5.74	17.22	11.48	1952	336	24.2	7.11		YBI/CH2M HILL
10/16/2003	1300	6.16	17.22	11.06	2376	460	22.3	7.27		YBI/CH2M HILL
10/23/2003	1615	6.29	17.22	10.93	1122	136	21.6	7.25		YBI/CH2M HILL
10/30/2003	0940	6.53	17.22	10.69	1906	382	21.7	7.30		YBI/CH2M HILL
11/06/2003	2330	5.21	17.22	12.01	1677	321	21.8	7.09		YBI/CH2M HILL
11/13/2003	2130	6.35	17.22	10.87	1521	292	19.2	7.18		YBI/CH2M HILL
11/20/2003	1530	6.79	17.22	10.43	1494	155	21.5	7.21		YBI/CH2M HILL
11/26/2003	2050	7.25	17.22	9.97	1068	118	15.5	7.18		YBI/CH2M HILL
12/04/2003	0900	7.57	17.22	9.65	1692	281	27.1	7.26		YBI/CH2M HILL
12/11/2003	0125	7.62	17.22	9.60	2976	483	17.5	7.21		YBI/CH2M HILL
12/18/2003	1035	7.45	17.22	9.77	2489	558	15.2	7.72		YBI/CH2M HILL
12/24/2003	1300	7.73	17.22	9.49	2521	394	24.7	7.31		YBI/CH2M HILL
12/30/2003	1215	7.68	17.22	9.54	1924	315	26.1	7.28		YBI/CH2M HILL

**Notes:**

feet bmp: feet below measuring point  
µmhos/cm: micromhos per centimeter  
mg/L: milligrams per liter  
C: Celsius  
S.U.: standard units



**Bonita Springs Utilities WRF IW-1  
Pad Monitor Well Water Quality Data  
Northwest Monitor Well (NW-2)**

Date	Time	Depth to Water (feet bmp)	Elevation (NGVD)	Depth to Water (NGVD)	Conductivity (µmhos/cm)	Chloride (mg/L)	Temperature (degrees C)	pH (S.U.)	Comments	Sampled By
05/05/2003	1615	8.41	15.65	7.24	844	65	24.0	7.23	Background Sample	YBI/CH2M HILL
05/08/2003	0915	9.00	15.65	6.65	858	104	21.5	7.26		YBI/CH2M HILL
05/15/2003	1920	9.69	15.65	5.96	699	50	22.6	7.32		YBI/CH2M HILL
05/22/2003	1630	9.57	15.65	6.08	845	60	29.6	7.09		YBI/CH2M HILL
05/29/2003	1515	9.40	15.65	6.25	1001	93	25.4	7.33		YBI/CH2M HILL
06/05/2003	1130	8.30	15.65	7.35	1127	106	29.8	7.10		YBI/CH2M HILL
06/12/2003	1340	9.20	15.65	6.45	1087	101	27.0	6.96		YBI/CH2M HILL
06/21/2003	1045	7.68	15.65	7.97	1027	112	32.9	7.01		YBI/CH2M HILL
06/30/2003	0945	6.32	15.65	9.33	929	95	24.5	7.06		YBI/CH2M HILL
07/04/2003	0820	6.42	15.65	9.23	1129	118	29.4	6.84		YBI/CH2M HILL
07/10/2003	1245	6.40	15.65	9.25	958	108	24.3	6.93		YBI/CH2M HILL
07/17/2003	0800	6.45	15.65	9.20	942	105	24.8	6.98		YBI/CH2M HILL
07/25/2003	1245	6.61	15.65	9.04	1010	92	26.3	7.01		YBI/CH2M HILL
07/31/2003	1650	5.10	15.65	10.55	1115	105	29.1	7.09		YBI/CH2M HILL
08/07/2003	1545	4.95	15.65	10.70	1036	92	28	7.01		YBI/CH2M HILL
08/14/2003	1500	4.80	15.65	10.85	948	62	23.4	7.03		YBI/CH2M HILL
08/21/2003	0915	4.83	15.65	10.82	1054	71	21.0	7.54		YBI/CH2M HILL
08/29/2003	0320	5.70	16.65	10.95	956	86	28.2	7.13		YBI/CH2M HILL
09/04/2003	1555	5.32	16.65	11.33	911	68	21.6	7.27		YBI/CH2M HILL
09/11/2003	1715	5.20	16.65	11.45	883	65	22.5	6.91		YBI/CH2M HILL
09/18/2003	1015	5.35	16.65	11.30	932	62	24.9	7.11		YBI/CH2M HILL
09/25/2003	1045	6.50	16.65	10.15	1180	86	21.5	7.04		YBI/CH2M HILL
10/02/2003	1620	6.12	16.65	10.53	1063	64	25.3	7.02		YBI/CH2M HILL
10/09/2003	0910	6.01	16.65	10.64	1017	54	24.4	7.08		YBI/CH2M HILL
10/16/2003	1330	5.93	16.65	10.72	1035	87	22.2	7.06		YBI/CH2M HILL
10/23/2003	1510	6.24	16.65	10.41	1494	128	21.5	7.31		YBI/CH2M HILL
10/30/2003	1020	6.35	16.65	10.30	1251	113	21.7	7.28		YBI/CH2M HILL
11/06/2003	1700	5.72	16.65	10.93	1395	126	23.1	6.98		YBI/CH2M HILL
11/13/2003	2055	6.21	16.65	10.44	1908	394	19.4	7.07		YBI/CH2M HILL
11/20/2003	1450	6.56	16.65	10.09	1329	121	21.6	7.21		YBI/CH2M HILL
11/26/2003	1925	7.16	16.65	9.49	1107	102	15.4	7.12		YBI/CH2M HILL
12/04/2003	0930	7.42	16.65	9.23	1599	232	25.4	7.15		YBI/CH2M HILL
12/11/2003	0225	7.54	16.65	9.11	1501	185	17.3	7.26		YBI/CH2M HILL
12/18/2003	1118	7.38	16.65	9.27	1743	263	15.3	7.38		YBI/CH2M HILL
12/24/2003	1345	7.62	16.65	9.03	1421	165	24.5	7.24		YBI/CH2M HILL
12/30/2003	1245	7.58	16.65	9.07	1385	148	26.1	7.26		YBI/CH2M HILL

**Notes:** feet below measuring point  
feet bmp: micromhos per centimeter  
µmhos/cm: milligrams per liter  
mg/L: Celsius  
C: standard units  
S.U.: The information is currently unavailable  
N/A

**Bonita Springs Utilities WRF IW-1  
Pad Monitor Well Water Quality Data  
Southeast Monitor Well (SE-2)**

Date	Time	Depth to Water (feet bmp)	Elevation (NGVD)	Depth to Water (NGVD)	Conductivity (µmhos/cm)	Chloride (mg/L)	Temperature (degrees C)	pH (S.U.)	Comments	Sampled By
05/05/2003	1500	8.80	16.12	7.32	706	40	24.0	7.13	Background Sample	YBI/CH2M HILL
05/08/2003	0930	9.40	16.12	6.72	863	98	21.4	7.24		YBI/CH2M HILL
05/15/2003	1940	10.20	16.12	5.92	910	76	22.7	7.03		YBI/CH2M HILL
05/22/2003	1645	10.13	16.12	5.99	794	35	29.9	7.08		YBI/CH2M HILL
05/29/2003	1720	9.30	16.12	6.82	737	41	25.8	7.06		YBI/CH2M HILL
06/05/2003	1030	9.20	16.12	6.92	739	30	29.6	7.05		YBI/CH2M HILL
06/12/2003	1400	9.60	16.12	6.52	711	44	26.9	7.06		YBI/CH2M HILL
06/21/2003	1100	8.60	16.12	7.52	663	34	32.3	7.09		YBI/CH2M HILL
06/30/2003	0830	6.32	16.12	9.80	609	38	24.2	7.08		YBI/CH2M HILL
07/04/2003	0840	6.81	16.12	9.31	678	34	29.3	7.26		YBI/CH2M HILL
07/10/2003	1340	7.15	16.12	8.97	616	33	24.2	7.03		YBI/CH2M HILL
07/17/2003	1000	7.22	16.12	8.90	833	47	24.7	7.05		YBI/CH2M HILL
07/25/2003	1125	7.38	16.12	8.74	805	37	26.1	6.98		YBI/CH2M HILL
07/31/2003	1710	5.60	16.12	10.52	699	31	28.8	7.06		YBI/CH2M HILL
08/07/2003	1100	5.50	16.12	10.62	730	55	26.7	7.09		YBI/CH2M HILL
08/14/2003	1610	4.80	16.12	11.32	651	21	26.8	6.97		YBI/CH2M HILL
08/21/2003	0800	4.35	16.12	11.77	682	29	21.0	7.65		YBI/CH2M HILL
08/29/2003	0500	4.80	17.12	12.32	695	44	22.9	7.26		YBI/CH2M HILL
09/04/2003	1500	5.68	17.12	11.44	716	33	21.6	7.23		YBI/CH2M HILL
09/11/2003	1815	5.75	17.12	11.37	946	102	22.5	7.28		YBI/CH2M HILL
09/18/2003	1745	5.47	17.12	11.65	723	38	24.8	7.24		YBI/CH2M HILL
09/25/2003	1115	6.57	17.12	10.55	1039	62	21.6	7.19		YBI/CH2M HILL
10/02/2003	1600	6.33	17.12	10.79	889	47	23.6	7.17		YBI/CH2M HILL
10/09/2003	1010	5.62	17.12	11.50	843	39	24.2	7.16		YBI/CH2M HILL
10/16/2003	1400	6.14	17.12	10.98	785	58	22.1	7.17		YBI/CH2M HILL
10/23/2003	1530	6.29	17.12	10.83	1130	52	21.6	7.28		YBI/CH2M HILL
10/30/2003	1040	6.41	17.12	10.71	788	52	21.8	7.34		YBI/CH2M HILL
11/06/2003	2100	4.58	17.12	12.54	1147	92	21.9	6.86		YBI/CH2M HILL
11/13/2003	2125	6.04	17.12	11.08	694	43	19.4	7.05		YBI/CH2M HILL
11/20/2003	1150	6.32	17.12	10.80	831	44	21.5	7.09		YBI/CH2M HILL
11/26/2003	2025	6.89	17.12	10.23	968	58	15.7	7.18		YBI/CH2M HILL
12/04/2003	0830	7.27	17.12	9.85	1948	251	23.9	7.16		YBI/CH2M HILL
12/11/2003	0035	7.33	17.12	9.79	744	41	17.5	7.68		YBI/CH2M HILL
12/18/2003	0935	7.13	17.12	9.99	1953	302	15.3	7.43		YBI/CH2M HILL
12/24/2003	1430	7.37	17.12	9.75	936	193	24.7	7.45		YBI/CH2M HILL
12/30/2003	1315	7.41	17.12	9.71	942	186	26.0	7.41		YBI/CH2M HILL

**Notes:**

feet bmp: feet below measuring point  
µmhos/cm: micromhos per centimeter  
mg/L: milligrams per liter  
C: Celsius  
S.U.: standard units

**Bonita Springs Utilities WRF IW-1  
Pad Monitor Well Water Quality Data  
Southwest Monitor Well (SW-2)**

Date	Time	Depth to Water (feet bmp)	Elevation (NGVD)	Depth to Water (NGVD)	Conductivity (µmhos/cm)	Chloride (mg/L)	Temperature (degrees C)	pH (S.U.)	Comments	Sampled By
05/05/2003	1530	8.79	16.02	7.23	969	85	24.0	7.12	Background Sample	YBI/CH2M HILL
05/08/2003	0940	9.34	16.02	6.68	1042	105	21.4	6.94		YBI/CH2M HILL
05/15/2003	2000	9.90	16.02	6.12	1017	98	22.7	7.08		YBI/CH2M HILL
05/22/2003	1710	10.15	16.02	5.87	1135	105	29.6	6.92		YBI/CH2M HILL
05/29/2003	1745	9.28	16.02	6.74	1490	130	25.7	7.21		YBI/CH2M HILL
06/05/2003	1100	9.10	16.02	6.92	1590	134	29.5	6.84		YBI/CH2M HILL
06/12/2003	1425	9.55	16.02	6.47	1484	125	27.0	7.08		YBI/CH2M HILL
06/21/2003	1115	8.62	16.02	7.40	1389	130	31.8	6.82		YBI/CH2M HILL
06/30/2003	0905	5.80	16.02	10.22	1062	110	24.3	6.85		YBI/CH2M HILL
07/04/2003	0900	6.80	16.02	9.22	1173	120	29.1	6.76		YBI/CH2M HILL
07/10/2003	1320	7.15	16.02	8.87	1021	110	24.1	6.84		YBI/CH2M HILL
07/17/2003	0920	7.21	16.02	8.81	1113	96	24.7	6.86		YBI/CH2M HILL
07/25/2003	1210	6.70	16.02	9.32	917	73	26.0	6.98		YBI/CH2M HILL
07/31/2003	1710	5.50	16.02	10.52	1324	108	27.3	6.89		YBI/CH2M HILL
08/07/2003	1215	5.40	16.02	10.62	997	78	26.2	7.20		YBI/CH2M HILL
08/14/2003	1750	4.60	16.02	11.42	1105	83	23.6	7.05		YBI/CH2M HILL
08/21/2003	0845	5.32	16.02	10.70	760	68	21.0	7.72		YBI/CH2M HILL
08/29/2003	0500	5.30	17.02	11.72	1076	70	23.1	7.25		YBI/CH2M HILL
09/04/2003	1530	5.67	17.02	11.35	810	52	21.7	7.11		YBI/CH2M HILL
09/11/2003	1745	5.85	17.02	11.17	741	56	22.6	7.17		YBI/CH2M HILL
09/18/2003	1815	5.92	17.02	11.10	869	61	24.9	7.26		YBI/CH2M HILL
09/25/2003	1145	6.63	17.02	10.39	1169	90	21.6	7.18		YBI/CH2M HILL
10/02/2003	1650	6.24	17.02	10.78	973	72	25.6	7.11		YBI/CH2M HILL
10/09/2003	935	5.48	17.02	11.54	819	47	24.3	7.13		YBI/CH2M HILL
10/16/2003	1430	5.40	17.02	11.62	846	73	22.2	7.16		YBI/CH2M HILL
10/23/2003	1555	6.10	17.02	10.92	737	56	21.6	7.25		YBI/CH2M HILL
10/30/2003	1100	6.24	17.02	10.78	1144	109	21.8	7.15		YBI/CH2M HILL
11/06/2003	2040	5.25	17.02	11.77	1350	118	21.8	6.80		YBI/CH2M HILL
11/13/2003	2140	6.48	17.02	10.54	1226	191	19.3	6.80		YBI/CH2M HILL
11/20/2003	1120	6.78	17.02	10.24	1187	127	21.5	7.02		YBI/CH2M HILL
11/26/2003	1950	7.07	17.02	9.95	1135	132	15.7	7.10		YBI/CH2M HILL
12/04/2003	0740	7.52	17.02	9.50	1136	93	24.5	7.04		YBI/CH2M HILL
12/11/2003	0000	7.61	17.02	9.41	2072	263	17.6	7.18		YBI/CH2M HILL
12/18/2003	1005	7.46	17.02	9.56	702	38	15.3	7.35		YBI/CH2M HILL
12/24/2003	1230	7.63	17.02	9.39	1245	142	24.8	7.23		YBI/CH2M HILL
12/30/2003	1345	7.59	17.02	9.43	1132	128	26	7.22		YBI/CH2M HILL

**Notes:**

feet bmp: feet below measuring point  
µmhos/cm: micromhos per centimeter  
mg/L: milligrams per liter  
C: Celsius  
S.U.: standard units

APPENDIX F

# Well Lithologic Descriptions

---

APPENDIX F.1

# **WRF IW-1 Lithologic Descriptions**

---

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
0	10	SAND, yellowish gray (5Y 7/2), fine grained quartz
10	20	NO SAMPLE
20	30	SHELL FRAGMENTS, yellowish gray (5Y 7/2), poorly consolidated
30	40	SHELL FRAGMENTS, as above
40	50	SHELL FRAGMENTS (50%), yellowish gray (5Y 7/2), poorly consolidated; CLAY (50%), yellowish gray (5Y 7/2), marly texture
50	60	CLAY, light olive gray (5Y 5/2), silty texture, stiff
60	70	CLAY, dark greenish gray (5G 4/1), silty texture, stiff
70	80	CLAY, as above
80	90	CLAY (50%), dark greenish gray (5G 4/1), silty texture, stiff; SHELL FRAGMENTS (50%), yellowish gray (5Y 7/2), poorly consolidated, minor limestone
90	100	SHELL FRAGMENTS (70%), yellowish gray (5Y 7/2), poorly consolidated, minor limestone; CLAY (30%), dark greenish gray (5G 4/1), sticky
100	110	SHELL FRAGMENTS and CLAY, as above
110	120	SHELL FRAGMENTS and CLAY, as above
120	130	SHELL FRAGMENTS and CLAY, as above
130	140	CLAY, light olive gray (5Y 6/1), marly texture, trace of shell fragments and limestone
140	150	CLAY (80%), as above, increase in shell fragments and limestone to 20%
150	160	CLAY (90%), as above, decrease in shell fragments and limestone to 10%
160	170	SHELL FRAGMENTS (80%), yellowish gray (5Y 7/2), poorly consolidated, minor limestone; CLAY (20%), dark greenish gray (5G 4/1), sticky
170	180	CLAY, dark greenish gray (5G 4/1), sticky, phosphates
180	190	CLAY, as above
190	200	CLAY, as above
200	210	CLAY (50%), as above, increase in shell fragments and limestone to 50%
210	220	LIMESTONE (90%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments; CLAY (10%), dark greenish gray (5G 4/1), sticky, trace of phosphates
220	230	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments, trace of phosphates
230	240	LIMESTONE, as above
240	250	LIMESTONE, as above
250	260	LIMESTONE, as above, trace of dark greenish gray clay
260	270	LIMESTONE, as above
270	280	LIMESTONE, as above
280	290	LIMESTONE, as above
290	300	LIMESTONE, as above
300	310	LIMESTONE, as above
310	320	LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
320	330	CLAY (70%), dark greenish gray (5G 4/1), sticky, trace of phosphates; LIMESTONE (30%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments
330	340	CLAY, dark greenish gray (5G 4/1) and yellowish gray (5Y 7/2), marly texture, sticky, trace of phosphates
340	350	CLAY, as above, increase in limestone to 30%
350	360	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments, trace of phosphates
360	370	LIMESTONE, as above
370	380	LIMESTONE, as above
380	390	CLAY (60%), yellowish gray (5Y 7/2), marly texture, trace of phosphates; LIMESTONE (30%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments
390	400	CLAY, as above, decrease in limestone to 20%
400	410	CLAY, as above
410	420	CLAY, as above, color change in clay to dark greenish gray (5G 4/1)
420	430	CLAY, as above
430	440	CLAY, as above
440	450	CLAY, as above, increase in limestone to 50%, high phosphates
450	460	CLAY, as above, color change in clay to yellowish gray (5Y 7/2)
460	470	CLAY, as above, decrease in limestone to 20%, trace of phosphates
470	480	CLAY, as above
480	490	CLAY, as above, decrease in limestone to 10%
490	500	CLAY, yellowish gray (5Y 7/2), marly texture, trace of limestone and phosphates
500	510	CLAY, as above, high phosphates
510	520	CLAY (80%), yellowish gray (5Y 7/2), marly texture, trace of phosphates; LIMESTONE (20%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments
520	530	CLAY, as above, decrease in limestone to 10%
530	540	CLAY, as above
540	550	CLAY, as above, increase in limestone to 30%
550	560	CLAY, yellowish gray (5Y 7/2), marly texture, trace of limestone and phosphates
560	570	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, well consolidated, moderate porosity, fine grained, shell molds
570	580	LIMESTONE, as above
580	590	LIMESTONE, as above
590	600	LIMESTONE, as above, small to large fragments, moderately consolidated
600	610	LIMESTONE, as above
610	620	LIMESTONE, as above
620	630	LIMESTONE, as above
630	640	LIMESTONE, as above
640	650	LIMESTONE, as above, medium fragments, well consolidated, dense
650	660	LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
660	670	LIMESTONE, as above, trace of marly clay
670	680	CLAY, very light gray (N8), marly texture, sticky, trace of limestone
680	690	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained, sandy texture, shell molds
690	700	LIMESTONE, as above
700	710	LIMESTONE, as above
710	720	LIMESTONE, as above
720	730	LIMESTONE, yellowish gray (5Y 7/2), small fragments, well consolidated, fine grained, sandy texture, shell fragments
730	740	LIMESTONE, as above
740	750	LIMESTONE, grayish orange (10YR 7/4), small to medium fragments, moderately consolidated, fine grained, sandy texture
750	760	LIMESTONE, as above
760	770	LIMESTONE, as above
770	780	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, well consolidated, fine grained, sandy texture, shell molds
780	790	LIMESTONE, as above
790	800	LIMESTONE, as above
800	810	LIMESTONE, as above
810	820	LIMESTONE, as above
820	830	LIMESTONE, as above
830	840	LIMESTONE, as above, trace of moderate yellowish brown (10YR 5/4) limestone
840	850	LIMESTONE, yellowish gray (5Y 7/2), small to large fragments, moderately consolidated, fine grained, dense, trace of marly clay
850	860	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained
860	870	LIMESTONE, as above
870	880	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, well consolidated, fine grained, dense
880	890	LIMESTONE, as above, small to medium fragments, sandy texture
890	900	LIMESTONE, as above
900	910	LIMESTONE, as above, poorly consolidated
910	920	NO SAMPLE
920	930	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, poorly consolidated, fine grained, sandy texture
930	940	NO SAMPLE
940	950	NO SAMPLE
950	960	NO SAMPLE
960	970	SAND, yellowish gray (5Y 7/2), well consolidated, fine grained quartz
970	980	SAND, as above
980	990	SAND, as above
990	1000	SAND, as above
1000	1010	SAND, as above
1010	1020	SAND, as above
1020	1030	SAND, as above
1030	1040	SAND (50%), yellowish gray (5Y 7/2), well consolidated, fine grained quartz; LIMESTONE (50%), yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, sandy texture



**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
1040	1050	SAND and LIMESTONE, as above
1050	1060	SAND and LIMESTONE, as above
1060	1070	SAND and LIMESTONE, as above
1070	1080	SAND and LIMESTONE, as above
1080	1090	LIMESTONE, yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, friable, very sandy texture
1090	1100	LIMESTONE, as above
1100	1110	LIMESTONE, as above
1110	1120	LIMESTONE, as above
1120	1130	LIMESTONE, as above
1130	1140	LIMESTONE, as above
1140	1150	LIMESTONE, as above
1150	1160	LIMESTONE, as above
1160	1170	LIMESTONE, as above
1170	1180	LIMESTONE, as above, medium fragments, well consolidated
1180	1190	LIMESTONE, as above, small to medium fragments, moderately consolidated
1190	1200	LIMESTONE, as above, medium to large fragments, well consolidated
1200	1210	LIMESTONE, as above, moderately consolidated
1210	1220	LIMESTONE, as above
1220	1230	LIMESTONE, as above, trace dolomite
1230	1240	LIMESTONE, yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, friable, very sandy texture
1240	1250	LIMESTONE, as above
1250	1260	LIMESTONE, as above
1260	1270	LIMESTONE (50%), yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, friable, very sandy texture; DOLOMITE (50%), moderate yellowish brown (10YR 5/4), low porosity, dense, 180 degree cleavage
1270	1280	LIMESTONE and DOLOMITE, as above
1280	1290	LIMESTONE, yellowish gray (5Y 8/1), small to medium fragments, well consolidated, fine grained, moderate porosity
1290	1300	LIMESTONE, as above
1300	1310	LIMESTONE, as above
1310	1320	LIMESTONE, as above, trace of dolomite
1320	1330	LIMESTONE, as above, sandy texture, no dolomite
1330	1340	LIMESTONE, as above, abundant foraminifera
1340	1350	LIMESTONE, as above
1350	1360	LIMESTONE, yellowish gray (5Y 8/1), medium to large fragments, well consolidated, low porosity, fine grained
1360	1370	LIMESTONE, as above, small to large fragments, moderately consolidated
1370	1380	LIMESTONE, as above
1380	1390	LIMESTONE, as above, abundant foraminifera

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
1390	1400	LIMESTONE, as above
1400	1410	LIMESTONE, as above, no foraminifera
1410	1420	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, well consolidated, low porosity, fine grained, sandy texture, soft to friable
1420	1430	LIMESTONE, as above, medium hardness, less sandy
1430	1440	LIMESTONE, as above
1440	1450	LIMESTONE, as above
1450	1460	LIMESTONE, as above
1460	1470	LIMESTONE, as above
1470	1480	LIMESTONE, yellowish gray (5Y 8/1), very small to large fragments, moderately consolidated, low porosity, fine grained, abundant foraminifera
1480	1490	LIMESTONE, as above
1490	1500	LIMESTONE, as above
1500	1510	LIMESTONE, as above
1510	1520	NO SAMPLE
1520	1530	NO SAMPLE
1530	1540	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, fine grained, trace of foraminifera
1540	1550	LIMESTONE, as above, well consolidated
1550	1560	LIMESTONE, yellowish gray (5Y 8/1), very small to large fragments, moderately consolidated, low porosity, very fine grained, abundant foraminifera
1560	1570	LIMESTONE, as above
1570	1580	LIMESTONE, as above
1580	1590	LIMESTONE, as above
1590	1600	LIMESTONE, as above
1600	1610	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, fine grained, medium density
1610	1620	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, very fine grained, silty texture, minor yellowish gray (5Y 7/2) clay
1620	1630	LIMESTONE, as above
1630	1640	DOLOMITE, dark yellowish brown (10YR 4/2), medium to large fragments, well consolidated, low porosity, medium density
1640	1650	NO SAMPLE
1650	1660	LIMESTONE, yellowish gray (5Y 8/1), small to medium fragments, moderately consolidated, low porosity, fine grained, trace of dark yellowish brown (10YR 4/2) dolomite
1660	1670	LIMESTONE, as above
1670	1680	LIMESTONE, as above
1680	1690	NO SAMPLE
1690	1700	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, low porosity, fine grained, sandy texture
1700	1710	LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
1710	1720	LIMESTONE, as above
1720	1730	LIMESTONE, as above
1730	1740	LIMESTONE, as above
1740	1750	LIMESTONE, as above, trace of dolomite
1750	1760	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, low porosity, fine grained, sandy texture
1760	1770	LIMESTONE, as above, small to medium fragments
1770	1780	LIMESTONE, as above
1780	1790	LIMESTONE, as above, small fragments
1790	1800	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, well consolidated, low porosity, fine grained
1800	1810	LIMESTONE, as above, medium to large fragments, moderately consolidated
1810	1820	LIMESTONE, as above
1820	1830	LIMESTONE, as above
1830	1840	LIMESTONE, medium to large fragments, trace of dolomite
1840	1850	LIMESTONE, as above, small fragments, fine grained, sandy texture
1850	1860	LIMESTONE, as above, medium to large fragments
1860	1870	LIMESTONE, as above, small fragments
1870	1880	LIMESTONE, as above, medium to large fragments, dense
1880	1890	LIMESTONE, as above
1890	1900	LIMESTONE, as above
1900	1910	LIMESTONE, as above
1910	1920	LIMESTONE, as above
1920	1930	LIMESTONE, as above
1930	1940	DOLOMITE, dusky yellowish brown (10YR 2/2), small to medium fragments, well consolidated, low porosity, dense, 180 degree cleavage
1940	1950	DOLOMITE, as above
1950	1960	LIMESTONE (50%), yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, low porosity, fine grained; DOLOMITE (50%), moderate yellowish brown (10YR 5/4), low porosity, dense
1960	1970	LIMESTONE and DOLOMITE, as above
1970	1980	LIMESTONE and DOLOMITE, as above, small fragments
1980	1990	DOLOMITE, moderate yellowish brown (10YR 5/4), small to medium fragments, well consolidated, low porosity, dense
1990	2000	LIMESTONE (50%), yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, low porosity, fine grained; DOLOMITE (50%), moderate yellowish brown (10YR 5/4), low porosity, dense
2000	2010	LIMESTONE and DOLOMITE, as above
2010	2020	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, medium density
2020	2030	LIMESTONE, as above, mottled color
2030	2040	LIMESTONE, as above
2040	2050	LIMESTONE, as above
2050	2060	LIMESTONE (50%), yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, low porosity, fine grained; DOLOMITE (50%), moderate yellowish brown (10YR 5/4), low porosity, dense

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
2060	2070	LIMESTONE and DOLOMITE, as above
2070	2080	NO SAMPLE
2080	2090	LIMESTONE and DOLOMITE, as above, mottled color
2090	2100	LIMESTONE and DOLOMITE, as above
2100	2110	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, well consolidated, low porosity, dense, fine grained, 180 degree cleavage
2110	2120	LIMESTONE, as above
2120	2130	LIMESTONE, as above
2130	2140	LIMESTONE, as above
2140	2150	LIMESTONE, as above, moderate yellowish brown (10YR 5/4)
2150	2160	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained, medium density
2160	2170	LIMESTONE, as above
2170	2180	LIMESTONE, as above, very small fragments, soft
2180	2190	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, moderate porosity, fine grained, medium density
2190	2200	LIMESTONE, as above
2200	2210	LIMESTONE, as above, poorly consolidated
2210	2220	LIMESTONE, as above
2220	2230	LIMESTONE, as above
2230	2240	LIMESTONE, as above, moderately consolidated
2240	2250	LIMESTONE, as above, mottled color
2250	2260	DOLOMITE, dusky yellowish brown (10YR 2/2), medium fragments, moderately consolidated, vuggy, trace limestone
2260	2270	LIMESTONE (50%), yellowish gray (5Y 7/2), medium to large fragments, poorly consolidated, low porosity, fine grained, dense; DOLOMITE (50%), dusky yellowish brown (10YR 2/2), low porosity, dense
2270	2280	LIMESTONE and DOLOMITE, as above, small fragments
2280	2290	LIMESTONE and DOLOMITE, as above
2290	2300	LIMESTONE and DOLOMITE, as above
2300	2310	LIMESTONE and DOLOMITE, as above, large fragments
2310	2320	LIMESTONE and DOLOMITE, as above
2320	2330	NO SAMPLE
2330	2340	LIMESTONE (50%), yellowish gray (5Y 7/2), small to medium fragments, poorly consolidated, low porosity, fine grained, dense; DOLOMITE (50%), dusky yellowish brown (10YR 2/2), low porosity, dense
2340	2350	DOLOMITE, dusky yellowish brown (10YR 2/2), medium fragments, well consolidated, dense, fractured
2350	2360	LIMESTONE (50%), yellowish gray (5Y 7/2), small to medium fragments, poorly consolidated, low porosity, fine grained, dense; DOLOMITE (50%), dusky yellowish brown (10YR 2/2), vuggy, microcrystalline
2360	2370	LIMESTONE and DOLOMITE, as above, increase in dolomite to 70%
2370	2380	DOLOMITE, dusky yellowish brown (10YR 2/2), small to large fragments, moderately consolidated, dense, vuggy, microcrystalline

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
2380	2390	DOLOMITE, as above
2390	2400	DOLOMITE, as above
2400	2410	DOLOMITE, as above
2410	2420	DOLOMITE, as above
2420	2430	DOLOMITE, as above, trace of limestone
2430	2440	DOLOMITE, as above
2440	2450	DOLOMITE, as above
2450	2460	DOLOMITE, dusky yellowish brown (10YR 2/2), very small to large fragments, poorly consolidated, dense, microcrystalline
2460	2470	DOLOMITE, as above
2470	2480	DOLOMITE, as above
2480	2490	DOLOMITE, as above
2490	2500	DOLOMITE, as above
2500	2510	DOLOMITE, as above
2510	2520	DOLOMITE, as above
2520	2530	DOLOMITE, dusky yellowish brown (10YR 2/2), large fragments, well consolidated, low porosity, dense, fractured, microcrystalline
2530	2540	DOLOMITE, pale yellowish brown (10YR 6/2), medium to large fragments, well consolidated, low porosity, dense, fractured, microcrystalline
2540	2550	DOLOMITE, as above
2550	2560	DOLOMITE, as above
2560	2570	DOLOMITE, as above, color change to grayish black (N2)
2570	2580	DOLOMITE, as above
2580	2590	DOLOMITE, moderate brown (5YR 3/4), very small to large fragments, poorly consolidated, vuggy, microcrystalline
2590	2600	DOLOMITE, as above
2600	2610	DOLOMITE, as above, color change to moderate yellowish brown (10YR 5/4)
2610	2620	DOLOMITE, dark yellowish brown (10YR 4/2) to black (N1), very small to large fragments, poorly consolidated, microcrystalline, mottled color
2620	2630	DOLOMITE, as above
2630	2640	DOLOMITE, moderate brown (5YR 4/4), medium fragments, well consolidated, vuggy, microcrystalline
2640	2650	DOLOMITE, dark yellowish brown (10YR 4/2) to black (N1), small to large fragments, moderately consolidated, vuggy, microcrystalline, mottled color
2650	2660	DOLOMITE, as above
2660	2670	DOLOMITE, as above, trace of lignite, black (N1)
2670	2680	LIGNITE (50%), black (N1), soft, 180 degree cleavage; DOLOMITE (50%), dark yellowish brown (10YR 4/2) to black (N1), small to large fragments, moderately consolidated, vuggy, microcrystalline, mottled color
2680	2690	DOLOMITE, dark yellowish brown (10YR 4/2) to black (N1), small to large fragments, moderately consolidated, vuggy, microcrystalline, mottled color, trace of lignite, black (N1)
2690	2700	DOLOMITE, as above

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
2700	2710	DOLOMITE, as above
2710	2720	DOLOMITE, dusky yellowish brown (10YR 2/2), large fragments, well consolidated, low porosity, dense, fractured, microcrystalline
2720	2730	DOLOMITE, dusky yellowish brown (10YR 2/2) to black (N1), small to large fragments, moderately consolidated, vuggy, microcrystalline, mottled color
2730	2740	DOLOMITE, as above
2740	2750	DOLOMITE, as above
2750	2760	DOLOMITE, grayish black (N2), medium fragments, well consolidated, low porosity, dense, fractured, microcrystalline
2760	2770	DOLOMITE, pale yellowish brown (10YR 6/2), medium to large fragments, well consolidated, low porosity, dense, fractured, microcrystalline, 180 degree cleavage, trace of lignite
2770	2780	DOLOMITE, as above, very small to large fragments, moderately consolidated
2780	2790	DOLOMITE, dusky yellowish brown (10YR 2/2) to black (N1), small to large fragments, moderately consolidated, low porosity, dense, fractured
2790	2800	DOLOMITE, as above
2800	2810	DOLOMITE, as above, trace of limestone
2810	2820	DOLOMITE, as above
2820	2830	DOLOMITE, as above
2830	2840	DOLOMITE, as above
2840	2850	DOLOMITE, pale yellowish brown (10YR 6/2), very small to large fragments, poorly consolidated, vuggy, microcrystalline, trace of limestone
2850	2860	DOLOMITE, as above
2860	2870	DOLOMITE, as above
2870	2880	DOLOMITE, as above
2880	2890	DOLOMITE, dusky yellowish brown (10YR 2/2), small to large fragments, moderately consolidated, low porosity, dense, fractured
2890	2900	DOLOMITE, as above
2900	2910	DOLOMITE, dusky yellowish brown (10YR 2/2), very small to large fragments, poorly consolidated, vuggy, microcrystalline, trace of limestone
2910	2920	DOLOMITE, dusky yellowish brown (10YR 2/2), small to large fragments, moderately consolidated, low porosity, dense, fractured
2920	2930	DOLOMITE, as above
2930	2940	DOLOMITE, as above
2940	2950	DOLOMITE, as above, vuggy
2950	2960	DOLOMITE, grayish black (N2), very small to medium fragments, poorly consolidated, dense, vuggy, microcrystalline, trace of limestone
2960	2970	DOLOMITE, as above
2970	2980	DOLOMITE, as above, color change to pale yellowish brown (10YR 6/2)
2980	2990	DOLOMITE, as above, sandy texture
2990	3000	DOLOMITE, as above
3000	3010	DOLOMITE, pale yellowish brown (10YR 6/2), small to large fragments, poorly consolidated, dense, microcrystalline

**BONITA SPRINGS UTILITIES WRF IW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
3010	3020	DOLOMITE, as above, mottled color
3020	3030	DOLOMITE, as above, color change to black (N1)
3030	3040	DOLOMITE, as above, color change to pale yellowish brown (10YR 6/2)
3040	3050	DOLOMITE, as above
3050	3060	DOLOMITE, as above, color change to black (N1)
3060	3070	DOLOMITE, as above, color change to pale yellowish brown (10YR 6/2), sandy texture
3070	3080	DOLOMITE, as above
3080	3090	DOLOMITE, grayish black (N2), medium fragments, well consolidated, low porosity, dense, fractured, microcrystalline
3090	3100	DOLOMITE, as above
3100	3110	DOLOMITE, as above
3110	3120	DOLOMITE, as above
3120	3130	DOLOMITE, as above
3130	3140	DOLOMITE, as above
3140	3150	DOLOMITE, as above
3150	3160	DOLOMITE, as above
3160	3170	DOLOMITE, as above
3170	3180	DOLOMITE, as above
3180	3190	DOLOMITE, as above
3190	3200	DOLOMITE, as above
3200	3210	DOLOMITE, as above
3210	3220	DOLOMITE, as above

**Notes:**

bpl = below pad level

Lithologic color designations are based on the Rock Color Chart, distributed by the Geological Society of America, 1984.

APPENDIX F.2

## **WRF DZMW-1 Lithologic Descriptions**

---



**BONITA SPRINGS UTILITIES WRF DZMW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
0	10	SAND, yellowish gray (5Y 7/2), fine grained quartz
10	20	SHELL FRAGMENTS, yellowish gray (5Y 7/2), poorly consolidated
20	30	SHELL FRAGMENTS, as above
30	40	SHELL FRAGMENTS, as above
40	50	CLAY, dark greenish gray (5G 4/1), silty texture, stiff
50	60	CLAY, as above
60	70	CLAY, as above
70	80	CLAY, as above
80	90	CLAY (50%), dark greenish gray (5G 4/1), silty texture, stiff; SHELL FRAGMENTS (50%), yellowish gray (5Y 7/2), poorly consolidated, minor limestone
90	100	SHELL FRAGMENTS (70%), yellowish gray (5Y 7/2), poorly consolidated, minor limestone; CLAY (30%), dark greenish gray (5G 4/1), sticky
100	110	SHELL FRAGMENTS and CLAY, as above
110	120	SHELL FRAGMENTS and CLAY, as above
120	130	SHELL FRAGMENTS and CLAY, as above, increase in clay to 50%
130	140	CLAY, dark greenish gray (5G 4/1), marly texture, trace of shell fragments and limestone
140	150	CLAY, as above
150	160	CLAY, light olive gray (5Y 6/1), marly texture, trace of shell fragments and limestone
160	170	CLAY (80%), as above, increase in shell fragments and limestone to 20%
170	180	CLAY, dark greenish gray (5G 4/1), sticky, phosphates
180	190	CLAY, as above
190	200	CLAY, as above
200	210	CLAY (70%), as above, increase in shell fragments and limestone to 30%
210	220	CLAY and SHELL FRAGMENTS, as above
220	230	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments, trace of phosphates
230	240	LIMESTONE, as above
240	250	LIMESTONE, as above
250	260	LIMESTONE, as above, trace of dark greenish gray clay
260	270	Missing Sample
270	280	LIMESTONE, as above
280	290	LIMESTONE, as above
290	300	LIMESTONE, as above
300	310	CLAY (70%), dark greenish gray (5G 4/1), sticky, trace of phosphates; LIMESTONE (30%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments
310	320	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments, trace of phosphates
320	330	CLAY (70%), dark greenish gray (5G 4/1), sticky, trace of phosphates; LIMESTONE (30%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments

**BONITA SPRINGS UTILITIES WRF DZMW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
330	340	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments, trace of phosphates
340	350	LIMESTONE, as above
350	360	LIMESTONE, as above
360	370	LIMESTONE, as above
370	380	LIMESTONE, as above
380	390	CLAY (60%), yellowish gray (5Y 7/2), marly texture, trace of phosphates; LIMESTONE (30%), yellowish gray (5Y 7/2), medium fragments, moderately consolidated, moderate porosity, fine grained, minor shell fragments
390	400	CLAY, as above
400	410	CLAY, as above
410	420	CLAY, as above, color change in clay to dark greenish gray (5G 4/1)
420	430	CLAY, as above
430	440	CLAY, as above
440	450	CLAY, as above, increase in limestone to 50%, high phosphates
450	460	CLAY, as above, color change in clay to yellowish gray (5Y 7/2)
460	470	CLAY, as above, decrease in limestone to 20%, trace of phosphates
470	480	CLAY, as above
480	490	CLAY, as above, decrease in limestone to 10%
490	500	CLAY, yellowish gray (5Y 7/2), marly texture, trace of limestone and phosphates
510	520	CLAY (80%), yellowish gray (5Y 7/2), marly texture, trace of phosphates; LIMESTONE (20%), yellowish gray (5Y 7/2), medium
520	530	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, well consolidated, moderate porosity, fine grained, shell molds
530	540	LIMESTONE, as above
540	550	LIMESTONE, as above
550	560	LIMESTONE, as above
560	570	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, well consolidated, moderate porosity, fine grained, shell molds
570	580	LIMESTONE, as above
580	590	LIMESTONE, as above
590	600	LIMESTONE, as above, small to large fragments, moderately consolidated
600	610	LIMESTONE, as above
610	620	LIMESTONE, as above
620	630	LIMESTONE, as above
630	640	LIMESTONE, as above
640	650	LIMESTONE, as above, medium fragments, well consolidated, dense
650	660	LIMESTONE, as above
660	670	LIMESTONE, as above, trace of marly clay
670	680	CLAY, very light gray (N8), marly texture, sticky, trace of limestone
680	690	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained, sandy texture, shell molds
690	700	LIMESTONE, as above
700	710	LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF DZMW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
710	720	LIMESTONE, as above
720	730	LIMESTONE, yellowish gray (5Y 7/2), small fragments, well consolidated, fine grained, sandy texture, shell fragments
730	740	LIMESTONE, as above
740	750	LIMESTONE, grayish orange (10YR 7/4), small to medium fragments, moderately consolidated, fine grained, sandy texture
750	760	LIMESTONE, as above
760	770	LIMESTONE, as above
770	780	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, well consolidated, fine grained, sandy texture, shell molds
780	790	LIMESTONE, as above
790	800	LIMESTONE, as above
800	810	LIMESTONE, as above
810	820	LIMESTONE, as above
820	830	LIMESTONE, as above
830	840	LIMESTONE, as above, trace of moderate yellowish brown (10YR 5/4) limestone
840	850	LIMESTONE, yellowish gray (5Y 7/2), small to large fragments, moderately consolidated, fine grained, dense, trace of marly clay
850	860	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained
860	870	LIMESTONE, as above
870	880	LIMESTONE, yellowish gray (5Y 7/2), medium fragments, well consolidated, fine grained, dense
880	890	LIMESTONE, as above, small to medium fragments, sandy texture
890	900	LIMESTONE, as above
900	910	LIMESTONE, as above, poorly consolidated
910	920	LIMESTONE, as above
920	930	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, poorly consolidated, fine grained, sandy texture
930	940	LIMESTONE, as above
940	950	LIMESTONE, as above
950	960	LIMESTONE, as above
960	970	SAND, yellowish gray (5Y 7/2), well consolidated, fine grained quartz
970	980	SAND, as above
980	990	SAND, as above
990	1000	SAND, as above
1000	1010	SAND, as above
1010	1020	SAND, as above
1020	1030	SAND, as above
1030	1040	SAND, as above
1040	1050	SAND, as above
1050	1060	SAND, as above
1060	1070	SAND, as above
1070	1080	SAND (50%), yellowish gray (5Y 7/2), well consolidated, fine grained quartz; LIMESTONE (50%), yellowish gray (5Y 7/2), very small to
1080	1090	SAND and LIMESTONE, as above
1090	1100	SAND and LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF DZMW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
1100	1110	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, fine grained, friable, very sandy texture
1110	1120	LIMESTONE, as above
1120	1130	LIMESTONE, as above
1130	1140	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, well consolidated, low porosity, fine grained, sandy texture, soft to friable
1140	1150	LIMESTONE, as above
1150	1160	LIMESTONE, as above
1160	1170	LIMESTONE, as above
1170	1180	LIMESTONE, as above, medium fragments, well consolidated
1180	1190	LIMESTONE, as above, small to medium fragments, moderately consolidated
1190	1200	LIMESTONE, as above, medium to large fragments, well consolidated
1200	1210	LIMESTONE, as above, moderately consolidated
1210	1220	LIMESTONE, as above
1220	1230	LIMESTONE, as above, trace dolomite
1230	1240	LIMESTONE, yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, friable, very sandy texture
1240	1250	LIMESTONE (50%), yellowish gray (5Y 7/2), very small to medium fragments, moderately consolidated, fine grained, friable, very sandy
1250	1260	LIMESTONE and DOLOMITE, as above
1260	1270	LIMESTONE, yellowish gray (5Y 8/1), small to medium fragments, well consolidated, fine grained, moderate porosity
1270	1280	LIMESTONE, as above
1280	1290	LIMESTONE, as above
1290	1300	LIMESTONE, as above
1300	1310	LIMESTONE, as above
1310	1320	LIMESTONE, as above, trace of dolomite
1320	1330	LIMESTONE, as above, sandy texture, no dolomite
1330	1340	LIMESTONE, as above, abundant foraminifera
1340	1350	LIMESTONE, as above
1350	1360	LIMESTONE, yellowish gray (5Y 8/1), medium to large fragments, well consolidated, low porosity, fine grained
1360	1370	LIMESTONE, as above, small to large fragments, moderately consolidated
1370	1380	LIMESTONE, as above
1380	1390	LIMESTONE, as above, abundant foraminifera
1390	1400	LIMESTONE, as above
1400	1410	LIMESTONE, as above, no foraminifera
1410	1420	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, well consolidated, low porosity, fine grained, sandy texture, soft to friable
1420	1430	LIMESTONE, as above, medium hardness, less sandy
1430	1440	LIMESTONE, as above
1440	1450	LIMESTONE, as above
1450	1460	LIMESTONE, as above
1460	1470	LIMESTONE, as above
1470	1480	LIMESTONE, yellowish gray (5Y 8/1), very small to large fragments, moderately consolidated, low porosity, fine grained, abundant
1480	1490	LIMESTONE, as above

**BONITA SPRINGS UTILITIES WRF DZMW-1  
LITHOLOGIC DESCRIPTIONS OF PILOT HOLE DRILL CUTTINGS**

Depth Logged (ft-bpl)		Observer's Description
From	To	
1490	1500	LIMESTONE, as above
1500	1510	LIMESTONE, as above
1510	1520	NO SAMPLE
1520	1530	NO SAMPLE
1530	1540	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, fine grained, trace of foraminifera
1540	1550	LIMESTONE, as above, well consolidated
1550	1560	LIMESTONE, yellowish gray (5Y 8/1), very small to large fragments, moderately consolidated, low porosity, very fine grained, abundant
1560	1570	LIMESTONE, as above
1570	1580	LIMESTONE, as above
1580	1590	LIMESTONE, as above
1590	1600	LIMESTONE, as above
1600	1610	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, fine grained, medium density
1610	1620	LIMESTONE, yellowish gray (5Y 8/1), small to large fragments, moderately consolidated, low porosity, very fine grained, silty texture,
1620	1630	DOLOMITE, dark yellowish brown (10YR 4/2), medium to large fragments, well consolidated, low porosity, medium density
1630	1640	DOLOMITE, as above
1640	1650	CLAY (80%), yellowish gray (5Y 7/2), marly texture; LIMESTONE (10%), yellowish gray (5Y 7/2), medium fragments, moderately
1650	1660	CLAY and LIMESTONE, as above
1660	1670	LIMESTONE, as above
1670	1680	LIMESTONE, as above
1680	1690	NO SAMPLE
1690	1700	LIMESTONE, yellowish gray (5Y 7/2), small to medium fragments, moderately consolidated, low porosity, fine grained, sandy texture
1700	1710	LIMESTONE, as above
1710	1720	LIMESTONE, as above
1720	1730	LIMESTONE, as above
1730	1740	LIMESTONE, as above
1740	1750	LIMESTONE, as above, trace of dolomite
1750	1755	LIMESTONE, yellowish gray (5Y 7/2), medium to large fragments, moderately consolidated, low porosity, fine grained, sandy texture

**Notes:**

bpl = below pad level

Lithologic color designations are based on the Rock Color Chart, distributed by the Geological Society of America, 1984.

APPENDIX G

# **Reverse-Air Water Quality Laboratory Results**

---

APPENDIX G.1

**WRF IW-1 Reverse-Air Water Quality  
Laboratory Results**

---

# Lab Project Summary

**Lab Project Num:** N0305421  
**Client:** CH2M Hill  
4350 W. Cypress St

Total Pages: 9

**Phone:** Tampa FL 33607  
813-874-6522  
**Fax:** 813-874-3056  
**E-mail:**  
**Client Project Name:** BSU  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.



Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03



## Laboratory Results

CH2M Hill  
 4350 W. Cypress St  
 Tampa, FL 33607

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-01	r-a iw-2 530' grab	Ground Water	5/20/03 15:45	5/18/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	134	J4	8	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	990	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	672	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-02	r-a iw-2 560' grab	Ground Water	5/20/03 15:45	5/18/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	115	J4	10	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	3130	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	4830	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-03	r-a iw-2 590' grab	Ground Water	5/20/03 15:45	5/18/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	136	J4	8	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	3000	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	3180	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03

### Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-04	r-a iw-2 620' grab	Ground Water	5/20/03 15:45	5/18/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	134	J4	8	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1120	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	664	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-05	r-a iw-2 650' grab	Ground Water	5/20/03 15:45	5/18/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	214	J4	8	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	500	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	832	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-06	r-a iw-2 680' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	184	J4	8	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1340	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	776	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-07	r-a iw-2 710' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	215	J4	10	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1210	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380

Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-07	r-a iw-2 710' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	4100	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-08	r-a iw-2 740' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	210	J4	20	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	3420	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	804	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-09	r-a iw-2 770' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	245	J4	20	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1390	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	832	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-10	r-a iw-2 800' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	250	J4	20	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1540	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	988	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>				<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>		
N0305421-11	r-a iw-2 830' grab				Ground Water	5/20/03 15:45	5/19/03 0:00		
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>	
Chloride	4500Cl-B	250	J4	20	mg/L	5/21/03 11:30	AK	E84380	
Conductivity	120.1	1530	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380	
Total Dissolved Solids	160.1	920	J4	10	mg/L	5/21/03 15:30	EW	E84380	
<u>Lab ID</u>	<u>Sample Description</u>				<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>		
N0305421-12	r-a iw-2 860' grab				Ground Water	5/20/03 15:45	5/19/03 0:00		
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>	
Chloride	4500Cl-B	265	J4	20	mg/L	5/21/03 11:30	AK	E84380	
Conductivity	120.1	1550	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380	
Total Dissolved Solids	160.1	1000	J4	10	mg/L	5/21/03 15:30	EW	E84380	
<u>Lab ID</u>	<u>Sample Description</u>				<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>		
N0305421-13	r-a iw-2 890' grab				Ground Water	5/20/03 15:45	5/19/03 0:00		
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>	
Chloride	4500Cl-B	610	J4	40	mg/L	5/21/03 11:30	AK	E84380	
Conductivity	120.1	2640	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380	
Total Dissolved Solids	160.1	2140	J4	10	mg/L	5/21/03 15:30	EW	E84380	
<u>Lab ID</u>	<u>Sample Description</u>				<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>		
N0305421-14	r-a iw-2 920' grab				Ground Water	5/20/03 15:45	5/19/03 0:00		
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>	
Chloride	4500Cl-B	370	J4	40	mg/L	5/21/03 11:30	AK	E84380	
Conductivity	120.1	3810	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380	

Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03

### Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-14	r-a iw-2 920' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	4650	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-15	r-a iw-2 950' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	340	J4	40	mg/L	5/21/03 11:30	AK	E84380
Conductivity	120.1	1670	J4	0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	1000	J4	10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-16	r-a iw-2 980' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	380		40	mg/L	5/22/03 10:00	AK	E84380
Conductivity	120.1	2270		0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	1630		10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-17	r-a iw-2 1010' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	360		40	mg/L	5/22/03 10:00	AK	E84380
Conductivity	120.1	1990		0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	1280		10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: BSU  
 Lab Project: N0305421  
 Report Date: 05/30/03

### Laboratory Results

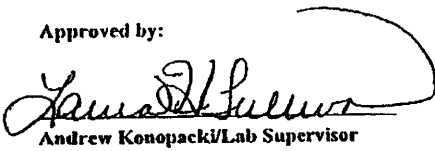
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-19	r-a iw-2 1070' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	380		40	mg/L	5/22/03 10:00	AK	E84380
Conductivity	120.1	1840		0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	1110		10	mg/L	5/21/03 15:30	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305421-20	r-a iw-2 1100' grab	Ground Water	5/20/03 15:45	5/19/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	390		40	mg/L	5/22/03 10:00	AK	E84380
Conductivity	120.1	1950		0.5	umhos/cm	5/21/03 12:30	EW	E84380
Total Dissolved Solids	160.1	1230		10	mg/L	5/21/03 15:30	EW	E84380

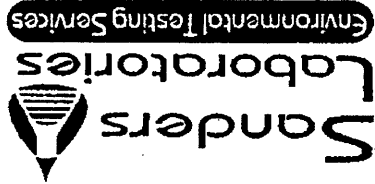
Approved by:



Andrew Konopacki/Lab Supervisor  
 Laura Sullivan/QA Officer  
 Kathrine Bartkiewicz/Lab Supervisor

Comments: Sample 1040 feet was not analyzed, due to improper preservation, per Dan Jablonski 05/21/03.  
 J4: The sample matrix interfered with the ability to make an accurate determination.

Test Results meet all the requirements of the NELAC standards.



**CHAIN-OF-CUSTODY RECORD**

PROJECT # N1021054121

Page 1 of 2

Client: CH2M HILL

Address \_\_\_\_\_

Phone: 410 484 8103 Fax: \_\_\_\_\_

Report To: Dr. J. Jablonski  
 Bill To: XBI  
 PO # \_\_\_\_\_  
 Project Name: ESU WRF TW-2  
 Project Location: ESU WRF

Sample Supply: \_\_\_\_\_  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: 5/17/03

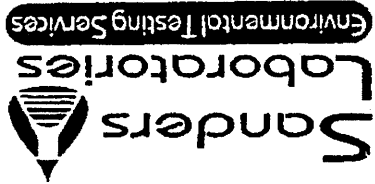
Sampled By (PRINT): Dan Jablonski

Sampler Signature: Dan Jablonski

Sample ID #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	PRESERVATIVES						ANALYSES REQUEST	
					4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	OTHER		
	KA TW-2 SSC	5/18		GW								X X X
		5/18		GW								
		5/18		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								
		5/19		GW								

Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED / DATE	VIA	RELINQUISHED BY / AFFILIATION						DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
					1	2	3	4	5	6					

Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED / DATE	VIA	RELINQUISHED BY / AFFILIATION						DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
					1	2	3	4	5	6					



**CHAIN-OF-CUSTODY RECORD**

PROJECT #         

Page 2 of 2

Client: Green Hill  
 Address: \_\_\_\_\_  
 Phone: 204 218 9421 Fax: \_\_\_\_\_

Report To: Dr. Jablonski  
 Bill To: YPT Inc.  
 Project Name: RSU WRF IW-2  
 Project Location: RSU WRF

Sample Supply: \_\_\_\_\_  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit #: \_\_\_\_\_  
 REQUESTED DUE DATE: 5/17/13

Sampled By (PRINT) Dr. Jablonski      Sampler Signature Dr. Jablonski

Sample ID #	ANALYSES REQUEST				DATE	TIME	TYPE	SAMPLE DESCRIPTION
	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL				
-11A			X	X	5/19	AM	R-A IW-2 980'	
-17A					5/19		1010'	
-19A					5/19		1040'	
-19B					5/19		1070'	
-20A					5/19		1100'	

Sample ID #	DATE	TIME	AFFILIATION	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	Bottle Lot #	SHIPMENT METHOD	RETURNED / DATE	VIA	COMMENTS	COOLER #	COOLER SEAL INTACT	Yes No
-11A	5/20	12:21	Green Hill	From Green Hill / Green Hill	5/20	12:21	Green Hill	5/20	12:21								
-17A																	
-19A																	
-19B																	
-20A																	



## Lab Project Summary

**Lab Project Num:** N0305618  
**Client:** CH2M Hill  
4350 W. Cypress St

Total Pages: 5

Tampa FL 33607  
**Phone:** 813-874-6522  
**Fax:** 813-874-3056  
**E-mail:**  
**Client Project Name:** BSU  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.



Laboratory Results

CH2M Hill  
 4350 W. Cypress St  
 Tampa, FL 33607

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305618-01	iw-2 r-a 1130' grab	Ground Water	5/29/03 10:50	5/23/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	760		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	3340		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1980	Q	10	mg/L	5/30/03 10:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305618-02	iw-2 r-a 1190' grab	Ground Water	5/29/03 10:50	5/23/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	800		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	3510		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1990	Q	10	mg/L	5/30/03 10:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0305618-03	iw-2 r-a 1220' grab	Ground Water	5/29/03 10:50	5/23/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	720		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	3040		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1760	Q	10	mg/L	5/30/03 10:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: BSU  
 Lab Project: N0305618  
 Report Date: 06/03/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-04	iw-2 r-a 1250' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	720		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	3090		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1820	Q	10	mg/L	5/30/03 10:00	EW	E84380
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-05	iw-2 r-a 1280' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	730		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	3170		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1880	Q	10	mg/L	5/30/03 10:00	EW	E84380
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-06	iw-2 r-a 1310' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	630		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	2800		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1500	Q	10	mg/L	5/30/03 10:00	EW	E84380
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-07	iw-2 r-a 1340' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	670		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	2680		0.5	umhos/cm	6/2/03 16:00	EW	E84380

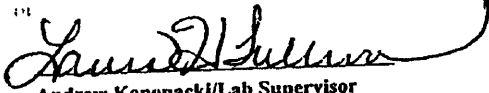
Client Project: BSU  
 Lab Project: N0305618  
 Report Date: 06/03/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-07	iw-2 r-a 1340' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	1550	Q	10	mg/l.	5/30/03 10:00	EW	E84380
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-08	iw-2 r-a 1370' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	650		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	2810		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1580	Q	10	mg/L	5/30/03 10:00	EW	E84380
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0305618-09	iw-2 r-a 1400' grab	Ground Water	5/29/03 10:50	5/23/03 0:00				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	680		40	mg/L	5/30/03 9:00	JL	E84380
Conductivity	120.1	2710		0.5	umhos/cm	6/2/03 16:00	EW	E84380
Total Dissolved Solids	160.1	1500	Q	10	mg/L	5/30/03 10:00	EW	E84380

Approved by:

Comments: Q = sample held beyond acceptable holding time.



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Test Results meet all the requirements of the NELAC standards.



**CHAIN-OF-CUSTODY RECORD**

PROJECT # 10305618

Page 1 of 1

Client CH2M HILL  
 Address \_\_\_\_\_  
 Phone 941-218-9421 Fax \_\_\_\_\_

Report To: Dan Jablonski, Job # 1  
 Bill To: YBI @ CH2M.HILL  
 P.O. # \_\_\_\_\_  
 Project Name FSU WRF PIW  
 Project Location: FSU WRF  
 Sample Supply: \_\_\_\_\_  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit #: \_\_\_\_\_  
 REQUESTED DUE DATE: Std 6/10/03

Sampled By (PRINT) <u>Dan Jablonski</u>					PRESERVATIVES				ANALYSES REQUEST													Sample ID #				
Sampler Signature <u>Dan Jablonski</u>					Sample				4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	<div style="text-align: center;"> <i>(Diagonal lines representing analysis requests)</i>            CI<sup>-</sup> IDES <i>(written)</i> </div>												
Bottle #	SAMPLE DESCRIPTION				DATE	TIME	TYPE														Sample ID #					
	Iw-2 R-A 1130'				5/23	-	GW														-C1A					
	" " 1190'				5/23	-	GW														-C2A					
	" " 1220'				5/23	-	GW														-C3A					
	" " 1250'				5/23	-	GW														-C4A					
	" " 1280'				5/23	-	GW														-C5A					
	" " 1310'				5/28	-	GW														-C6A					
	" " 1340'				5/28	-	GW														-C7A					
	" " 1370'				5/28	-	GW														-C8A					
	" " 1400'				5/28	-	GW														-C9A					
<del>_____</del>																										

Bottle Lot #	SHIPMENT METHOD		VIA	RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME
	OUT / DATE	RETURNED / DATE									
				<u>Dan Jablonski / CH2M HILL</u>		5/29	705	<u>(Signature)</u>		5/30	945
	COMMENTS:			COOLER #		5/29	1050	<u>(Signature)</u>		5/30	1115
				COOLER SEAL INTACT Yes No							

Sanders Laboratories, Inc.

# Lab Project Summary

**Lab Project Num:** N0306167  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 7

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

RECEIVED  
JUN 19 2003

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.



Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-01	IW-2 R-A 1430' grab	Ground Water	6/10/03 13:00	5/31/03 8:45

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	770		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	3570		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1980	Q	10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-02	IW-2 R-A 1460' grab	Ground Water	6/10/03 13:00	6/1/03 20:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	725		100	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2760		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1300	Q	10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-03	IW-2 R-A 1490' grab	Ground Water	6/10/03 13:00	6/1/03 21:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	710		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2980		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1690	Q	10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs

Lab Project: N0306167

Report Date: 06/13/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-04	IW-2 R-A 1520' grab	Ground Water	6/10/03 13:00	6/3/03 2:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	510		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2280		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1480	Q	10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-05	IW-2 R-A 1550' grab	Ground Water	6/10/03 13:00	6/6/03 17:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	520		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2330		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1290		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-06	IW-2 R-A 1580' grab	Ground Water	6/10/03 13:00	6/7/03 1:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	530		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2390		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1330		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-07	IW-2 R-A 1610' grab	Ground Water	6/10/03 13:00	6/7/03 22:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	550		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2370		0.5	umhos/cm	6/11/03 10:30	IR	E84380



Client Project: Bonita Springs

Lab Project: N0306167

Report Date: 06/13/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-07	IW-2 R-A 1610' grab	Ground Water	6/10/03 13:00	6/7/03 22:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	1310		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-08	IW-2 R-A 1640' grab	Ground Water	6/10/03 13:00	6/8/03 20:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	590		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2590		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1420		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-09	IW-2 R-A 1670' grab	Ground Water	6/10/03 13:00	6/10/03 1:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	670		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2900		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1660		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-10	IW-2 R-A 1700' grab	Ground Water	6/10/03 13:00	6/10/03 2:15

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	610		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2350		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1240		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs  
 Lab Project: N0306167  
 Report Date: 06/13/03

**Laboratory Results**

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-11	IW-2 R-A 1730' grab	Ground Water	6/10/03 13:00	6/10/03 3:00

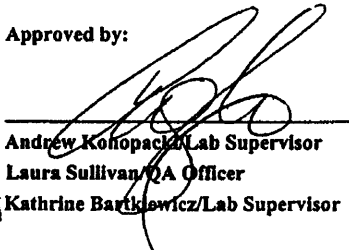
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	670		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2650		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1440		10	mg/L	6/10/03 14:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0306167-12	IW-2 R-A 1750' grab	Ground Water	6/10/03 13:00	6/10/03 5:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	700		40	mg/L	6/11/03 11:00	JL	E84380
Conductivity	120.1	2560		0.5	umhos/cm	6/11/03 10:30	IR	E84380
Total Dissolved Solids	160.1	1340		10	mg/L	6/10/03 14:00	EW	E84380

Approved by:

Comments: Q: Sample received beyond acceptable holding time.

  
 Andrew Kohopack/Lab Supervisor  
 Laura Sullivan/QA Officer  
 Kathrine Bartkiewicz/Lab Supervisor

Test Results meet all the requirements of the NELAC





CHAIN-OF-CUSTODY RECORD

PROJECT #

N0306167

Client YBI
Address
Phone 239 218 9421 Fax

Report To: Dan Jablonski (djablons@ch2m.com)
Bill To: YBI
P.O. #
Project Name BSU WRF DIW
Project Location: BSU WRF

Sample Supply:
Customer Type:
Field Report #:
Kit #
REQUESTED DUE DATE: Std 6/23/03

Table with columns: Sampled By, Sampler Signature, Sample Description, Date, Time, Type, Preservatives (4C, UNPRESERVED, H2SO4, HNO3, HCL), Analyses Request (CI-, TO5, Spec. Cond.), Sample ID #

Table with columns: Bottle Lot #, SHIPMENT METHOD, OUT / DATE, RETURNED DATE, VIA, RELINQUISHED BY / AFFILIATION, DATE, TIME, ACCEPTED BY / AFFILIATION, DATE, TIME, COMMENTS, COOLER #, COOLER SEAL INTACT

# Lab Project Summary

**Lab Project Num:** N0308039  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 10

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

Client Project: Bonita Springs

Lab Project: N0308039

Report Date: 08/07/03



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-01	BSU WWRF IW-2 1780' grab	Ground Water	8/5/03 13:05	7/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	670		40	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	3190		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	1920	Q	10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-02	BSU WWRF IW-2 1810' grab	Ground Water	8/5/03 13:05	7/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	720		40	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	3390		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	1840	Q	10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-03	BSU WWRF IW-2 1840' grab	Ground Water	8/5/03 13:05	7/30/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	860		40	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	4110		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	2300		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs

Lab Project: N0308039

Report Date: 08/07/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-04	BSU WWRF IW-2 1870' grab	Ground Water	8/5/03 13:05	7/30/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	880		40	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	4170		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	2310		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-05	BSU WWRF IW-2 1900' grab	Ground Water	8/5/03 13:05	7/30/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1400		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	5890		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	3710		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-06	BSU WWRF IW-2 1930' grab	Ground Water	8/5/03 13:05	7/31/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1700		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	5950		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	3700		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-07	BSU WWRF IW-2 1960' grab	Ground Water	8/5/03 13:05	7/31/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1770		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	6770		0.5	umhos/cm	8/5/03 16:30	EW	E84380

Client Project: Bonita Springs  
 Lab Project: N0308039  
 Report Date: 08/07/03

Laboratory Results

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-07	BSU WWRF IW-2 1960' grab	Ground Water	8/5/03 13:05	7/31/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Total Dissolved Solids	160.1	3760		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-08	BSU WWRF IW-2 1990' grab	Ground Water	8/5/03 13:05	8/1/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	1750		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	6310		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	3710		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-09	BSU WWRF IW-2 2020' grab	Ground Water	8/5/03 13:05	8/1/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	1000		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	4810		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	2460		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-10	BSU WWRF IW-2 2050' grab	Ground Water	8/5/03 13:05	8/1/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	1120		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	4940		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	2330		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
--------	--------------------	---------------	--------------------	------------------



Client Project: Bonita Springs  
 Lab Project: N0308039  
 Report Date: 08/07/03

Laboratory Results

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-11	BSU WWRF IW-2 2080' grab	Ground Water	8/5/03 13:05	8/2/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	4050		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	14800		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	9300		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-12	BSU WWRF IW-2 2110' grab	Ground Water	8/5/03 13:05	8/2/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	2100		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	7550		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	4650		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-13	BSU WWRF IW-2 2140' grab	Ground Water	8/5/03 13:05	8/2/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	2100		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	7750		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	4240		10	mg/L	8/5/03 15:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0308039-14	BSU WWRF IW-2 2170' grab	Ground Water	8/5/03 13:05	8/2/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	2150		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	8090		0.5	umhos/cm	8/5/03 16:30	EW	E84380

Client Project: Bonita Springs  
 Lab Project: N0308039  
 Report Date: 08/07/03

Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-14	BSU WWRF IW-2 2170' grab	Ground Water	8/5/03 13:05	8/2/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	4980		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-15	BSU WWRF IW-2 2200' grab	Ground Water	8/5/03 13:05	8/3/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	3000		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	9240		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	5190		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-16	BSU WWRF IW-2 2230' grab	Ground Water	8/5/03 13:05	8/3/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2250		100	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	9320		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	5820		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-17	BSU WWRF IW-2 2260' grab	Ground Water	8/5/03 13:05	8/3/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2750		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	9490		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	5420		10	mg/L	8/5/03 15:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

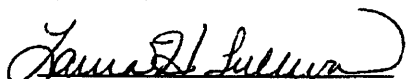
Client Project: Bonita Springs  
 Lab Project: N0308039  
 Report Date: 08/07/03

Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0308039-18	BSU WWRF IW-2 2320' grab	Ground Water	8/5/03 13:05	8/3/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2750		200	mg/L	8/5/03 14:00	JL	E84380
Conductivity	120.1	9650		0.5	umhos/cm	8/5/03 16:30	EW	E84380
Total Dissolved Solids	160.1	5440		10	mg/L	8/5/03 15:00	EW	E84380

Approved by:



Andrew Konopacki/Lab Supervisor  
 Laura Sullivan/QA Officer  
 Kathrine Bartkiewicz/Lab Supervisor

Comments: Q = sample held beyond acceptable holding time.

Test Results meet all the requirements of the NELAC standards.



# CHAIN-OF-CUSTODY RECORD

PROJECT # N0308039

Page \_\_\_\_\_ of \_\_\_\_\_

Client Youngquist Well Drilling  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

Report To: \_\_\_\_\_  
 Bill To: \_\_\_\_\_  
 P.O. # \_\_\_\_\_  
 Project Name BSU  
 Project Location: \_\_\_\_\_

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: \_\_\_\_\_

Sampled By (PRINT) <u>NIEL POSTLETHWAT</u>					PRESERVATIVES				ANALYSES REQUEST										Sample ID #			
Sampler Signature					4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CHLORIDE			TDS			CONDUCTIVITY						
Bottle #	SAMPLE DESCRIPTION			DATE						TIME	TYPE											
	BSU WWRF IW-2	1780'	7/29/03		G						X	X	X								-01A	
		1810'	7/29/03								X	X	X									-02A
		1840'	7/30/03								X	X	X									-03A
		1870'	7/30/03								X	X	X									-04A
		1900'	7/30/03								X	X	X									-05A
		1930'	7/31/03								X	X	X									-06A
		1960'	7/31/03								X	X	X									-07A
		1990'	8/1/03								X	X	X									-08A
Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION				DATE	TIME	ACCEPTED BY / AFFILIATION				DATE	TIME						
					client				8/4/03	1340	Sanders Lab				8/4/03	1400						
					Sanders Lab				8/5/03	1305	T. Bright				8/5/03	1305						
	COMMENTS: * see attached c-o-c's. for signatures.				COOLER #																	
					COOLER SEAL INTACT Yes No																	

Sanders Laboratories, Inc.





# CHAIN-OF-CUSTODY RECORD

PROJECT # N0308039

Page \_\_\_\_\_ of \_\_\_\_\_

Client Youngquist Well Drilling  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

Report To: \_\_\_\_\_  
 Bill To: \_\_\_\_\_  
 P.O. # \_\_\_\_\_  
 Project Name BSU  
 Project Location: \_\_\_\_\_

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit #: \_\_\_\_\_  
 REQUESTED DUE DATE: \_\_\_\_\_

Sampled By (PRINT) <u>Nick Posthewait</u>						PRESERVATIVES					ANALYSES REQUEST								Sample ID #	
Sampler Signature			Sample			4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	<del>CHLORIDE</del> <del>TDS</del> <del>CONDUCTIVITY</del>									
Bottle #	SAMPLE DESCRIPTION		DATE	TIME	TYPE															
	BSU WWRF 1W-2 2210'		8/3/03		G															-17A
	↓		8/3/03		G															-18A
Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	COMMENTS:									
					client	8/4/03	1340	Sanders Lab	8/4/03	1400										
					Sanders Lab	8/5/03	1305	T. Bright	8/5/03	1305										
					COOLER #															
					COOLER SEAL INTACT															
					Yes No															

## Lab Project Summary

**Lab Project Num:** F0308120  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 11

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

RECEIVED AUG 25 2003

Client Project: Bonita Springs  
 Lab Project: F0308120  
 Report Date: 08/19/03



Laboratory Results

Youngquist Brothers, Inc.  
 15465 Pine Ridge Road  
 Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-01	IW-2 R-A/2590' grab	Ground Water	8/13/03 11:50	8/8/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	21700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53600		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	39600		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-02	IW-2 R-A/2620' grab	Ground Water	8/13/03 11:50	8/8/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	21200		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53800		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	37900		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-03	IW-2 R-A/2650' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53800		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	36000		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------



Client Project: Bonita Springs

Lab Project: F0308120

Report Date: 08/19/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-04	IW-2 R-A/2680' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	54000		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	38600		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-05	IW-2 R-A/2710' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
loride	4500Cl-B	12000		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	36800		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	25500		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-06	IW-2 R-A/2740' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53600		0.5	umhos/cm	8/18/03 17:30	EW	E84380
Total Dissolved Solids	160.1	34100		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-07	IW-2 R-A/2770' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53200		0.5	umhos/cm	8/15/03 9:00	EW	E84380

Client Project: Bonita Springs  
 Lab Project: F0308120  
 Report Date: 08/19/03

Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-07	IW-2 R-A/2770' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	33300		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-08	IW-2 R-A/2800' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	52400		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	41100		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-09	IW-2 R-A/2830' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	48400		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	40000		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-10	IW-2 R-A/2860' grab	Ground Water	8/13/03 11:50	8/9/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20200		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	49600		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	37800		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs

Lab Project: F0308120

Report Date: 08/19/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-11	IW-2 R-A/2890' grab	Ground Water	8/13/03 11:50	8/10/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	19700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	49900		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	35100		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-12	IW-2 R-A/2920' grab	Ground Water	8/13/03 11:50	8/10/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20000		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	49300		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	37600		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-13	IW-2 R-A/2950' grab	Ground Water	8/13/03 11:50	8/10/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	21500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	52200		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	35700		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-14	IW-2 R-A/2980' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	18700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	51800		0.5	umhos/cm	8/15/03 9:00	EW	E84380

Client Project: Bonita Springs

Lab Project: F0308120

Report Date: 08/19/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-14	IW-2 R-A/2980' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	39500		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-15	IW-2 R-A/3010' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	18700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	52700		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	34200		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-16	IW-2 R-A/3040' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20700		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	52600		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	37600		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0308120-17	IW-2 R-A/3070' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	52200		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	38200		10	mg/L	8/14/03 17:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs

Lab Project: F0308120

Report Date: 08/19/03

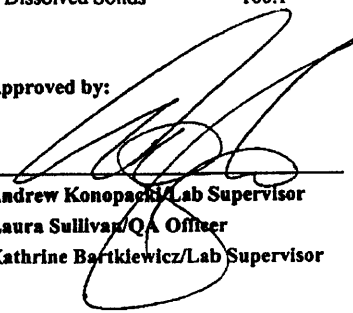
Laboratory Results

<b>Lab ID</b>	<b>Sample Description</b>	<b>Sample Source</b>	<b>Received Date/Time</b>	<b>Sample Date/Time</b>
F0308120-18	IW-2 R-A/3100' grab	Ground Water	8/13/03 11:50	8/11/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	21500		1000	mg/L	8/15/03 9:00	JL	E84380
Conductivity	120.1	53200		0.5	umhos/cm	8/15/03 9:00	EW	E84380
Total Dissolved Solids	160.1	36000		10	mg/L	8/14/03 17:00	EW	E84380

Approved by:

Comments:



Andrew Konopacki/Lab Supervisor  
Laura Sullivan/QA Officer  
Kathrine Bartkiewicz/Lab Supervisor

Test Results meet all the requirements of the NELAC standards.



August 18, 2003

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Fort Myers, FL 33908

Reference: Analysis Certification Letter  
Sanders Laboratory Report: F0308120

**"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or person who manages the system or those person directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitted false information, including the possibility of fine and imprisonment for knowing violation."**



Andy Konopacki  
Laboratory Supervisor



CHAIN-OF-C TODAY RECORD

PROJECT # F030 120

Page 1 of 3

Client CH2M HILL  
 Address \_\_\_\_\_  
 Phone 239 218 9421 Fax \_\_\_\_\_

Report To: CH2M HILL  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DIW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: Std 8/14/03

Sampled By (PRINT)		PRESERVATIVES					ANALYSES REQUEST									
Dan Jablonski		4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	Cond. TDS CF-									
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	Sample ID #											
	IW-2 R-A 2590'	8/8	00:00	GW	01A											
	2620'	8/8			02A											
	2650'	8/8			03A											
	2680'	8/9			04A											
	2710'	8/9			05A											
	2740'	8/9			06A											
	2770'	8/9			07A											
	2800'	8/9			08A											
Bottle Lot #	SHIPMENT METHOD	VIA	RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME						
	OUT / DATE <td>RETURNED DATE <td colspan="2">Tom Jablonski / CH2M HILL</td> <td>8/13</td> <td>1100</td> <td colspan="2">JL DTA</td> <td>8/13/03</td> <td>1100</td> </td>	RETURNED DATE <td colspan="2">Tom Jablonski / CH2M HILL</td> <td>8/13</td> <td>1100</td> <td colspan="2">JL DTA</td> <td>8/13/03</td> <td>1100</td>	Tom Jablonski / CH2M HILL		8/13	1100	JL DTA		8/13/03	1100						
	COMMENTS:	COOLER #	[Signature]		8/13/03	1150	Ky [Signature]		8/13/03	1150						
		COOLER SEAL INTACT	[Signature]		8/14/03	1100	[Signature]		8/14/03	1100						
		Yes No	[Signature]		8/14/03	1400	[Signature]		8/14/03	1400						

Sanders Laboratories, Inc.



CHAIN-OF-C TODAY RECORD

PROJECT # For 8120

Page 2 of 3

Client CH2M HILL  
 Address \_\_\_\_\_  
 Phone 239 218 9421 Fax \_\_\_\_\_

Report To: CH2M HILL  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DIW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: Std 8/11/07

Sampled By (PRINT)		Sample			PRESERVATIVES				ANALYSES REQUEST										Sample ID #	
Dan Jablonski		DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	/ /										
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	Cond	Cl-	TDS								Sample ID #
	IW-2 R-A 2830'	8/9	00:00	GW		✓				X	X	X								09A
	2860'	8/9				✓														10A
	2890'	8/10				✓														11A
	2920'	8/10				✓														12A
	2950'	8/10				✓														13A
	2980'	8/11				✓														14A
	3010'	8/11				✓														15A
	3040'	8/11				✓				↓	↓	↓								16A
Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION			DATE	TIME	ACCEPTED BY / AFFILIATION			DATE	TIME						
					Tom Adami / CH2M HILL			8/13	1100	K.M. Burt			8/13/07	1100						
	COMMENTS:				K.M. Burt			8/13/07	1150	K.M. Burt			8/13/07	1100						
					K.M. Burt			8/14/07	1100	K.M. Burt			8/14/07	1100						
						K.M. Burt			8/14/07	1400	K.M. Burt			8/14/07	1400					
					COOLER #															
					COOLER SEAL INTACT															
					Yes No															





CHAIN-OF-CUSTODY STUDY RECORD

PROJECT # F03-5120

Page 3 of 3

Client CH2M HILL  
 Address \_\_\_\_\_  
 Phone 239 218 9421 Fax \_\_\_\_\_

Report To: CH2M HILL  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DIW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit #: \_\_\_\_\_  
 REQUESTED DUE DATE: STJ 8/21/03

Sampled By (PRINT) <u>Dan Jablonski</u>			PRESERVATIVES				ANALYSES REQUEST																	
Sampler Signature <u>Dan Jablonski</u>		Sample					UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	<i>GT</i> <i>IDS</i> <i>COND.</i>													
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C																Sample ID #			
	<u>IW-2 R-A 3070'</u>	<u>8/11</u>	<u>00:00</u>	<u>GW</u>	<input checked="" type="checkbox"/>																	<u>17A</u>		
	<u>" " 3100'</u>	<u>8/11</u>	<u>00:00</u>	<u>GW</u>	<input checked="" type="checkbox"/>																	<u>18A</u>		
Bottle Lot # _____			SHIPMENT METHOD																					
	OUT / DATE	RETURNED DATE	VIA			RELINQUISHED BY / AFFILIATION			DATE	TIME	ACCEPTED BY / AFFILIATION			DATE	TIME									
						<u>T. Jablonski / CH2M HILL</u>			<u>8/13</u>	<u>1100</u>	<u>[Signature]</u>			<u>8/13/03</u>	<u>1100</u>									
			<b>COOLER #</b>			<u>[Signature]</u>			<u>8/13/03</u>	<u>1150</u>	<u>[Signature]</u>			<u>8/13/03</u>	<u>1150</u>									
						<u>[Signature]</u>			<u>8/14/03</u>	<u>1100</u>	<u>[Signature]</u>			<u>8/14/03</u>	<u>1100</u>									
			<b>COOLER SEAL INTACT</b>			<u>[Signature]</u>			<u>8/14/03</u>	<u>1400</u>	<u>[Signature]</u>			<u>8/14/03</u>	<u>1400</u>									
			<b>Yes No</b>																					

# Lab Project Summary

**Lab Project Num:** F0308280  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 4

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon re
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Lab
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

RECEIVED SEP - 2 2003

Nokomis Lab ~ 1050 Endeavor Ct. ~ Nokomis, FL 34275-3623 ~ Phone: 941-488-8103 ~ Fax: 941-484-6774 ~ HRS Certification # E84380  
Fort Myers Lab ~ 16880 Gator Road ~ Fort Myers, FL 33912 ~ Phone: 941-590-0337 ~ Fax: 941-590-0536 ~ HRS Certification # E85457



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
F0308280-01	IW2-R-A/3130' grab	Ground Water	8/22/03 13:00	8/16/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	21200		2000	mg/L	8/26/03 15:30	BG	E85457
Conductivity	120.1	58000		0.1	umhos/cm	8/28/03 8:45	BG	E85457
Total Dissolved Solids	160.1	36100		350	mg/L	8/23/03 9:45	BG	E85457

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
F0308280-02	IW2 R-A/3160' grab	Ground Water	8/22/03 13:00	8/16/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	23200		2000	mg/L	8/26/03 15:30	BG	E85457
Conductivity	120.1	56800		0.1	umhos/cm	8/28/03 8:45	BG	E85457
Total Dissolved Solids	160.1	35600		350	mg/L	8/23/03 9:45	BG	E85457

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
F0308280-03	IW2 R-A/3190' grab	Ground Water	8/22/03 13:00	8/17/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	22500		2000	mg/L	8/26/03 15:30	BG	E85457
Conductivity	120.1	57000		0.1	umhos/cm	8/28/03 8:45	BG	E85457
Total Dissolved Solids	160.1	34800		350	mg/L	8/23/03 9:45	BG	E85457

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
--------	--------------------	---------------	--------------------	------------------

Client Project: Bonita Springs

Lab Project: F0308280

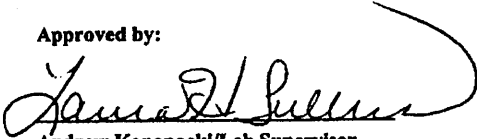
Report Date: 08/28/03

Laboratory Results

<b>Lab ID</b> F0308280-04	<b>Sample Description</b> IW@ R-A/3220' grab	<b>Sample Source</b> Ground Water	<b>Received Date/Time</b> 8/22/03 13:00	<b>Sample Date/Time</b> 8/18/03 0:00
------------------------------	--	--------------------------------------	--	---

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20500		2000	mg/L	8/26/03 15:30	BG	E85457
Conductivity	120.1	56200		0.1	umhos/cm	8/28/03 8:45	BG	E85457
Total Dissolved Solids	160.1	35600		350	mg/L	8/23/03 9:45	BG	E85457

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC standards.



**CHAIN-OF-CUSTODY RECORD**

PROJECT # 10308280

Page 1 of 1

Client CH2M HILL  
 Address \_\_\_\_\_  
 Phone 239-218-9421 Fax \_\_\_\_\_

Report To: CH2M HILL  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DIW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: STD 8-29-03

Sampled By (PRINT) <u>MARK SCHILLING</u>					PRESERVATIVES					ANALYSES REQUEST										Sample ID #				
Sampler Signature <u>Mark Schilling</u>					4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	/ / / / / / / / / / / / / / / /														
Bottle #	SAMPLE DESCRIPTION									DATE	TIME	TYPE												
	TW-2 R-A 3130'				8/16	00:00	GW	/														01A		
	↓ 3160'				8/16	↓	↓	/															02A	
	↓ 3190'				8/17	↓	↓	/															03A	
	↓ 3220'				8/18	↓	↓	/															04A	
Bottle Lot #					SHIPMENT METHOD					RELINQUISHED BY / AFFILIATION					ACCEPTED BY / AFFILIATION									
OUT / DATE					RETURNED DATE					VIA					DATE					TIME				
										<u>Mark Schilling / CH2M HILL</u>					<u>[Signature]</u>					8/22/03 11:45				
COMMENTS:					COOLER #					<u>[Signature]</u>					<u>[Signature]</u>					8/22/03 13:00				
					COOLER SEAL INTACT																			
					Yes No																			

APPENDIX G.2

**WRF DZMW-1 Reverse-Air Water  
Quality Laboratory Results**

---

# Lab Project Summary

**Lab Project Num:** N0304043  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 8

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

RECEIVED

APR 15 2003



Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Fort Myers, FL 33908

Reference: Analysis Certification Letter  
Sanders Laboratory Report: N0304043

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or person who manages the system or those person directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitted false information, including the possibility of fine and imprisonment for knowing violation.”

  
Laura H. Sullivan  
QAO



Client Project: Bonita Springs

Lab Project: N0304043

Report Date: 04/09/03



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0304043-01	dzmw-1 1260' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	900		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	5250		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	2640		10	mg/L	4/3/03 8:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0304043-02	dzmw-1 1290' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	950		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	5360		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	2660		10	mg/L	4/3/03 8:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0304043-03	dzmw-1 1320' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	1750		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	6890		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4120		10	mg/L	4/3/03 8:00	EW	E84380

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
--------	--------------------	---------------	--------------------	------------------

Client Project: Bonita Springs

Lab Project: N0304043

Report Date: 04/09/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-04	dzmw-1 1350' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1050		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	5530		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	2720		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-05	dzmw-1 1380' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2200		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8350		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4860		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-06	dzmw-1 1410' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2350		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8590		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	5420		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-07	dzmw-1 1440' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1800		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	7150		0.5	umhos/cm	4/3/03 14:30	EW	E84380

Client Project: Bonita Springs

Lab Project: N0304043

Report Date: 04/09/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-07	dzmw-1 1440' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	4540		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-08	dzmw-1 1470' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1950		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8100		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	5140		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-09	dzmw-1 1500' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1800		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	7130		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	3800		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-10	dzmw-1 1530' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	1800		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	7240		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4500		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
---------------	---------------------------	----------------------	---------------------------	-------------------------

Client Project: Bonita Springs

Lab Project: N0304043

Report Date: 04/09/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-11	dzmw-1 1560' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2200		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8460		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	5700		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-12	dzmw-1 1590' grab	Ground Water	4/2/03 14:00	3/28/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2000		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	7620		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4880		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-13	dzmw-1 1620' grab	Ground Water	4/2/03 14:00	3/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2200		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8240		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4820		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-14	dzmw-1 1650' grab	Ground Water	4/2/03 14:00	3/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2250		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8550		0.5	umhos/cm	4/3/03 14:30	EW	E84380

Client Project: Bonita Springs

Lab Project: N0304043

Report Date: 04/09/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-14	dzmw-1 1650' grab	Ground Water	4/2/03 14:00	3/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	4780		10	mg/L	4/3/03 8:00	EW	E84380

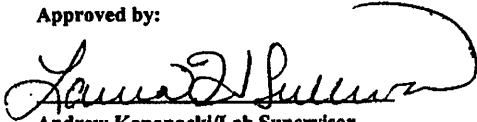
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-15	dzmw-1 1680' grab	Ground Water	4/2/03 14:00	3/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2000		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	8010		0.5	umhos/cm	4/3/03 14:30	EW	E84380
tal Dissolved Solids	160.1	4500		10	mg/L	4/3/03 8:00	EW	E84380

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0304043-16	dzmw-1 1700' grab	Ground Water	4/2/03 14:00	3/29/03 0:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2000		200	mg/L	4/3/03 9:00	JL	E84380
Conductivity	120.1	7980		0.5	umhos/cm	4/3/03 14:30	EW	E84380
Total Dissolved Solids	160.1	4980		10	mg/L	4/3/03 8:00	EW	E84380

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC



# CHAIN-OF-CUSTODY RECORD

PROJECT # N0304043

Page 1 of 1

Client YBI  
 Address \_\_\_\_\_  
 Phone 239 218 9421 Fax \_\_\_\_\_

Report To: Dan Jablonski  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSV RO DIW  
 Project Location: BSV WTP

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: Std. 4/5/03

Sampled By (PRINT) <u>Dan Jablonski</u>			PRESERVATIVES				ANALYSES REQUEST															
Sampler Signature <u>Dan Jablonski</u>			Sample			4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	/ /											
Bottle #	SAMPLE DESCRIPTION		DATE	TIME	TYPE																Sample ID #	
	DEMW-1 R-A Sample - 1260'		3/28	N/A	GW									X	X	X						-01A
	" " 1290'		3/28																			-02A
	" " 1320'		3/28																			-03A
	" " 1350'		3/28																			-04A
	" " 1380'		3/28																			05A
	" " 1410'		3/28																			06A
	" " 1440'		3/28																			07A
	" " 1470'		3/28																			08A
	" " 1500'		3/28																			09A
	" " 1530'		3/28																			10A
	" " 1560'		3/28																			11A
	" " 1590'		3/28																			12A
	" " 1620'		3/29																			13A
	" " 1650'		3/29																			14A
	" " 1680'		3/29																			15A

Comments	COOLER #	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
COMMENTS:		Dan Jablonski / CH2M HILL	4/2	930	<u>Jobl</u>	4/2/03	930
		<u>Jobl</u>	4/2/03	1400	T. Bright	4/2/03	1400
		COOLER SEAL INTACT					
	Yes No						

Sanders Laboratories, Inc.

APPENDIX H

## **Core Laboratory Results**

---



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

March 11, 2004  
File Number 02-184

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Fort Myers, Florida 33908

RECEIVED  
MAR 15 2004

Attention: Mr. Edward McCullers

Subject: Laboratory Testing of Rock Core Samples from Bonita Springs Utilities WRF  
Injection Well IW-2

Gentlemen:

As requested, permeability, effective porosity and specific gravity tests have been completed on six rock core samples provided for testing by your firm from the Bonita Springs Utilities WRF Injection Well IW-2. The samples were received in our laboratory between September 12, 2003 and September 24, 2003. The permeability tests were performed in general accordance with ASTM Standard D 5084 "Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible-Wall Permeameter" using the constant-head method (Method A). The specific gravity was determined in general accordance with ASTM Standard D 854 "Specific Gravity of Soils".

Due to the irregular shape and short length of the core samples, each of the requested tests (i.e., vertical permeability test, horizontal permeability test and unconfined compression test) could not be performed on each sample. As instructed, priority was given to obtaining specimens from the samples for vertical and horizontal permeability tests.

#### Permeability Tests

The permeability test results are presented in Table 1. The vertical permeability tests were performed first on specimens maintained at the as-received diameter (except for the core sample from 1932 ft) and cut to lengths of 6.8 to 10.8 cm. After completing the vertical permeability tests, horizontal permeability test specimens were obtained from five of the samples by coring 5.0 cm diameter cylinders from the vertical specimens. The horizontal specimens were then trimmed to lengths of 7.0 to 8.5 cm to provide flat, parallel ends. The final moisture contents of the vertical test specimens that were cored for horizontal specimens were not measured. The dry density and degree of saturation of those vertical permeability test specimens, therefore, were estimated using the final moisture contents from the corresponding horizontal permeability test specimens.

The vertical permeability test specimens were air-dried, deaired under vacuum, and then saturated with deaired tap water from the bottom upward while still under vacuum. After testing, the vertical specimens were maintained submerged in water until cored for horizontal specimens and retested for measurement of horizontal hydraulic conductivity. Each specimen was mounted in a triaxial-type permeameter and encased within a latex membrane. The specimens were confined using an average isotropic effective confining stress of 30 lb/in<sup>2</sup> and permeated with deaired tap water under a back-pressure of 70 lb/in<sup>2</sup> or 160 lb/in<sup>2</sup>. Satisfactory saturation was verified by a B-factor equal to or greater than 95 percent, or a B-factor that remained relatively constant for two consecutive increments of applied cell pressure. The inflow to and outflow from each specimen were monitored



with time, and the hydraulic conductivity was calculated for each recorded flow increment. The tests were continued until steady-state flow conditions were obtained, as evidenced by an outflow/inflow ratio between 0.75 and 1.25, and until stable values of hydraulic conductivity were measured.

The final degree of saturation was calculated upon completion of testing using the final dry mass, moisture content and volume, and the measured specific gravity. Although some of the calculated final degrees of saturation are low (i.e., less than 95%), the B-factors indicate satisfactory saturation. The calculated final degrees of saturation are potentially affected by occluded voids within the specimens, surface irregularities, and the use of final moisture contents for vertical permeability specimens from corresponding horizontal permeability specimens.

### Specific Gravity Tests

The specific gravity of each sample was determined on a representative approximately 100 gram specimen ground to pass the U.S. Standard No. 40 sieve. The specific gravity measured on each sample is presented in Table 1.

### Total Porosity

The total porosity,  $n$ , of each permeability test specimen was calculated using the measured dry density,  $\gamma_d$ , and measured specific gravity,  $G_s$ , from the equation:  $n = 1 - [\gamma_d / (G_s)(\gamma_w)]$  where  $\gamma_w$  = unit weight of water. The calculated total porosities are presented in Table 1.

### Effective Porosity


The effective porosity (i.e., the portion of the pore space effective in transmitting flow) of each sample was estimated by flowing a salt (NaCl) solution through each vertical permeability test specimen and monitoring the increase in conductivity of the outflow as the pore water in the specimen was displaced by the high conductivity (75,600  $\mu$ mhos) salt solution. Assuming no reaction between the salt solution and specimen, the arrival time and corresponding volume of flow when the outflow conductivity equals 50% of the salt solution conductivity can be used to estimate effective porosity from advective transport theory. The effective porosities of the vertical permeability test specimens estimated by this technique are tabulated below.

Core Depth (feet)	Porosity	
	Total	Effective
1442 - 1442.5	0.25	0.20
1834	0.28	0.26
1932	0.19	0.17
2080.5 - 2081	0.22	0.22
2330.5 - 2331	0.26	0.25
2398 - 2399	0.07	0.05

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions about the test results or require additional testing services, please contact us.

Very truly yours,  
ARDAMAN & ASSOCIATES, INC.



Shawkat Ali, Ph.D., P.E.  
Quality Control Manager



Thomas S. Ingra, P.E.  
Laboratory Director  
Florida Registration No. 31987

SA/TSI/sa

Table 1  
**PERMEABILITY TEST RESULTS**  
**BONITA SPRINGS UTILITIES WRF INJECTION WELL IW-2**

Core Depth (feet)	D-5084 Test Method*	Test Specimen Orientation	G <sub>s</sub>	Initial Conditions					$\bar{\sigma}_c$ (lb/in <sup>2</sup> )	u <sub>b</sub> (lb/in <sup>2</sup> )	B Factor (%)	Average Hydraulic Gradient	Final Conditions			Hydraulic Conductivity k <sub>20</sub> (cm/sec)
				Length (cm)	Diameter (cm)	w <sub>c</sub> (%)	γ <sub>d</sub> (lb/ft <sup>3</sup> )	n					w <sub>c</sub> (%)	γ <sub>d</sub> (lb/ft <sup>3</sup> )	S (%)	
1442 - 1442.5	A	Vertical	2.71	10.14	10.06	12.0	126.6	0.25	30	160	100	51	12.0 *	126.6	97	6.6x10 <sup>-8</sup>
	A	Horizontal		7.72	5.02	12.0	126.8	0.25	30	160	97	31	12.0	126.8	97	7.4x10 <sup>-7</sup>
1834	A	Vertical	2.71	6.75	9.60	14.2	122.3	0.28	30	160	96	35	14.2 †	122.3	100	1.3x10 <sup>-5</sup>
	A	Horizontal		7.87	5.01	14.2	122.1	0.28	30	160	93**	20	14.2	122.1	100	1.4x10 <sup>-5</sup>
1932	A	Vertical	2.73	8.91	5.02	8.4	137.6	0.19	30	160	100	25	8.4	137.6	96	2.9x10 <sup>-7</sup>
2080.5 - 2081	A	Vertical	2.70	10.75	9.89	10.0	131.6	0.22	30	70	92**	27	10.0 †	131.6	97	6.4x10 <sup>-7</sup>
	A	Horizontal		8.02	5.01	10.0	132.6	0.21	30	160	77**	36	10.0	132.6	100	6.6x10 <sup>-7</sup>
2330.5 - 2331	A	Vertical	2.72	10.09	9.86	12.1	125.5	0.26	30	70	83**	29	12.1 †	125.5	94	4.0x10 <sup>-6</sup>
	A	Horizontal		6.98	5.02	12.1	126.9	0.25	30	160	98	16	12.1	126.9	98	7.8x10 <sup>-6</sup>
2398 - 2399	A	Vertical	2.84	10.48	10.10	1.7	165.2	0.07	30	70	57**	39	1.7 †	165.2	68	5.6x10 <sup>-9</sup>
	A	Horizontal		8.51	5.03	1.7	165.0	0.07	30	160	87**	78	1.7	165.0	67	2.0x10 <sup>-8</sup>

Where: w<sub>c</sub> = Moisture content; γ<sub>d</sub> = Dry density; G<sub>s</sub> = Specific gravity; n = Total Porosity;  $\bar{\sigma}_c$  = Average isotropic effective confining stress; u<sub>b</sub> = Back-pressure; and S = Calculated degree of saturation using measured specific gravity.

\* Method A = Constant-head test.  
 \*\* B-Factor remained relatively constant for two consecutive increments of applied cell pressure.  
 † Vertical permeability test specimen was cored upon completion of testing to obtain horizontal permeability test specimen. The final moisture content of the vertical test specimen was not measured, and was assumed to be the same as the horizontal permeability test specimen.



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

November 21, 2003  
File Number 02-184

RECEIVED NOV 24 2003

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Fort Myers, Florida 33908

Attention: Mr. Edward McCullers

Subject: Laboratory Testing of Rock Core Samples from Bonita Springs Utilities WRF  
Injection Well IW-2

Gentlemen:

As requested, permeability, effective porosity and specific gravity tests have been completed on four rock core samples provided for testing by your firm from the Bonita Springs Utilities WRF Injection Well IW-2. The permeability tests were performed in general accordance with ASTM Standard D 5084 "Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible-Wall Permeameter" using the constant-head method (Method A) and the falling-head with increasing tailwater level method (Method C). The specific gravity was determined in general accordance with ASTM Standard D 854 "Specific Gravity of Soils".

#### Permeability Tests

The permeability test results are presented in Table 1. The vertical permeability tests were performed first on specimens maintained at the as-received diameter and cut to lengths of 5.8 to 10.1 cm. After completing the vertical permeability tests, horizontal permeability test specimens were obtained from three of the samples by coring 5.0 cm diameter cylinders from the vertical specimens (the fourth sample was too short to core). The horizontal specimens were then trimmed to lengths of 3.9 to 7.9 cm to provide flat, parallel ends. The final moisture contents of the vertical test specimens that were cored for horizontal specimens were not measured. The dry density and degree of saturation of those vertical permeability test specimens, therefore, were estimated using the final moisture contents from the corresponding horizontal permeability test specimens.

The vertical permeability test specimens were air-dried, deaired under vacuum, and then saturated with deaired tap water from the bottom upward while still under vacuum. After testing, the vertical specimens were maintained submerged in water until cored for horizontal specimens and retested for measurement of horizontal hydraulic conductivity. Each specimen was mounted in a triaxial-type permeameter and encased within a latex membrane. The specimens were confined using an average isotropic effective confining stress of 30 lb/in<sup>2</sup> and permeated with deaired tap water under a back-pressure of 70 lb/in<sup>2</sup> or 160 lb/in<sup>2</sup>. Satisfactory saturation was verified by a B-factor equal to or greater than 95 percent, or a B-factor that remained relatively constant for two consecutive increments of applied cell pressure. The inflow to and outflow from each specimen were monitored

with time, and the hydraulic conductivity was calculated for each recorded flow increment. The tests were continued until steady-state flow conditions were obtained, as evidenced by an outflow/inflow ratio between 0.75 and 1.25, and until stable values of hydraulic conductivity were measured.

The final degree of saturation was calculated upon completion of testing using the final dry mass, moisture content and volume, and the measured specific gravity. Although some of the calculated final degrees of saturation are low (i.e., less than 95%), the B-factors indicate satisfactory saturation. The calculated final degrees of saturation are potentially affected by occluded voids within the specimens, surface irregularities, and the use of final moisture contents for vertical permeability specimens from corresponding horizontal permeability specimens.

### Specific Gravity Tests

The specific gravity of each sample was determined on a representative approximately 100 gram specimen ground to pass the U.S. Standard No. 40 sieve. The specific gravity measured on each sample is presented in Table 1.

### Total Porosity

The total porosity,  $n$ , of each permeability test specimen was calculated using the measured dry density,  $\gamma_d$ , and measured specific gravity,  $G_s$ , from the equation:  $n = 1 - [\gamma_d / (G_s)(\gamma_w)]$  where  $\gamma_w$  = unit weight of water. The calculated total porosities are presented in Table 1.

### Effective Porosity

The effective porosity (i.e., the portion of the pore space effective in transmitting flow) of each sample was estimated by flowing a salt (NaCl) solution through each vertical permeability test specimen and monitoring the increase in conductivity of the outflow as the pore water in the specimen was displaced by the high conductivity (86,500 to 88,200  $\mu\text{mhos}$ ) salt solution. Assuming no reaction between the salt solution and specimen, the arrival time and corresponding volume of flow when the outflow conductivity equals 50% of the salt solution conductivity can be used to estimate effective porosity from advective transport theory. The effective porosities of the vertical permeability test specimens estimated by this technique are tabulated below.

Core Depth (feet)	Porosity	
	Total	Effective
1540.0 - 1540.3	0.38	0.35
1601.0 - 1601.3	0.31	0.15
1640.0 - 1642.0	0.14	0.09
1681.0 - 1681.4	0.33	0.28

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact us if you have any questions. Testing on six other core samples is still in progress. The results will be submitted as the tests are completed.

Very truly yours,  
ARDAMAN & ASSOCIATES, INC.



Shawkat Ali, Ph.D., P.E.  
Quality Control Manager



Thomas S. Ingra, P.E.  
Laboratory Director  
Florida Registration No. 31987

SA/TSI/sa

Table 1

**PERMEABILITY TEST RESULTS  
 BONITA SPRINGS UTILITIES WRF INJECTION WELL IW-2**

Core Depth (feet)	D-5084 Test Method*	Test Specimen Orientation	G <sub>s</sub>	Initial Conditions					$\bar{\sigma}_c$ (lb/in <sup>2</sup> )	u <sub>b</sub> (lb/in <sup>2</sup> )	B Factor (%)	Average Hydraulic Gradient	Final Conditions			Hydraulic Conductivity k <sub>20</sub> (cm/sec)
				Length (cm)	Diameter (cm)	w <sub>c</sub> (%)	γ <sub>d</sub> (lb/ft <sup>3</sup> )	n					w <sub>c</sub> (%)	γ <sub>d</sub> (lb/ft <sup>3</sup> )	S (%)	
1540.0 - 1540.3	A A	Vertical Horizontal	2.71	7.22	9.87	20.4	105.4	0.38	30	70	77**	20	20.4†	105.4	91	7.2x10 <sup>-6</sup>
				6.97	5.01	20.4	107.9	0.36					20.4	107.9	97	6.8x10 <sup>-6</sup>
1601.0 - 1601.3	A	Vertical	2.71	5.81	9.66	15.0	116.8	0.31	30	70	70**	53	15.0	116.8	91	1.3x10 <sup>-6</sup>
1640 - 1642	A A	Vertical Horizontal	2.83	10.14	9.98	5.5	152.1	0.14	30	70	88**	45	5.5†	152.1	97	3.9x10 <sup>-7</sup>
				7.88	5.03	5.5	151.3	0.14					5.5	151.3	93	3.6x10 <sup>-7</sup>
1681.0 - 1681.4	A C	Vertical Horizontal	2.72	9.30	9.86	17.6	113.1	0.33	30	70	97	14	17.6†	113.1	96	2.5x10 <sup>-5</sup>
				3.90	5.04	17.6	110.5	0.35					17.6	110.5	89	8.9x10 <sup>-5</sup>

Where: w<sub>c</sub> = Moisture content; γ<sub>d</sub> = Dry density; G<sub>s</sub> = Specific gravity; n = Total Porosity;  $\bar{\sigma}_c$  = Average isotropic effective confining stress; u<sub>b</sub> = Back-pressure; and S = Calculated degree of saturation using measured specific gravity.

\* Method A = Constant-head test; Method C = Falling-head test with increasing tailwater level.

\*\* B-Factor remained relatively constant for two consecutive increments of applied cell pressure.

† Vertical permeability test specimen was cored upon completion of testing to obtain horizontal permeability test specimen. The final moisture content of the vertical test specimen was not measured, and was assumed to be the same as the horizontal permeability test specimen.

Samples received 07/15/03

APPENDIX I

## **Packer Test Water Level Plots**

---



**Bonita Springs Utilities**  
**IW-2 Packer Test 1 Data - August 23, 2003**  
**1,919 to 1,968 feet bpl**

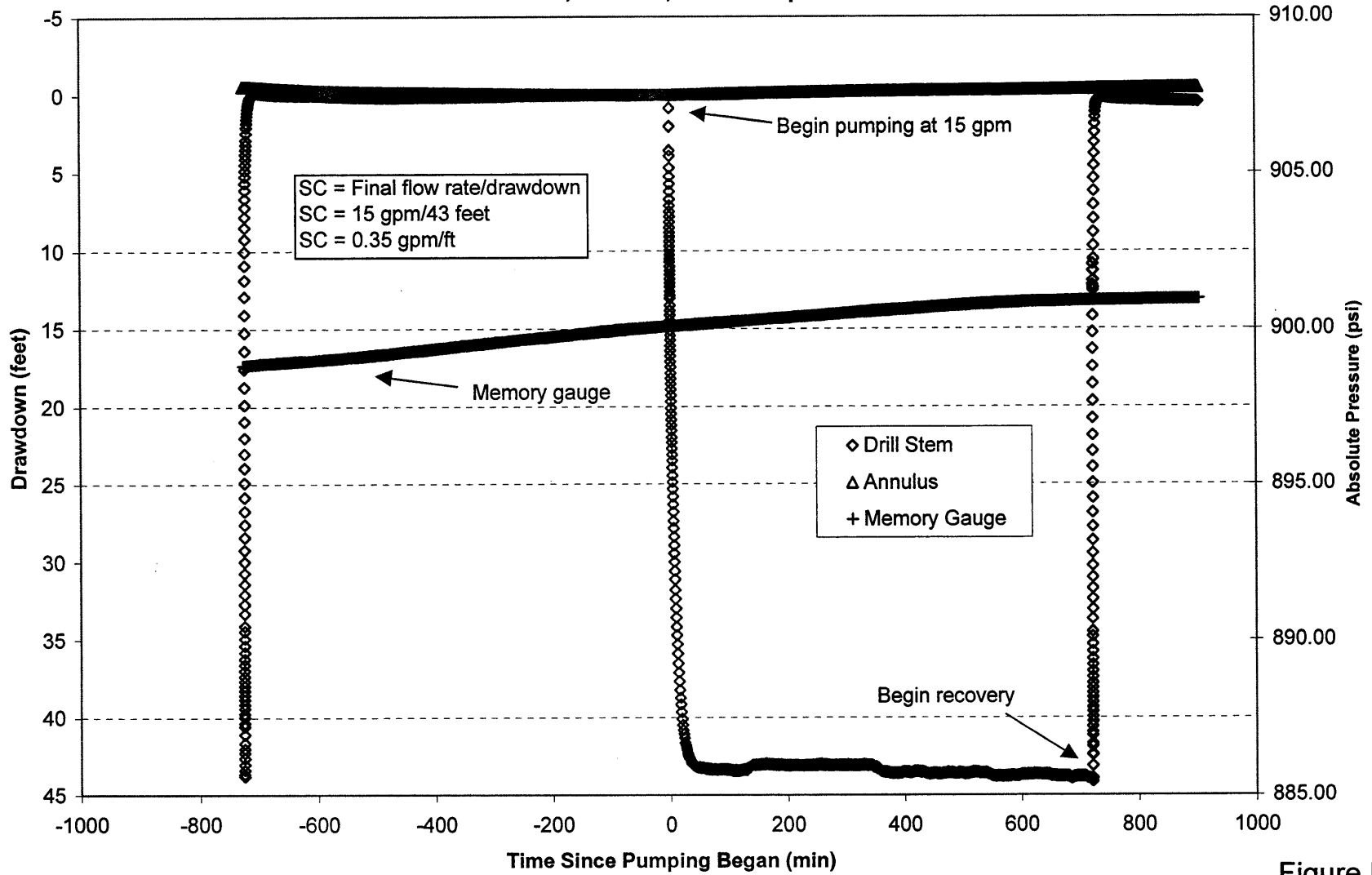


Figure I-1  
 IW-1 Packer Test Drawdown and Recovery Data  
 Interval of 1,919 feet to 1,968 feet bls

**Bonita Springs Utilities  
IW-2 Packer Test 2 Data - August 28, 2003  
2,290 to 2,318 feet bpl**

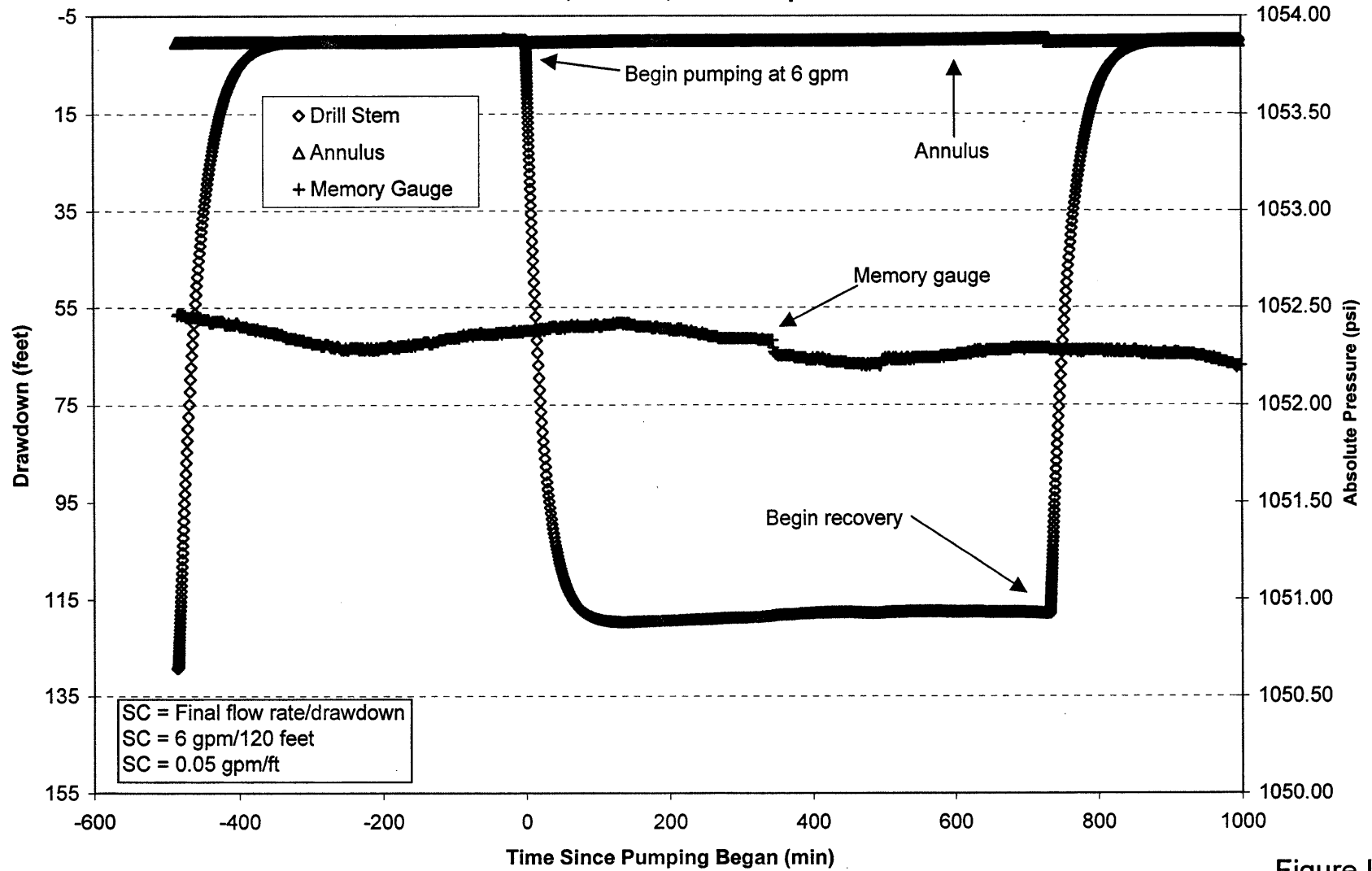


Figure I-2  
IW-1 Packer Test Drawdown and Recovery Data  
Interval of 2,290 feet to 2,318 feet bls

**Bonita Springs Utilities  
IW-2 Packer Test 3 Data - August 30, 2003  
2,215 to 2,243 feet bpl**

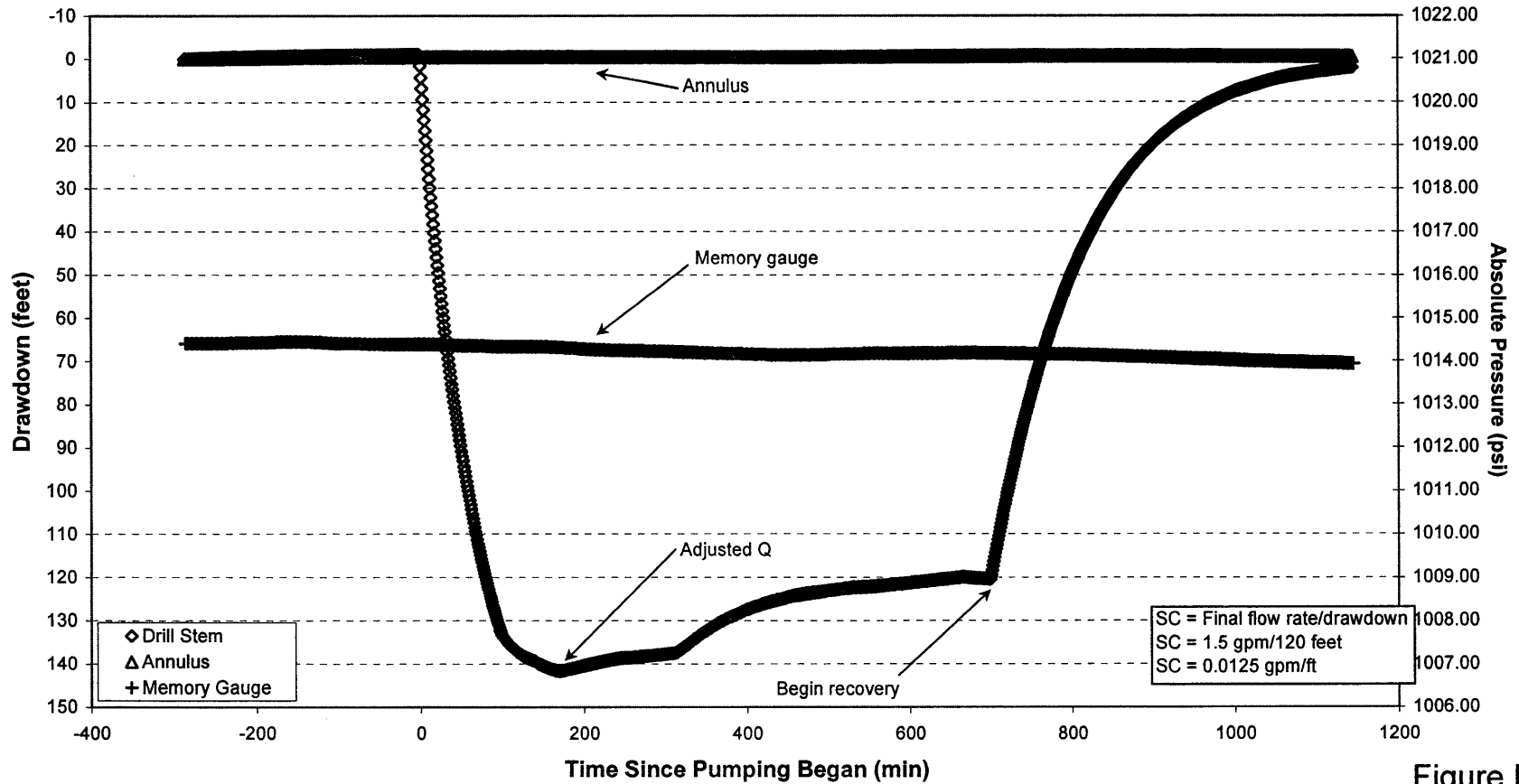


Figure I-3  
IW-1 Packer Test Drawdown and Recovery Data  
Interval of 2,215 to 2,243 feet bpl

**Bonita Springs Utilities  
IW-2 Packer Test 4 Data - September 5, 2003  
2,100 to 2,128 feet bpl**

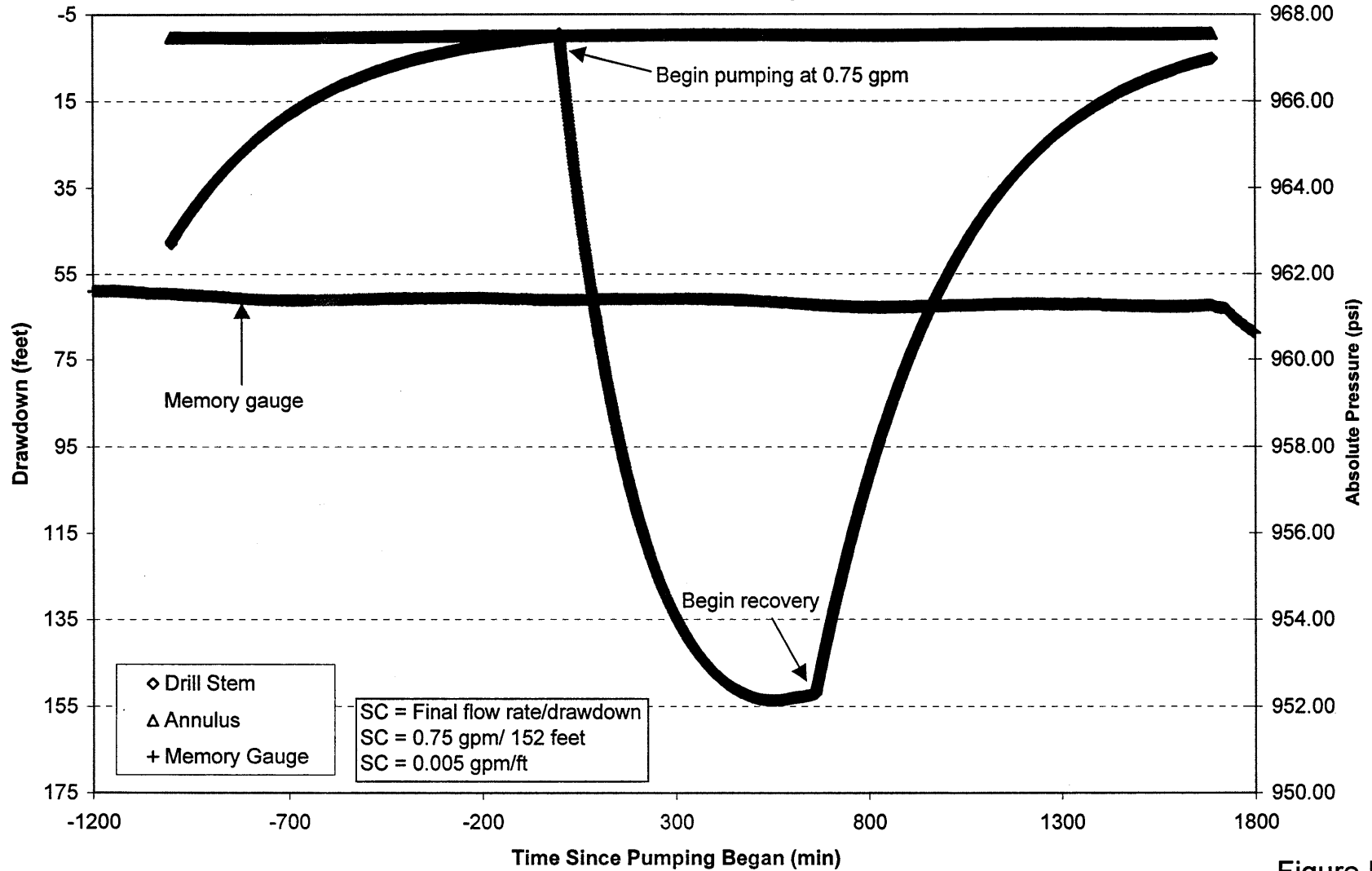


Figure I-4

IW-1 Packer Test Drawdown and Recovery Data  
Interval of 2,100 to 2,128 feet bls

**Bonita Springs Utilities  
IW-2 Packer Test 5 Data - September 10, 2003  
1,870 to 1,898 feet bpl**

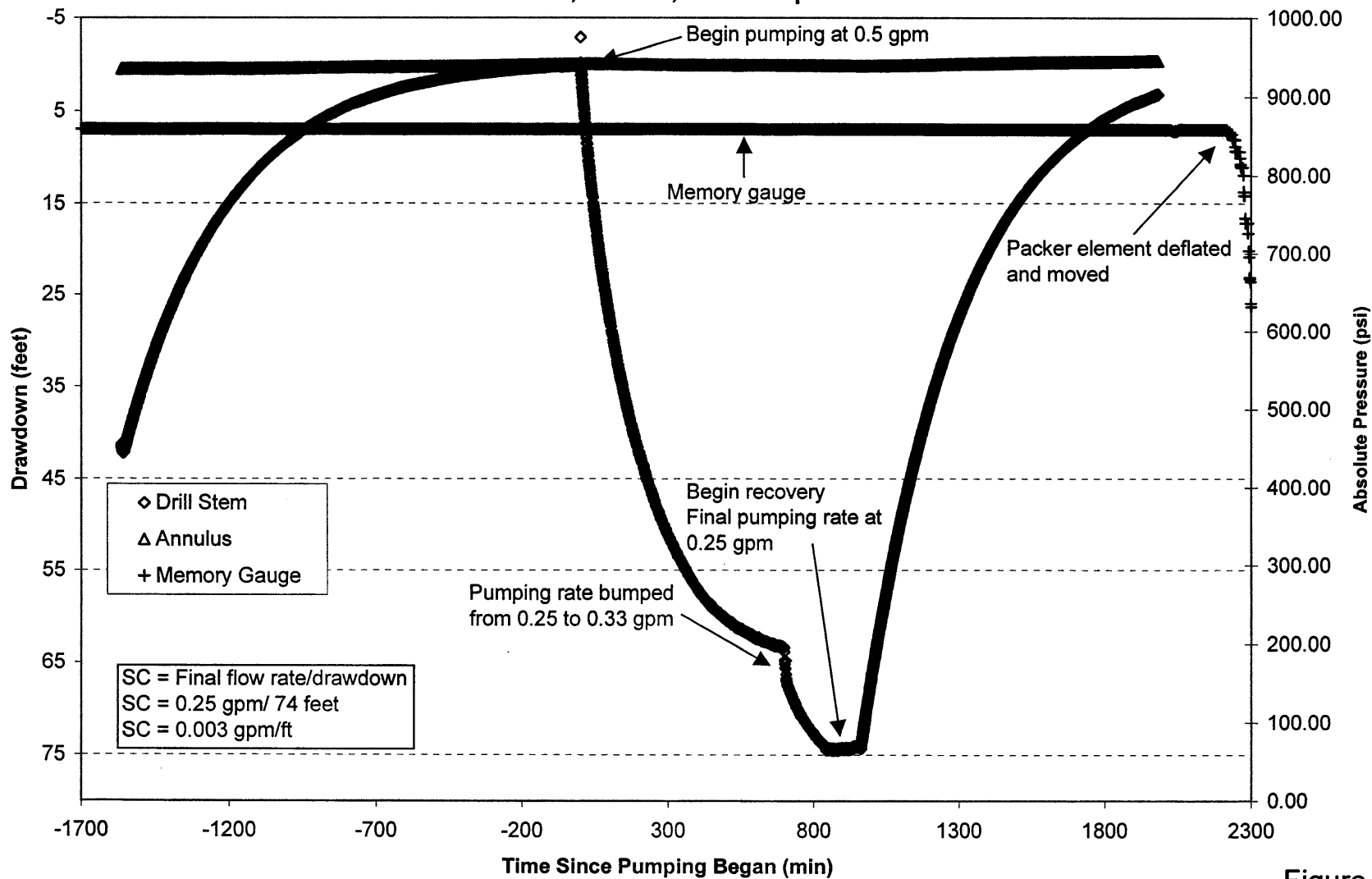


Figure I-5

IW-1 Packer Test Drawdown and Recovery Data

Interval of 1,870 to 1,898 feet bls

**Bonita Springs Utilities  
IW-2 Packer Test 6 Data - September 12, 2003  
2,490 to 3,220 feet bpl (Single Packer)**

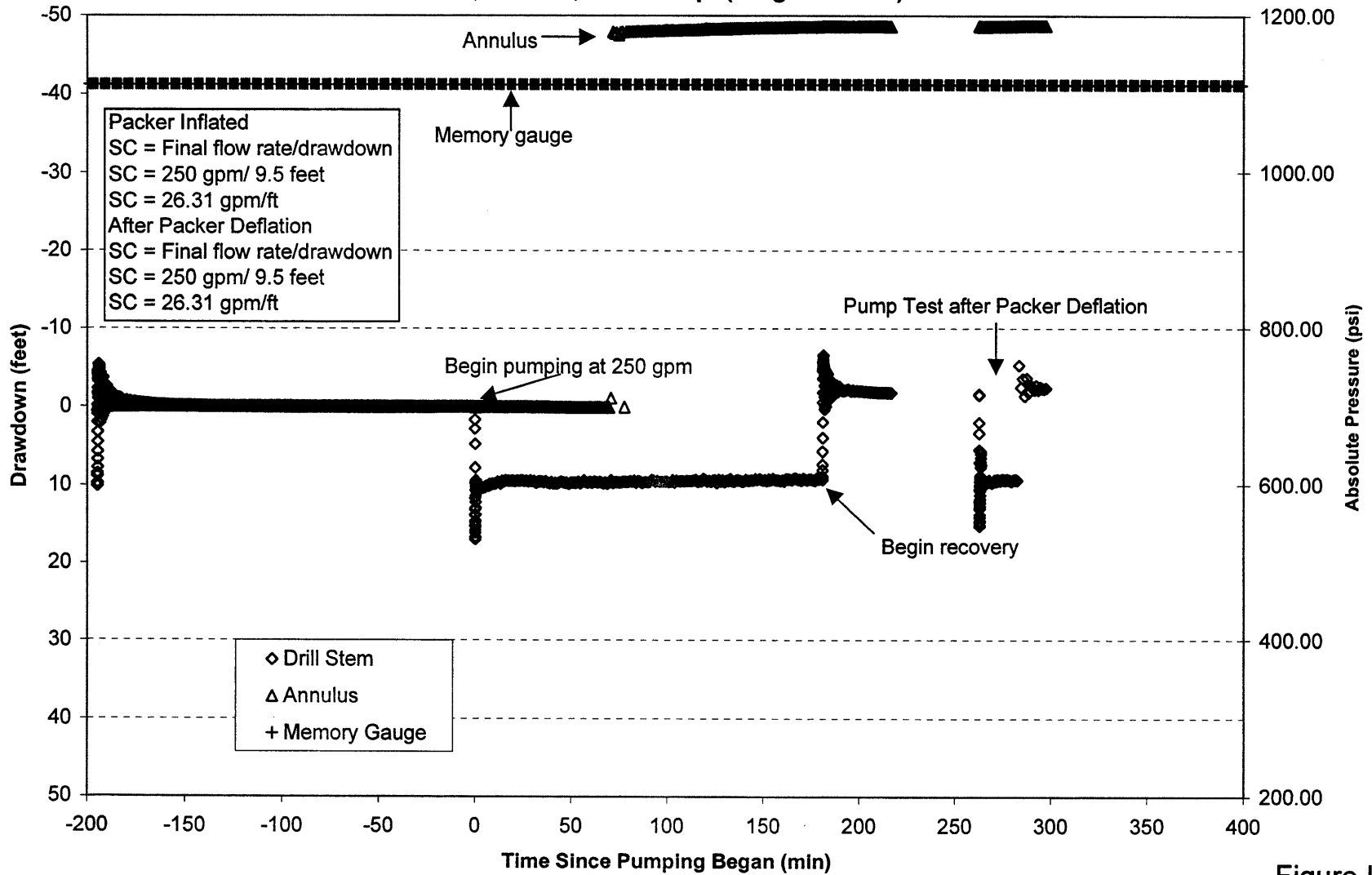


Figure I-6

IW-1 Packer Test Drawdown and Recovery Data  
Interval of 2,490 to 3,220 feet bls

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 1 Data - November 21, 2003  
1,450 to 1,480 feet bpl**

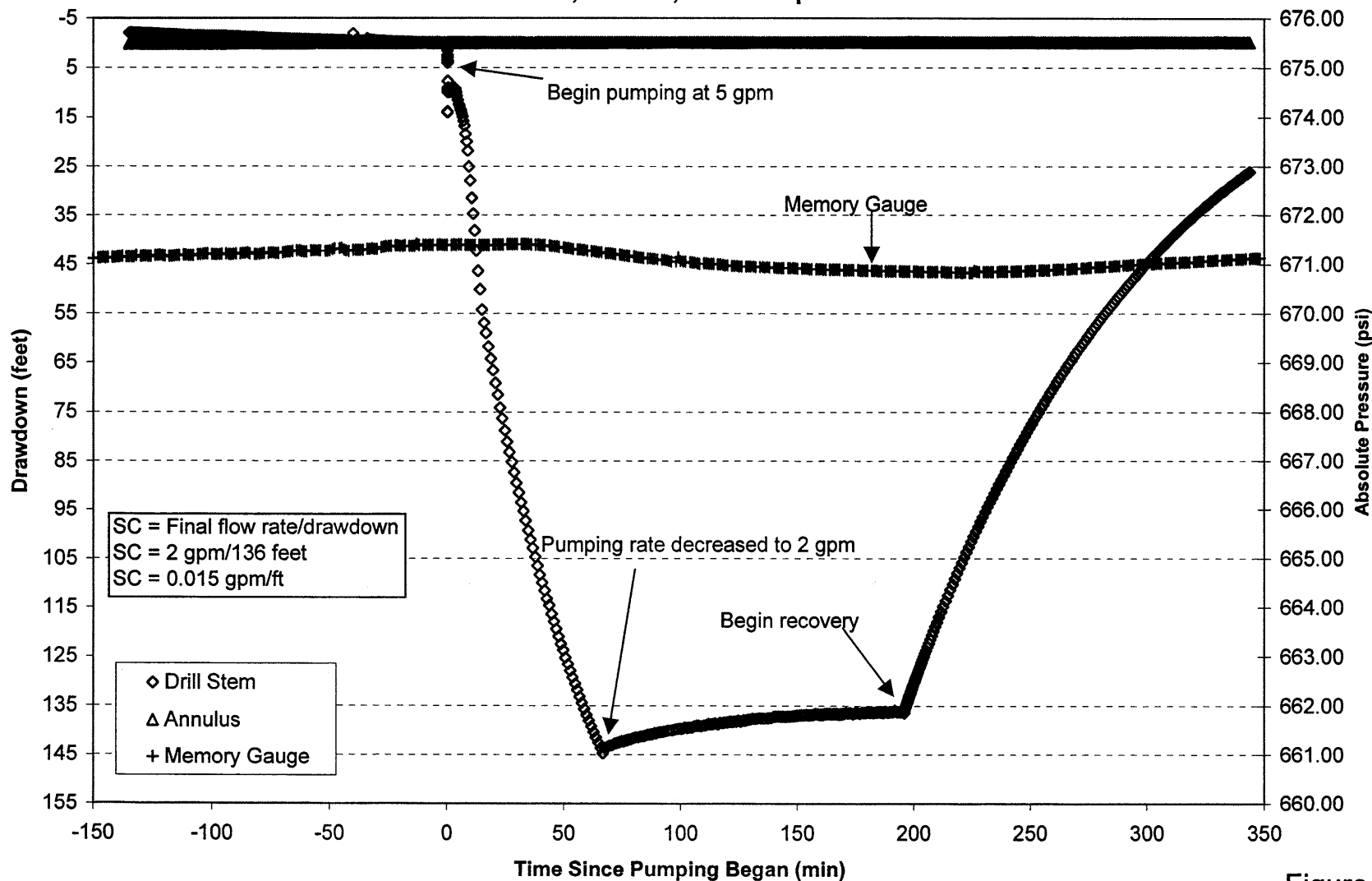


Figure I-7

IW-1 Packer Test Drawdown and Recovery Data  
Interval of 1,450 to 1,480 feet bls

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 2 Data - November 25, 2003  
1,520 to 1,550 feet bpl**

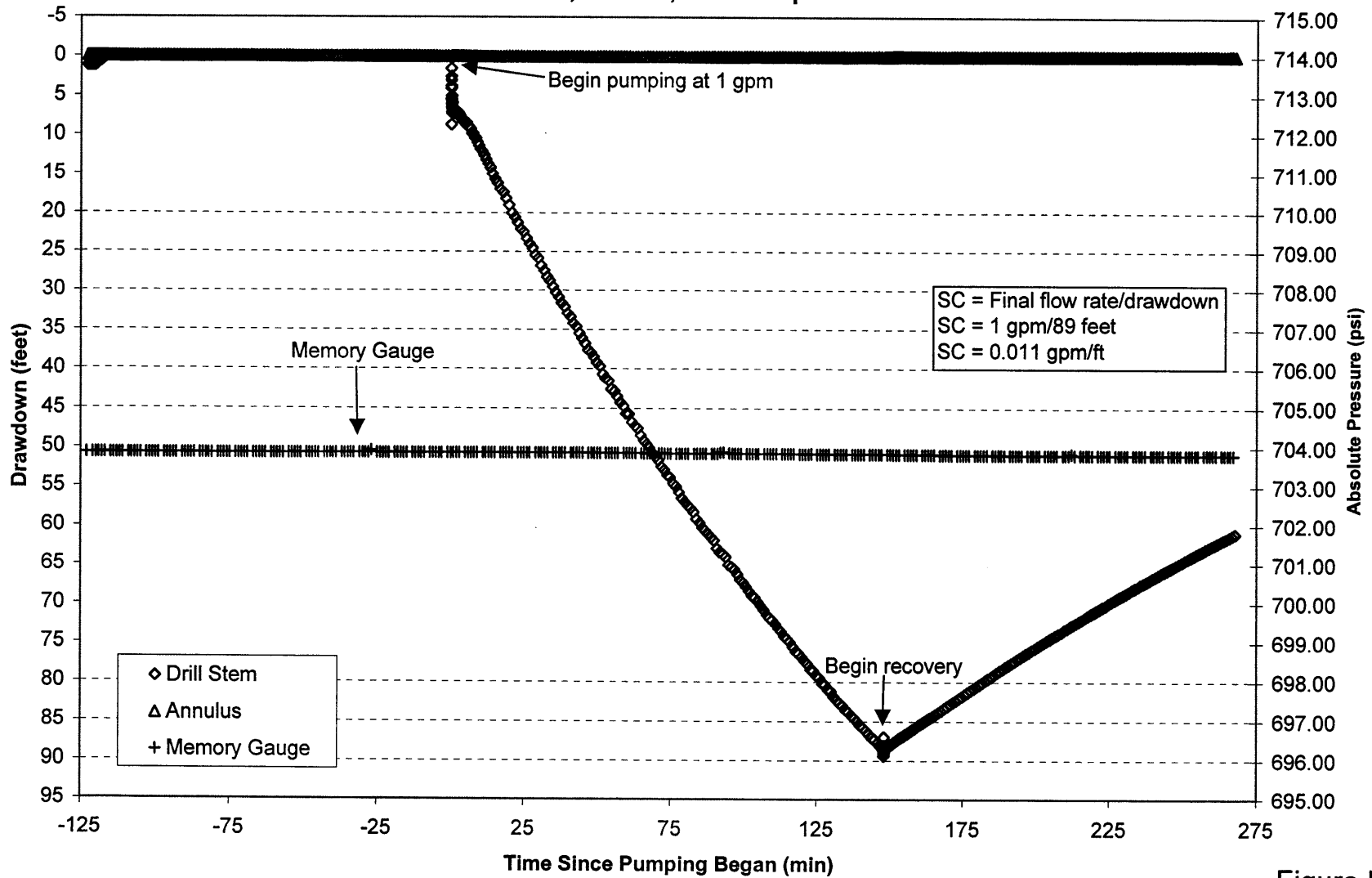


Figure I-8

IW-1 Packer Test Drawdown and Recovery Data  
Interval of 1,520 to 1,550 feet bls



**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 3 Data - November 26, 2003  
1,680 to 1,710 feet bpl**

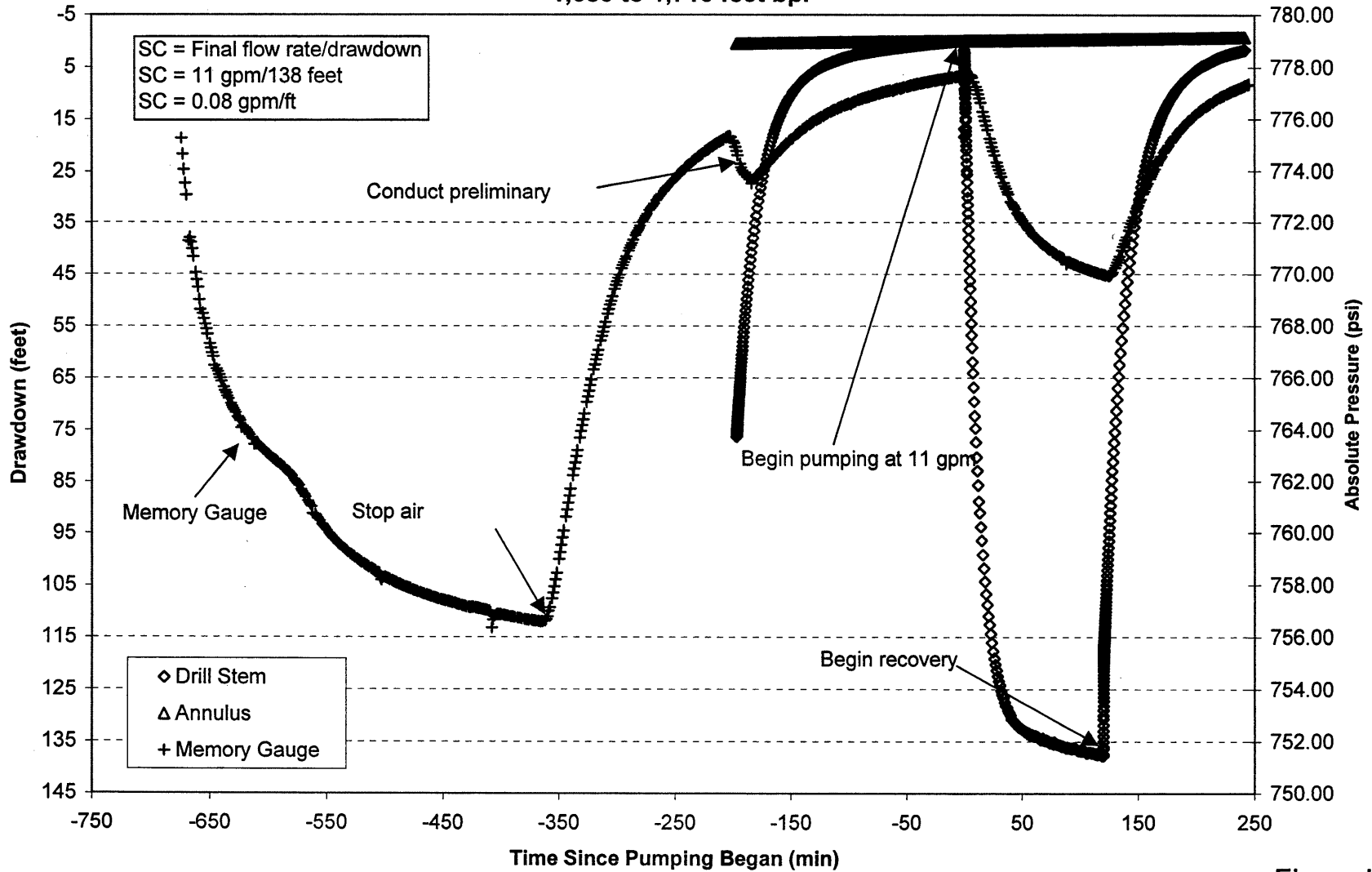


Figure I-9

IW-1 Packer Test Drawdown and Recovery Data  
 Interval of 1,680 o 1,710 feet bls

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 4 Data - December 3, 2003  
1,643 to 1,658 feet bpl**

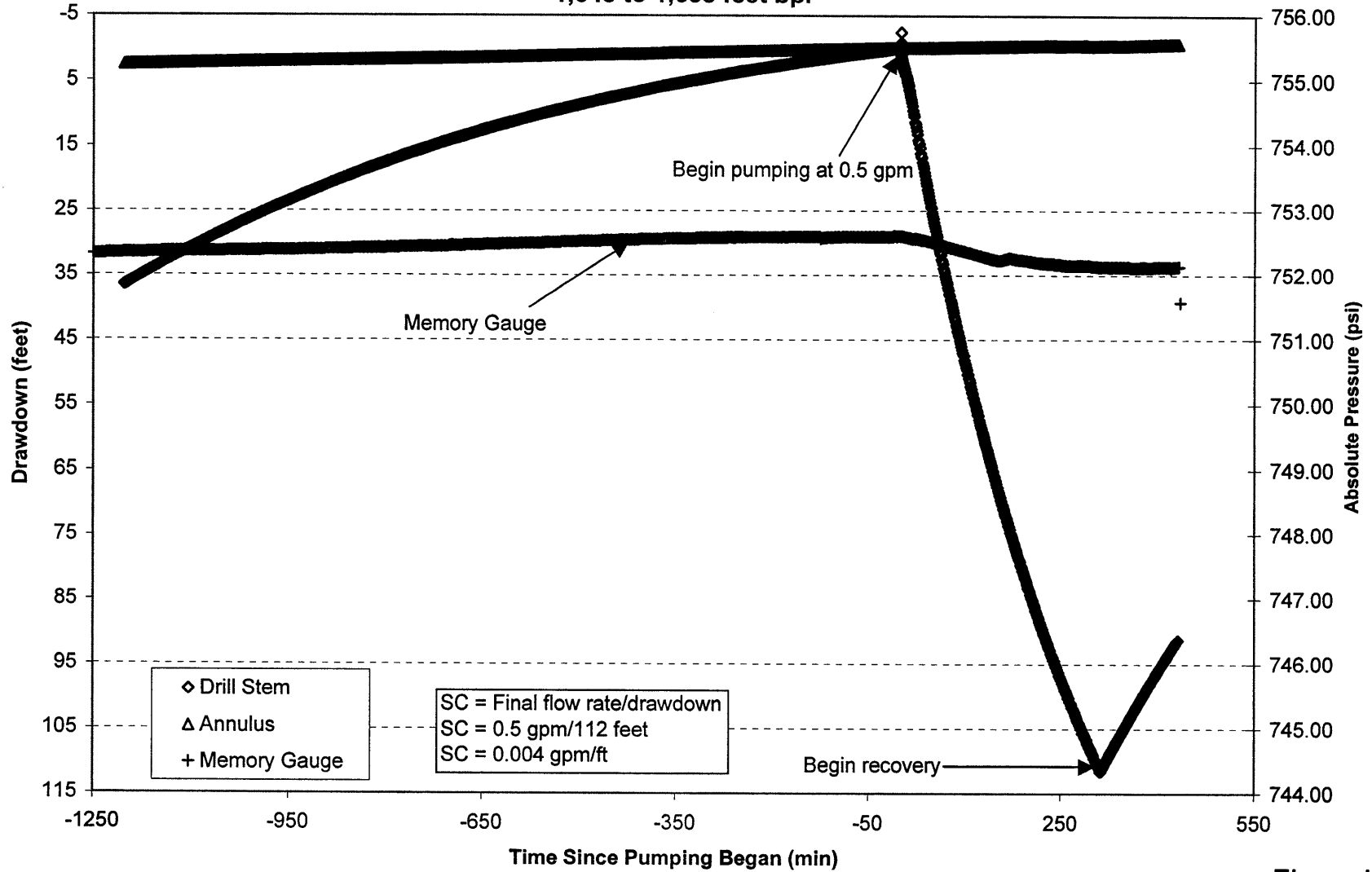


Figure I-10  
IW-1 Packer Test Drawdown and Recovery Data  
Interval of 1,643 to 1,658 feet bls

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 5 Data - December 5, 2003  
1,430 to 1,460 feet bpl**

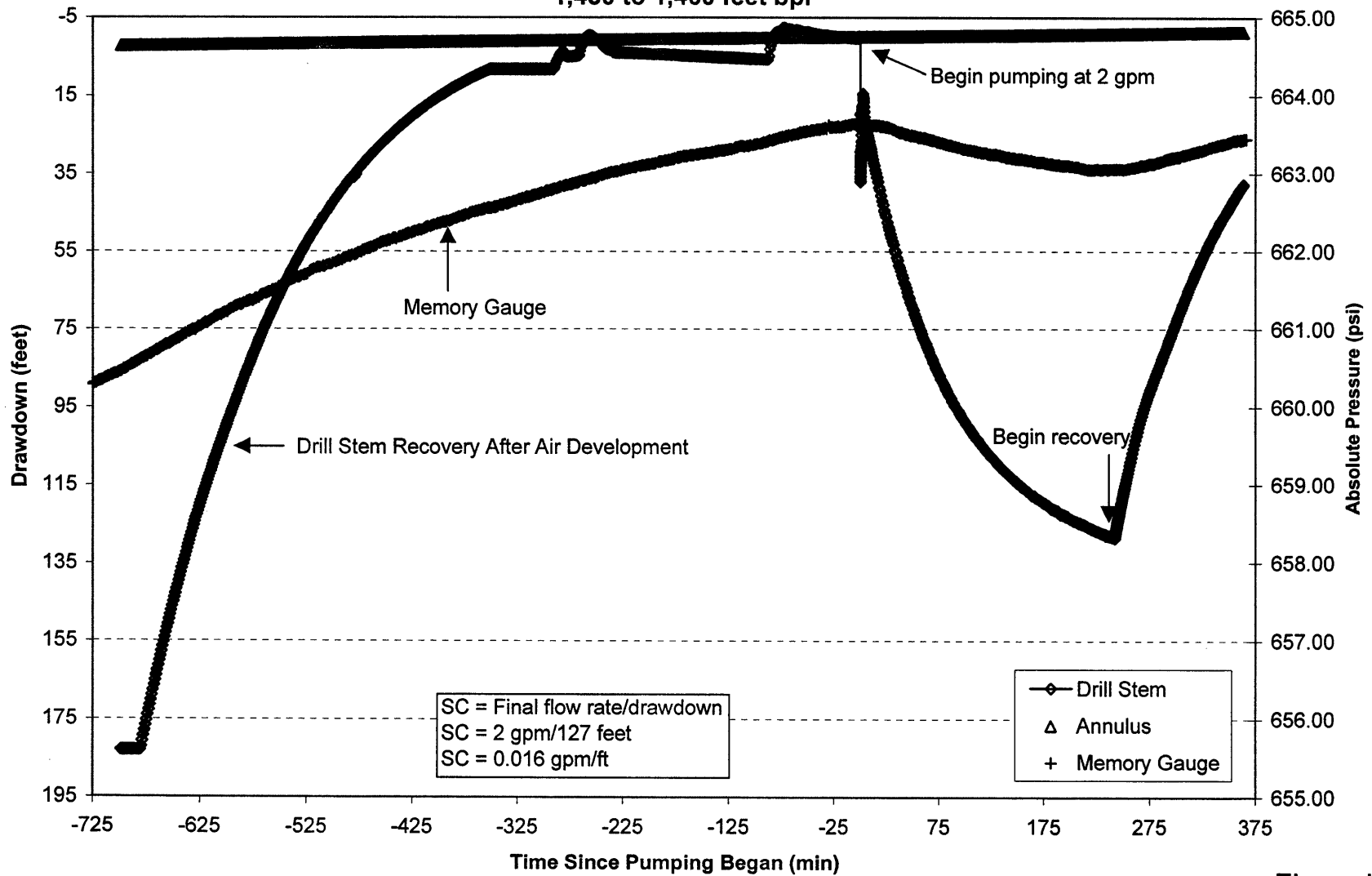


Figure I-11  
IW-1 Packer Test Drawdown and Recovery Data  
Interval of 1,430 to 1,460 feet bpl

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 6 Data - December 5, 2003  
1,255 to 1,285 feet bpl**

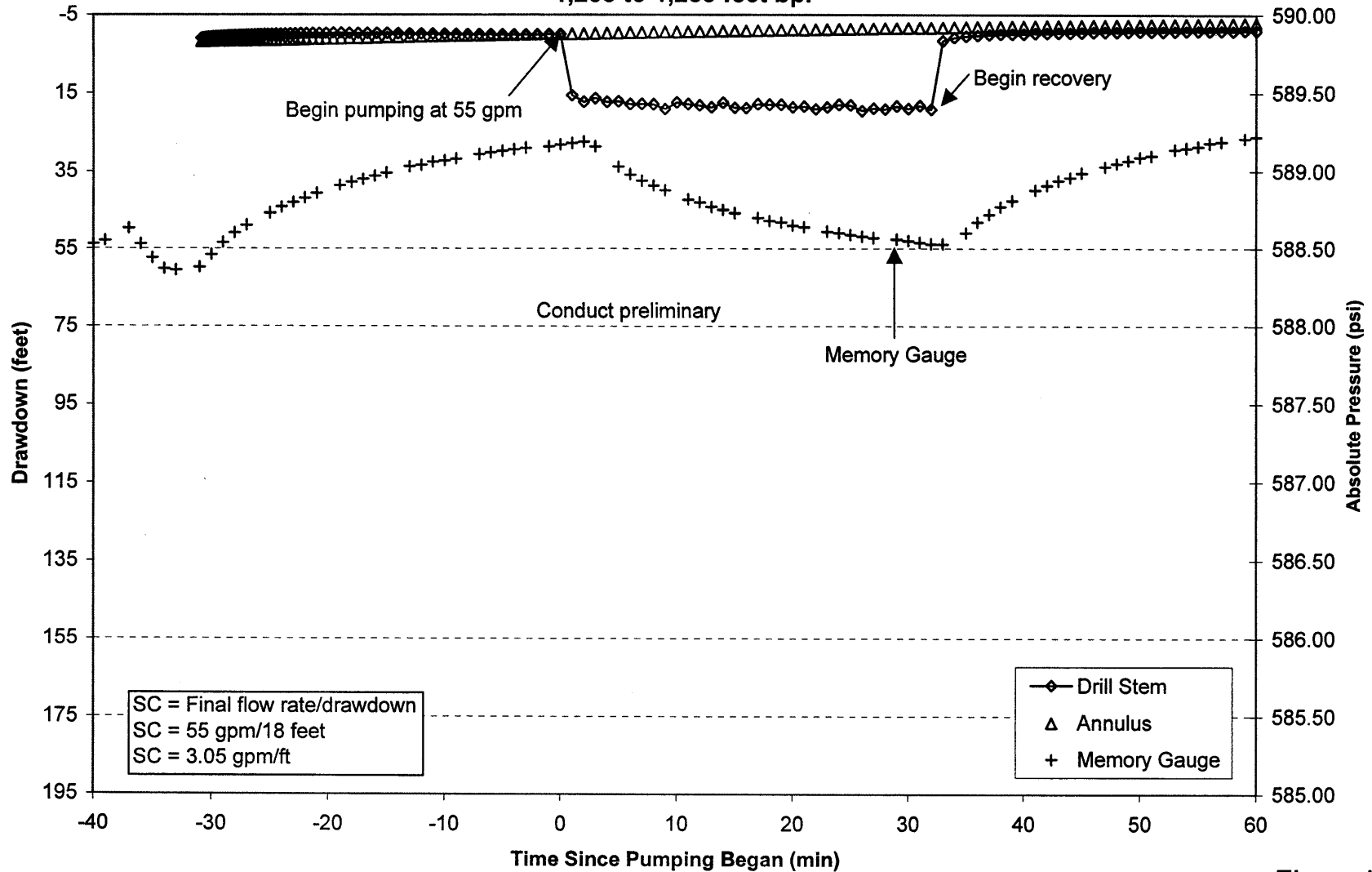


Figure I-12  
 IW-1 Packer Test Drawdown and Recovery Data  
 Interval of 1,255 to 1,285 feet bls

**Bonita Springs Utilities WRF  
DZMW-1 Packer Test 7 Data - December 13, 2003  
1,110 to 1,200 feet bpl**

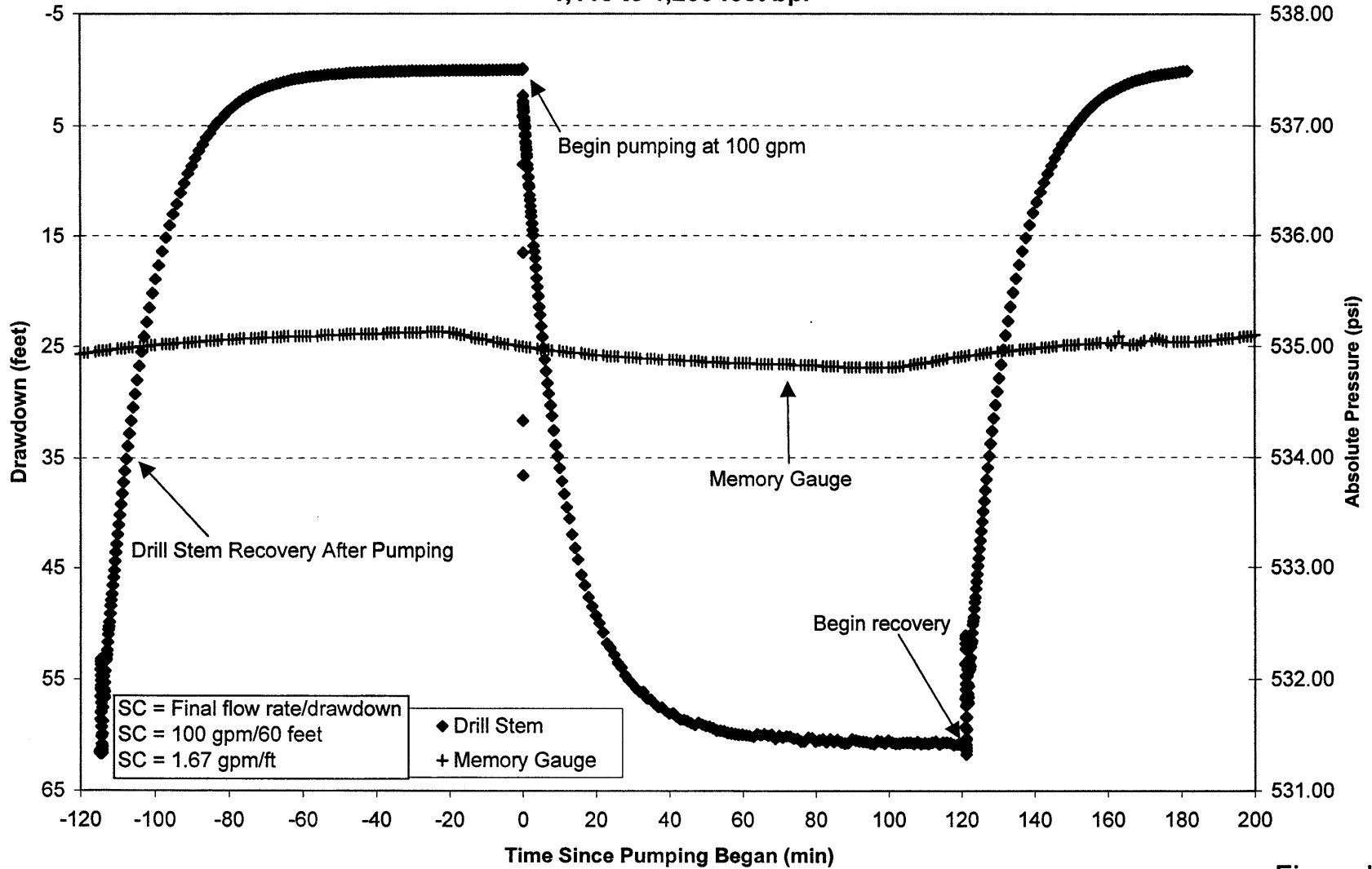


Figure I-13  
 IW-1 Packer Test Drawdown and Recovery Data  
 Interval of 1,110 to 1,200 feet bls

APPENDIX J

## **Packer Test Analysis**

---

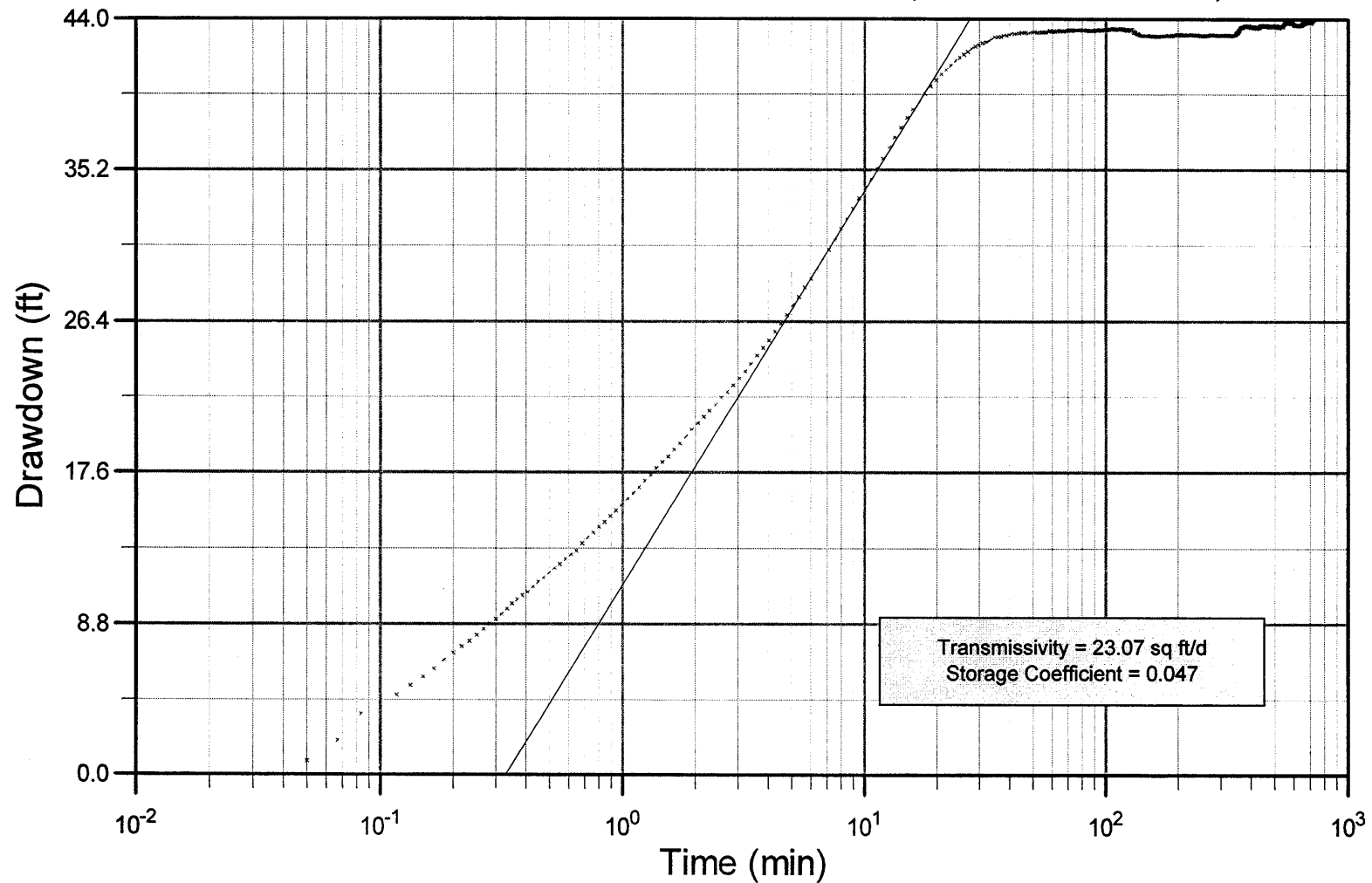
---

APPENDIX J.1

## **Cooper Jacob Analysis Curves**

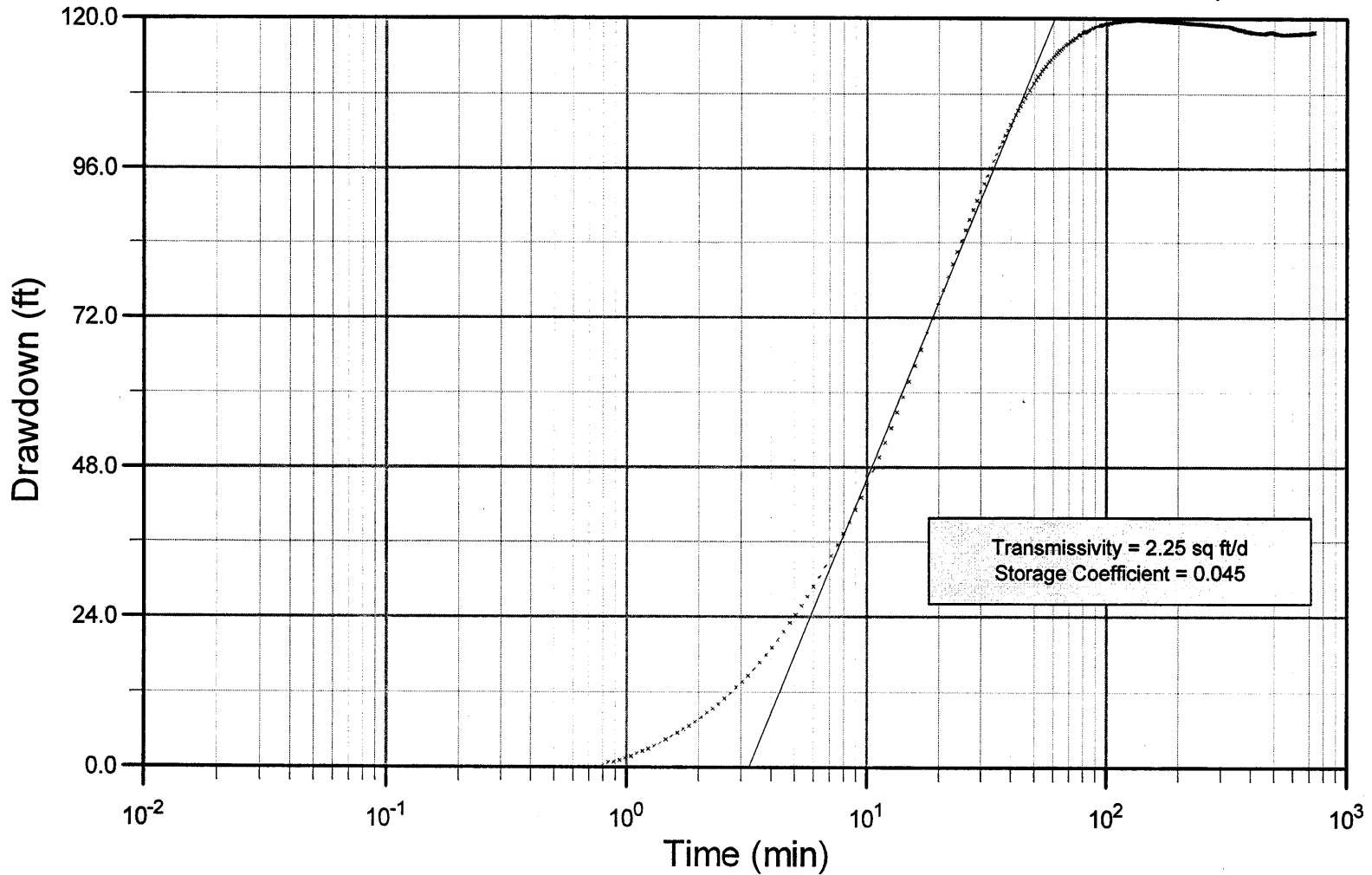
---

Cooper and Jacob - WRF IW-1 Packer Test 1 (1,919 - 1,968 feet bls)

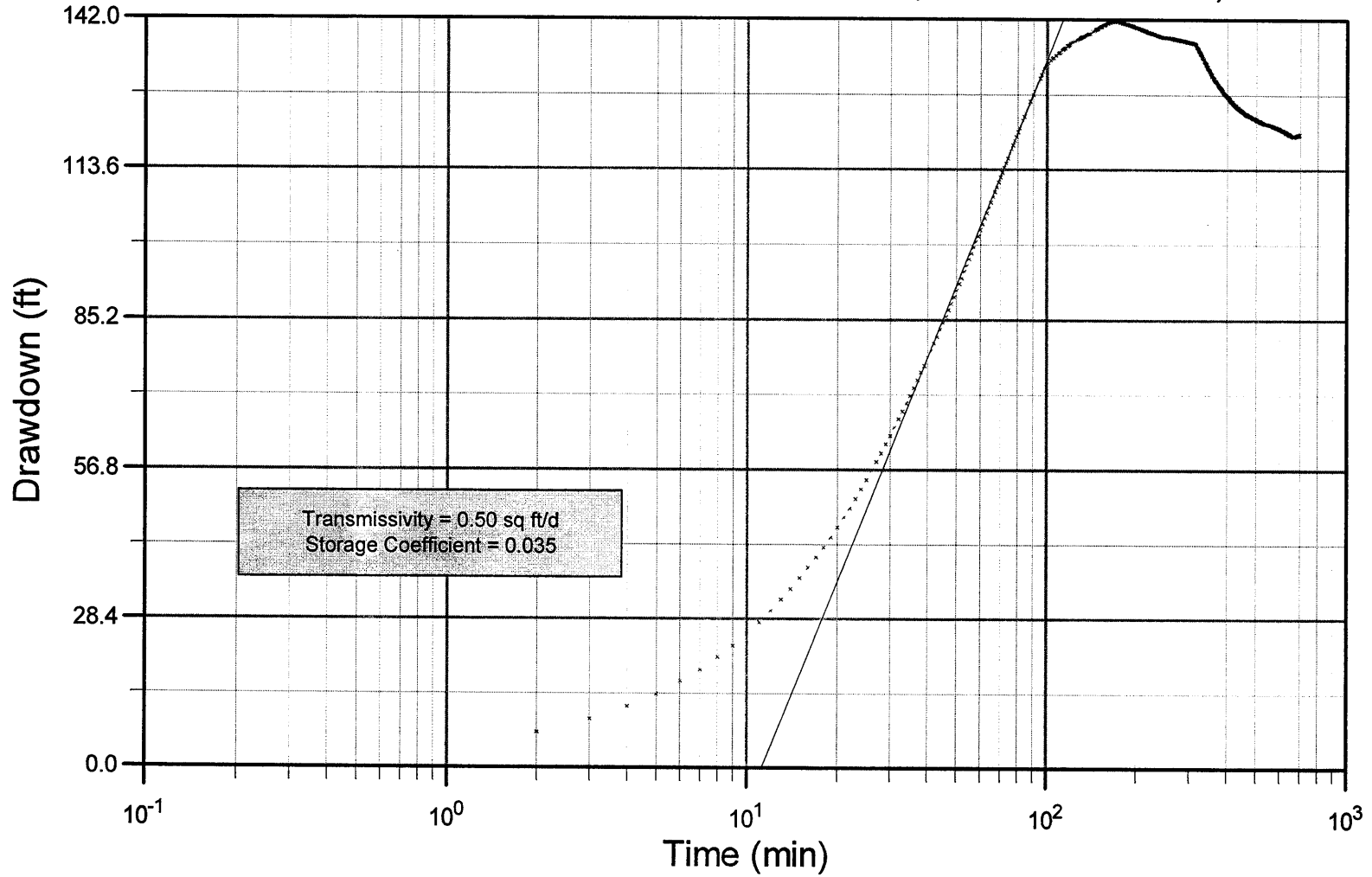




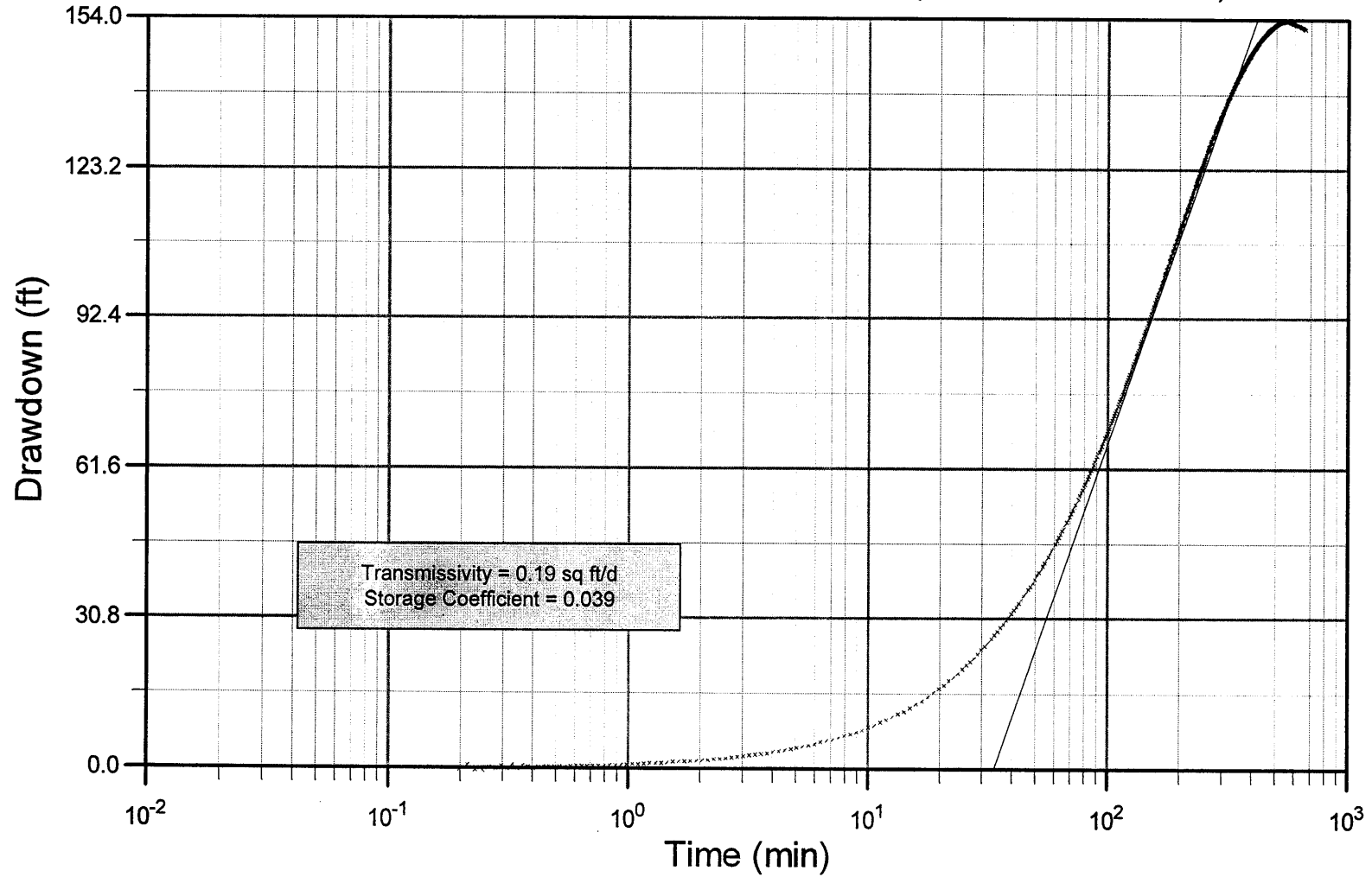
Cooper and Jacob - WRF IW-1 Packer Test 2 (2,290 - 2,318 feet bls)



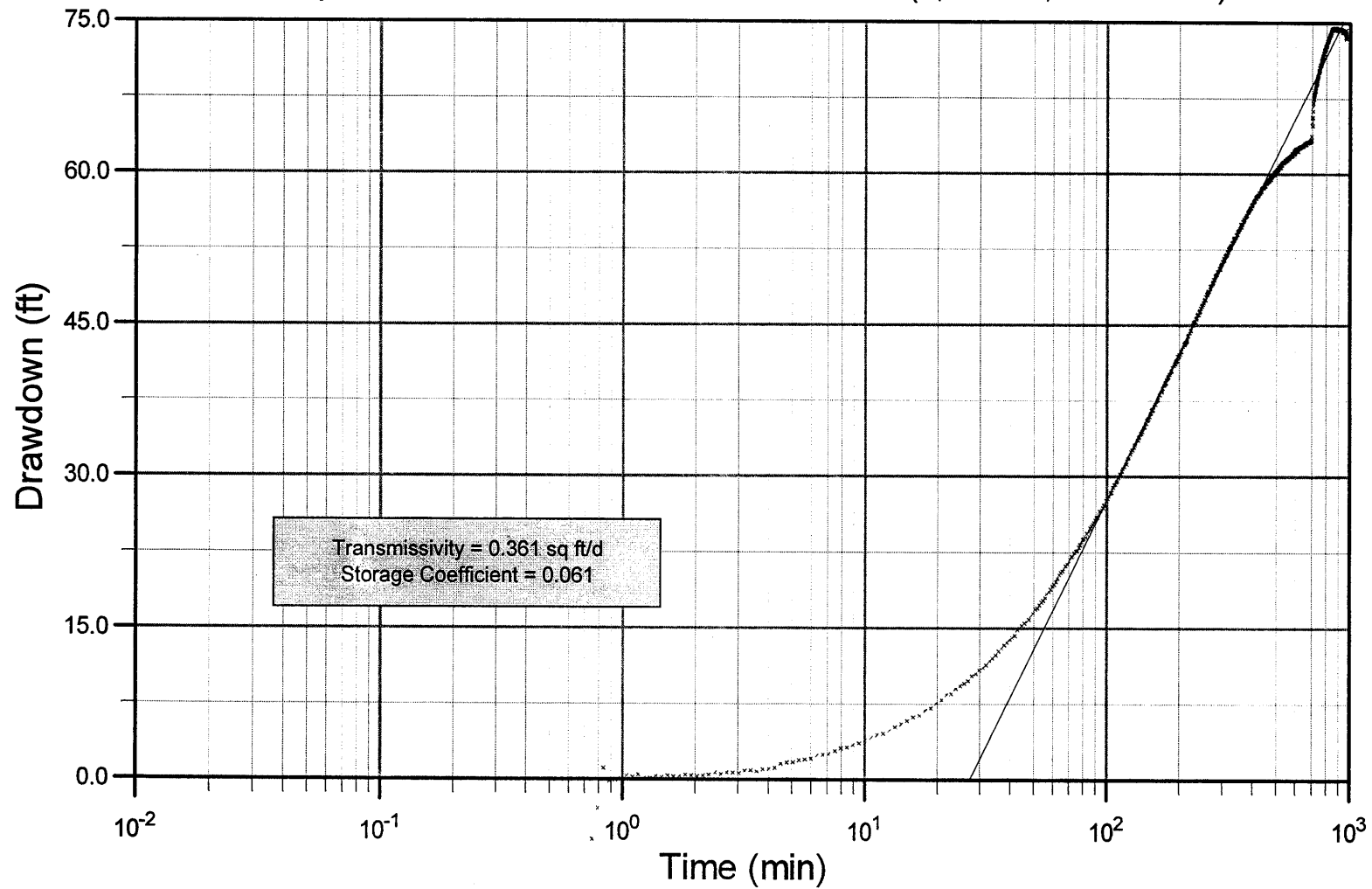
Cooper and Jacob - WRF IW-1 Packer Test 3 (2,215 - 2,243 feet bls)



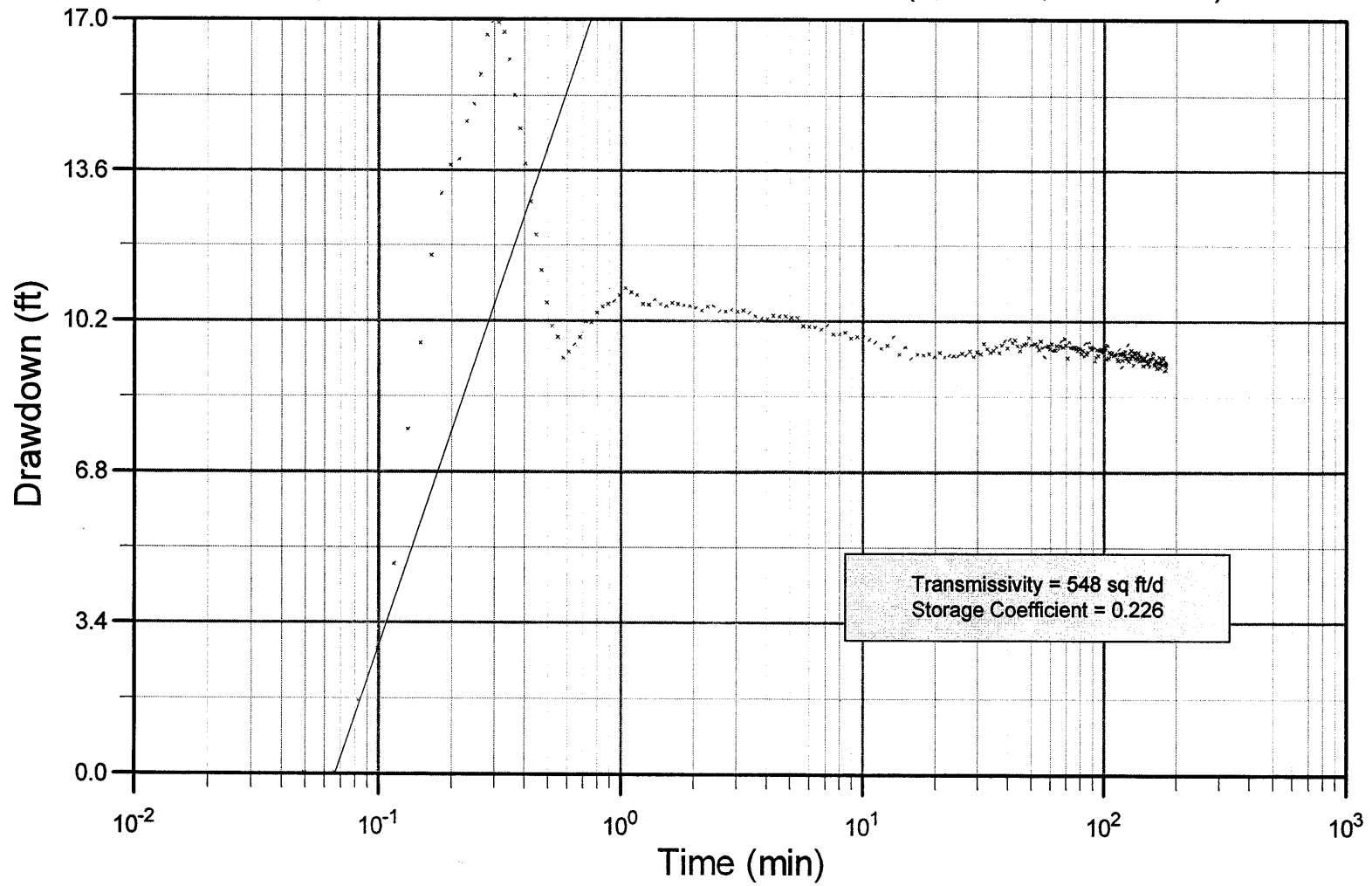
Cooper and Jacob - WRF IW-1 Packer Test 4 (2,100 - 2,128 feet bls)



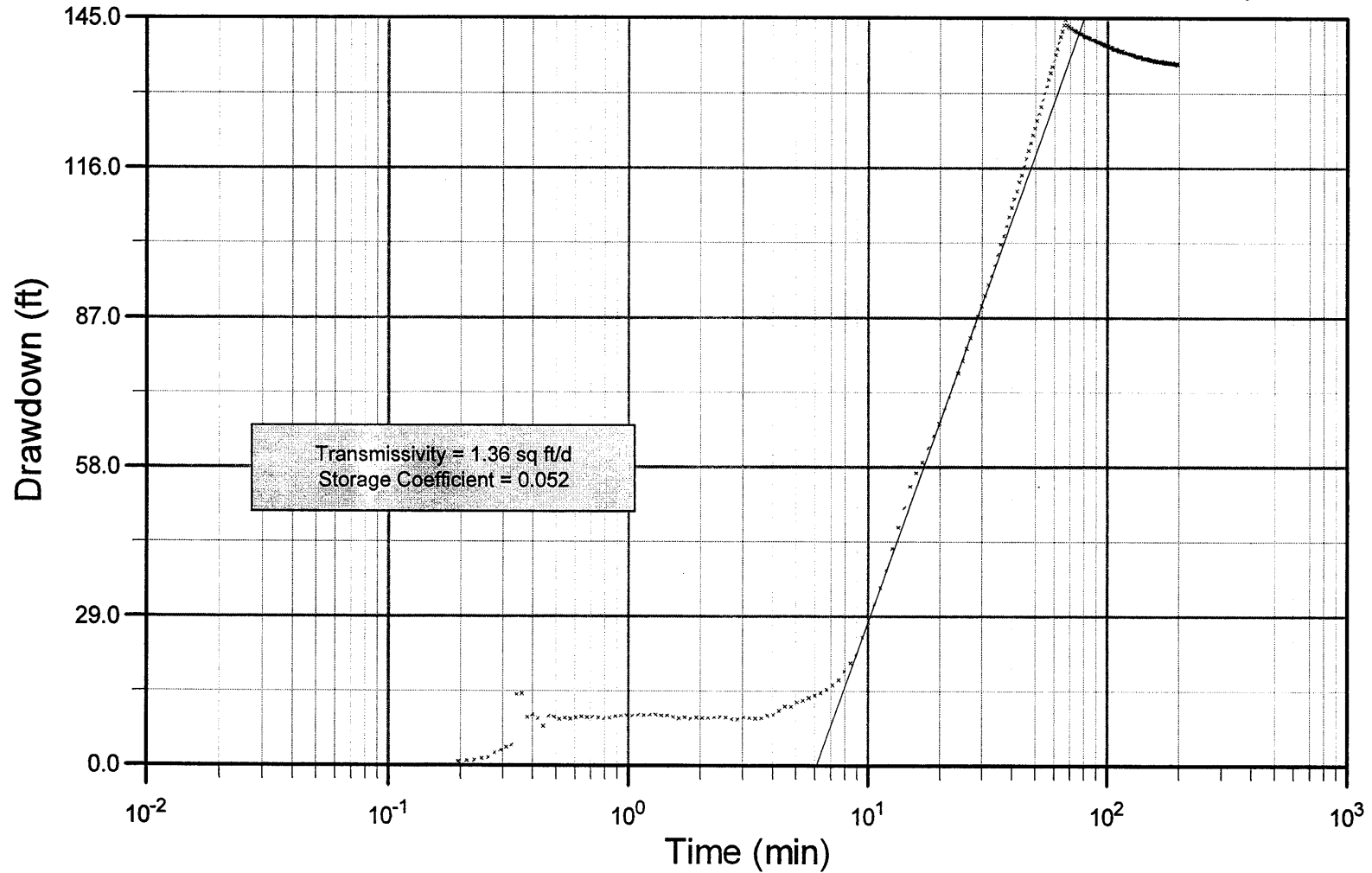
Cooper and Jacob - WRF IW-1 Packer Test 5 (1,870 - 1,898 feet bls)



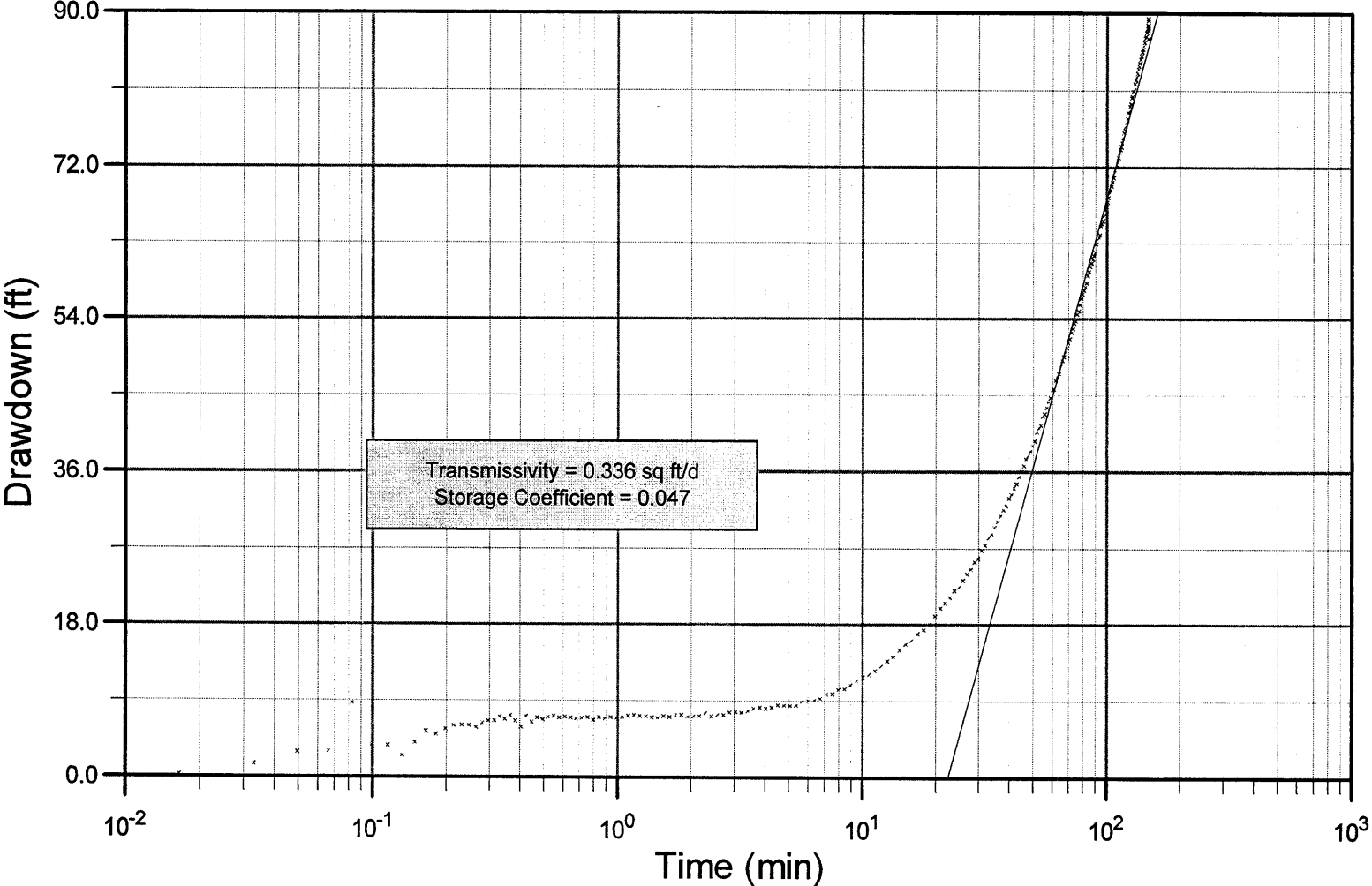
Cooper and Jacob - WRF IW-1 Packer Test 6 (2,490 - 3,220 feet bls)



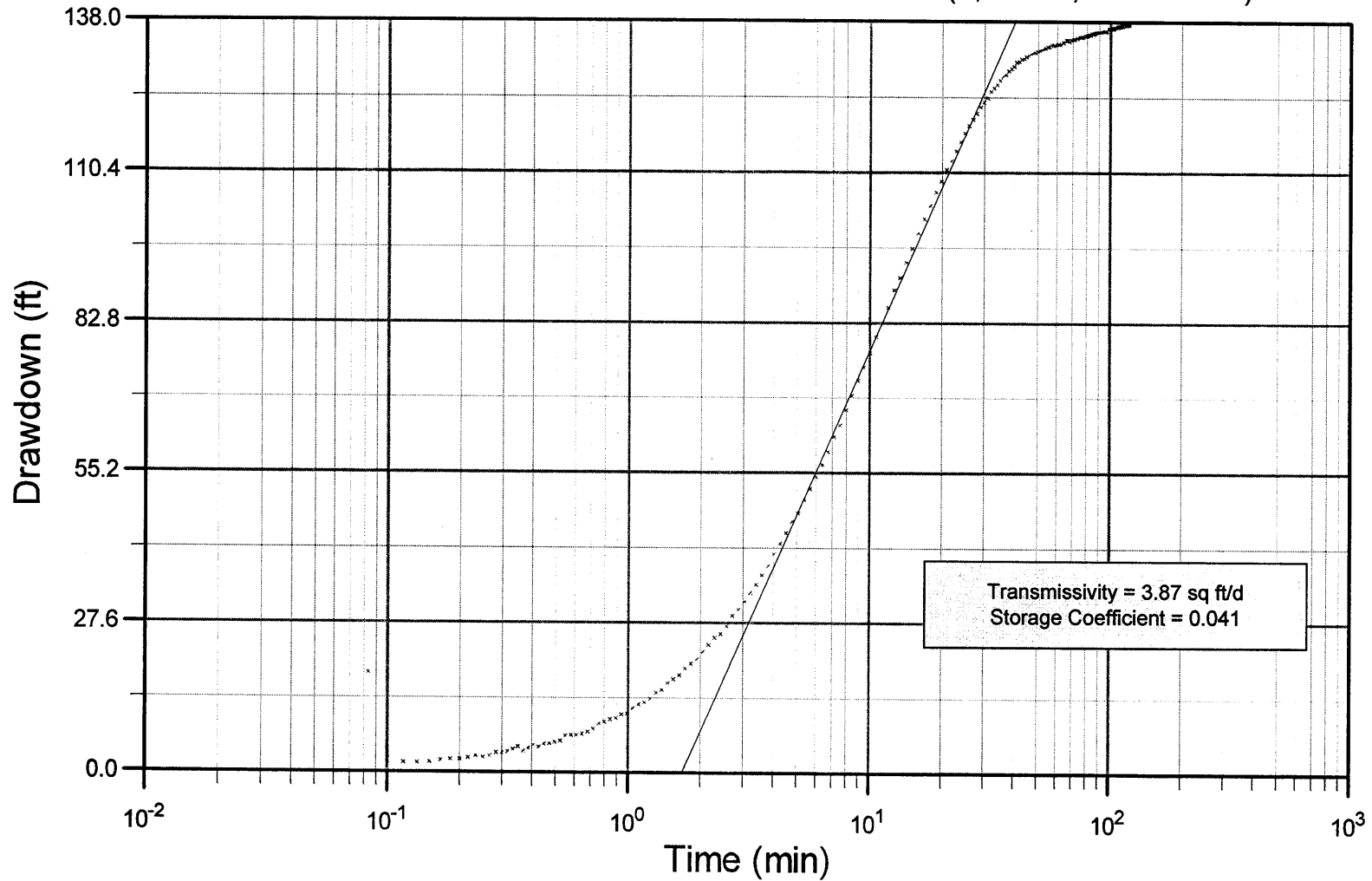
Cooper and Jacob - WRF DZMW-1 Packer Test 1 (1,450 - 1,480 feet bls)



Cooper and Jacob - WRF DZMW-1 Packer Test 2 (1,520 - 1,550 feet bls)

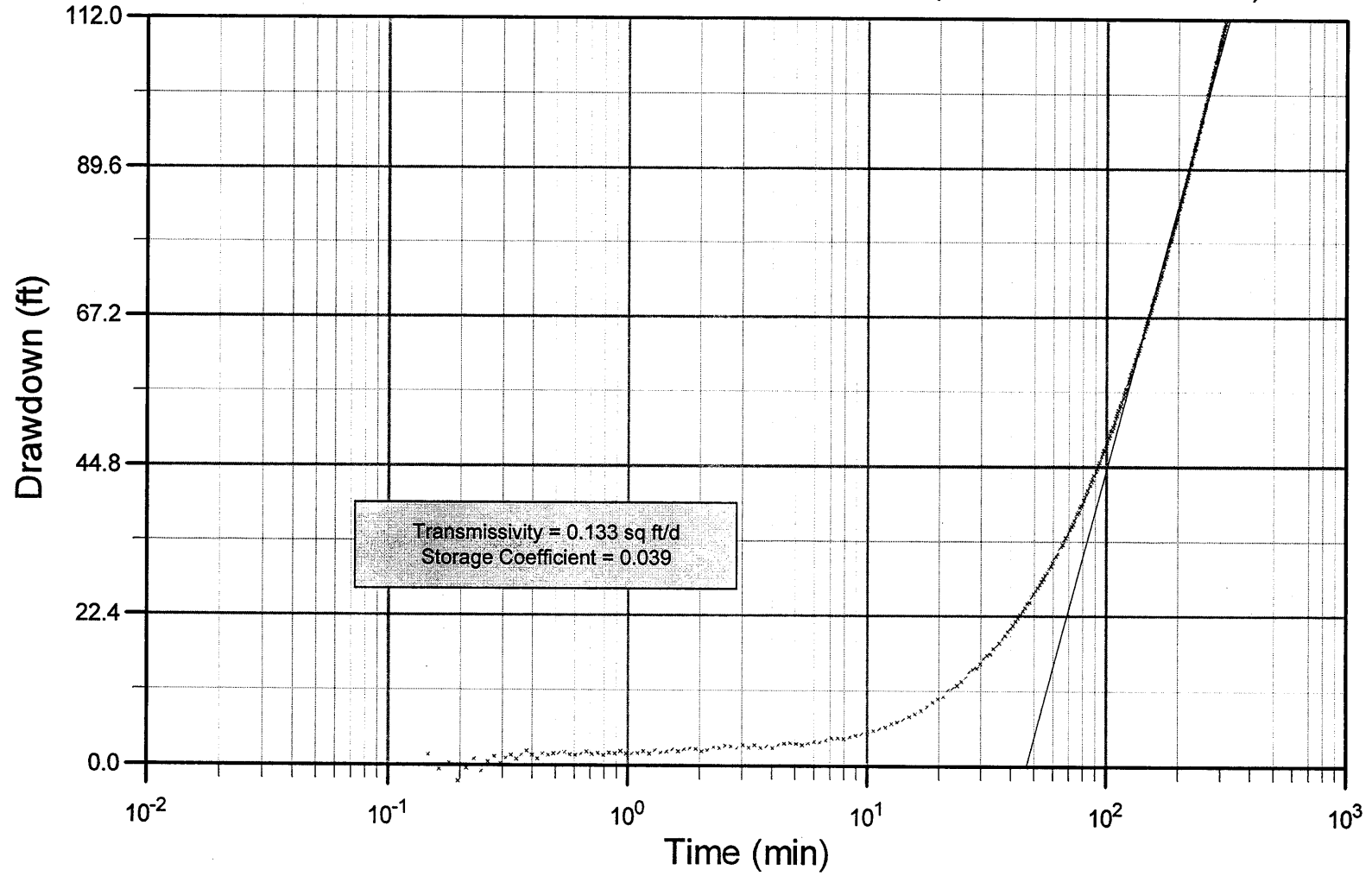


Cooper and Jacob - WRF DZMW-1 Packer Test 3 (1,680 -1,710 feet bls)

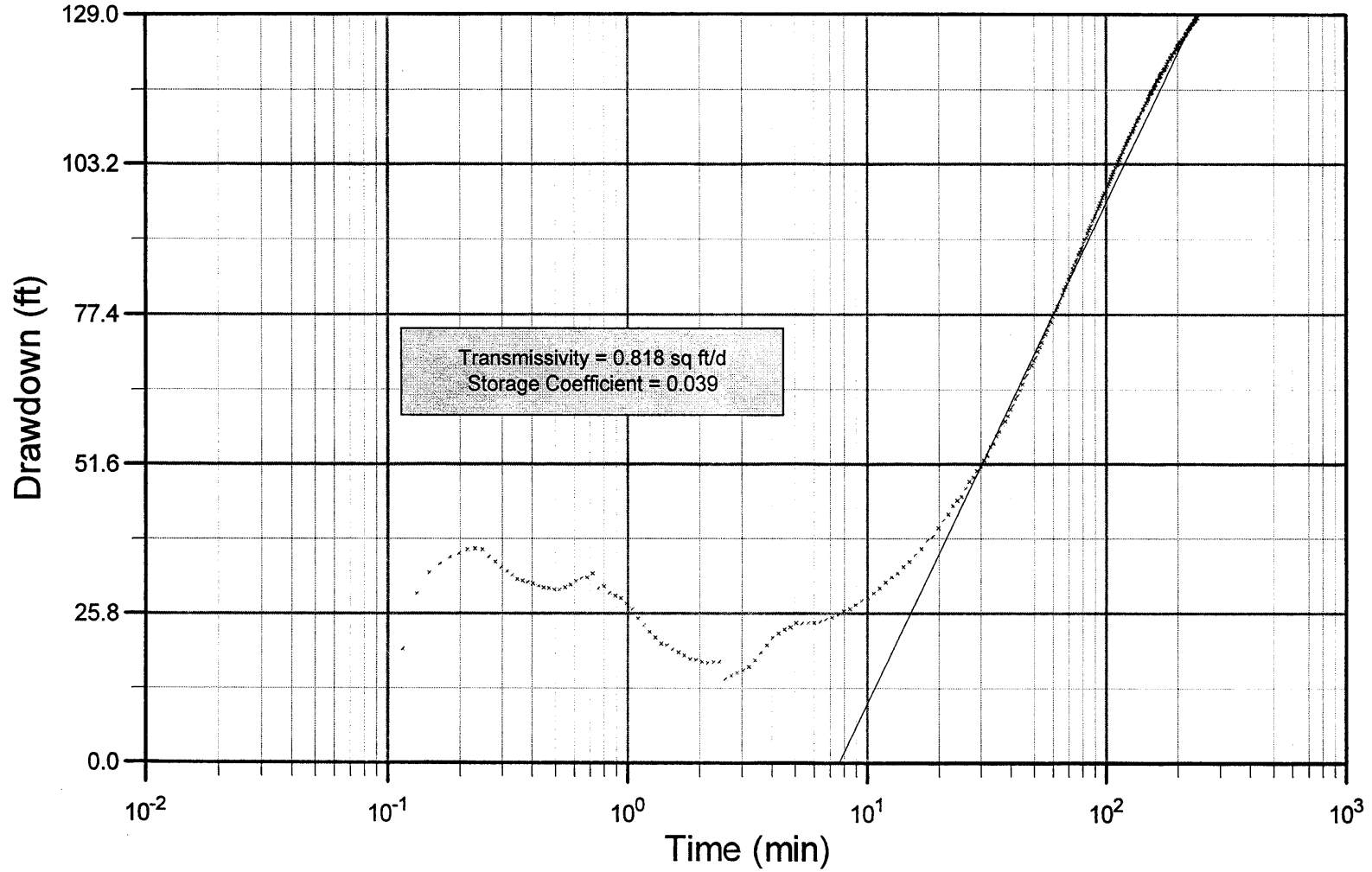




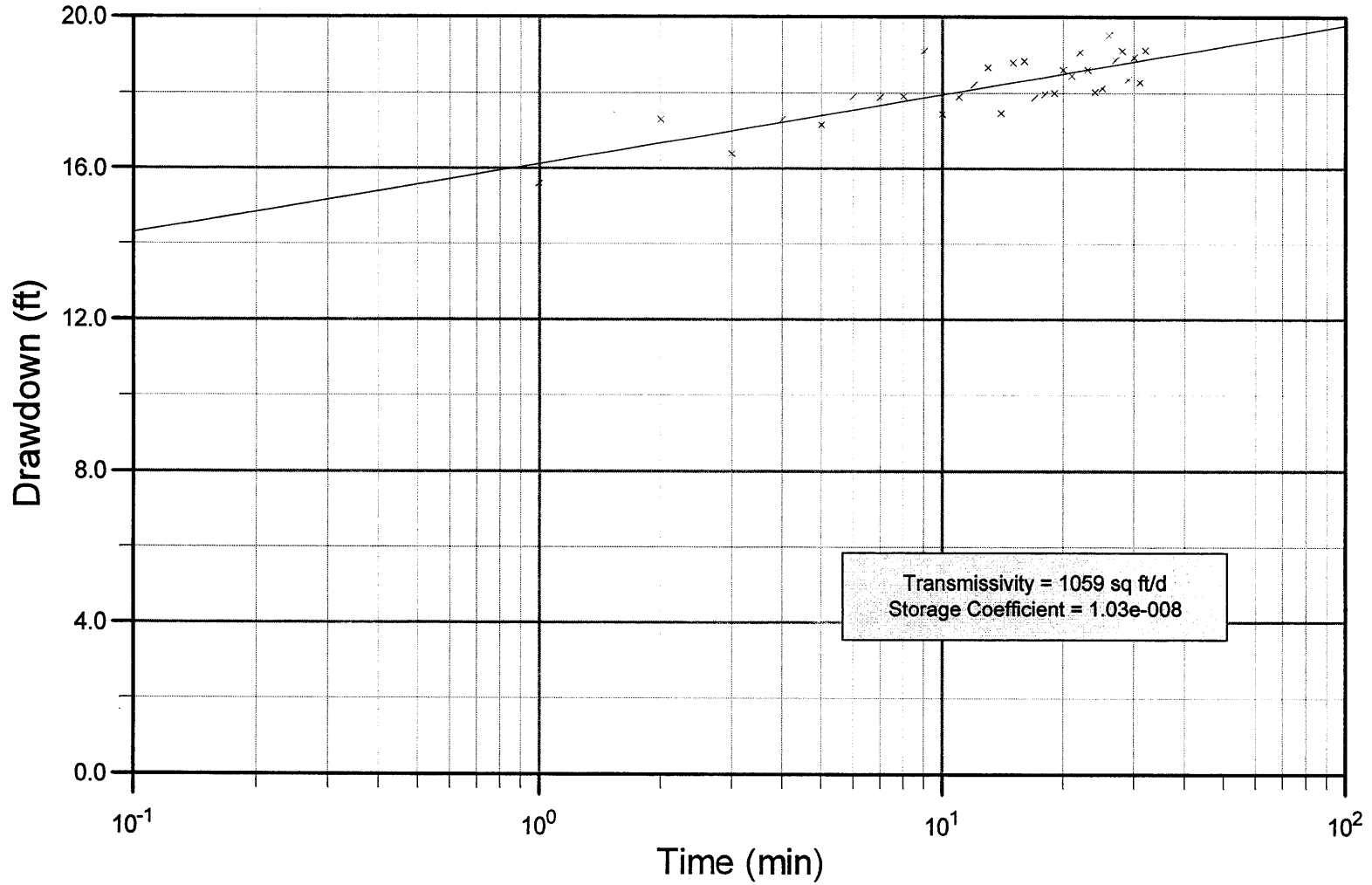
Cooper and Jacob - WRF DZMW-1 Packet Test 4 (1,643 to 1,658 feet bls)



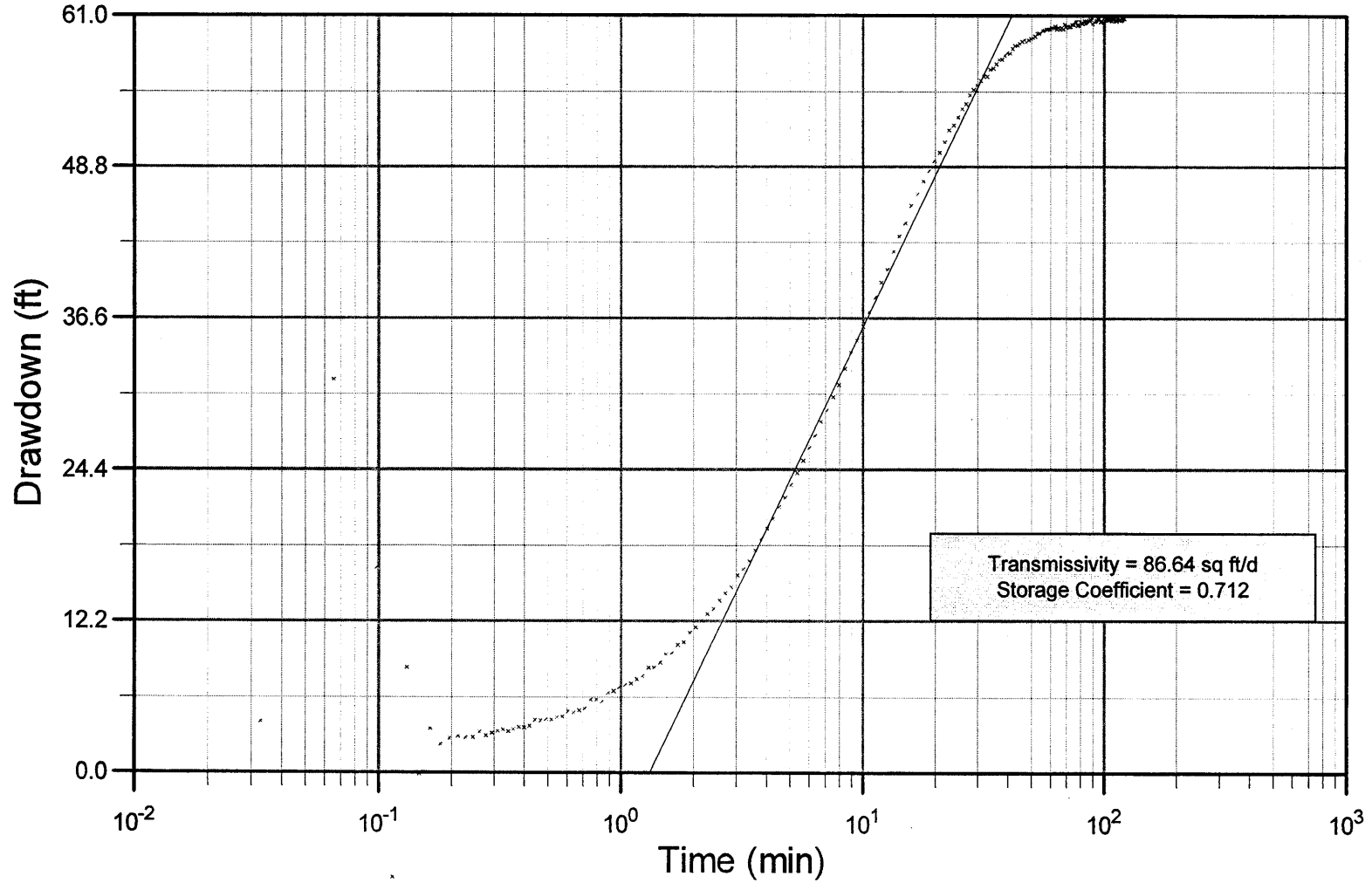
Cooper and Jacob - WRF DZMW-1 Packer Test 5 (1,430 to 1,460 feet bpl)



Cooper and Jacob - WRF DZMW-1 Packer Test 6 (1,255 to 1,285 feet bpl)



Cooper and Jacob - WRF DZMW-1 Packer Test 7 (1,110 to 1,200 feet bpl)



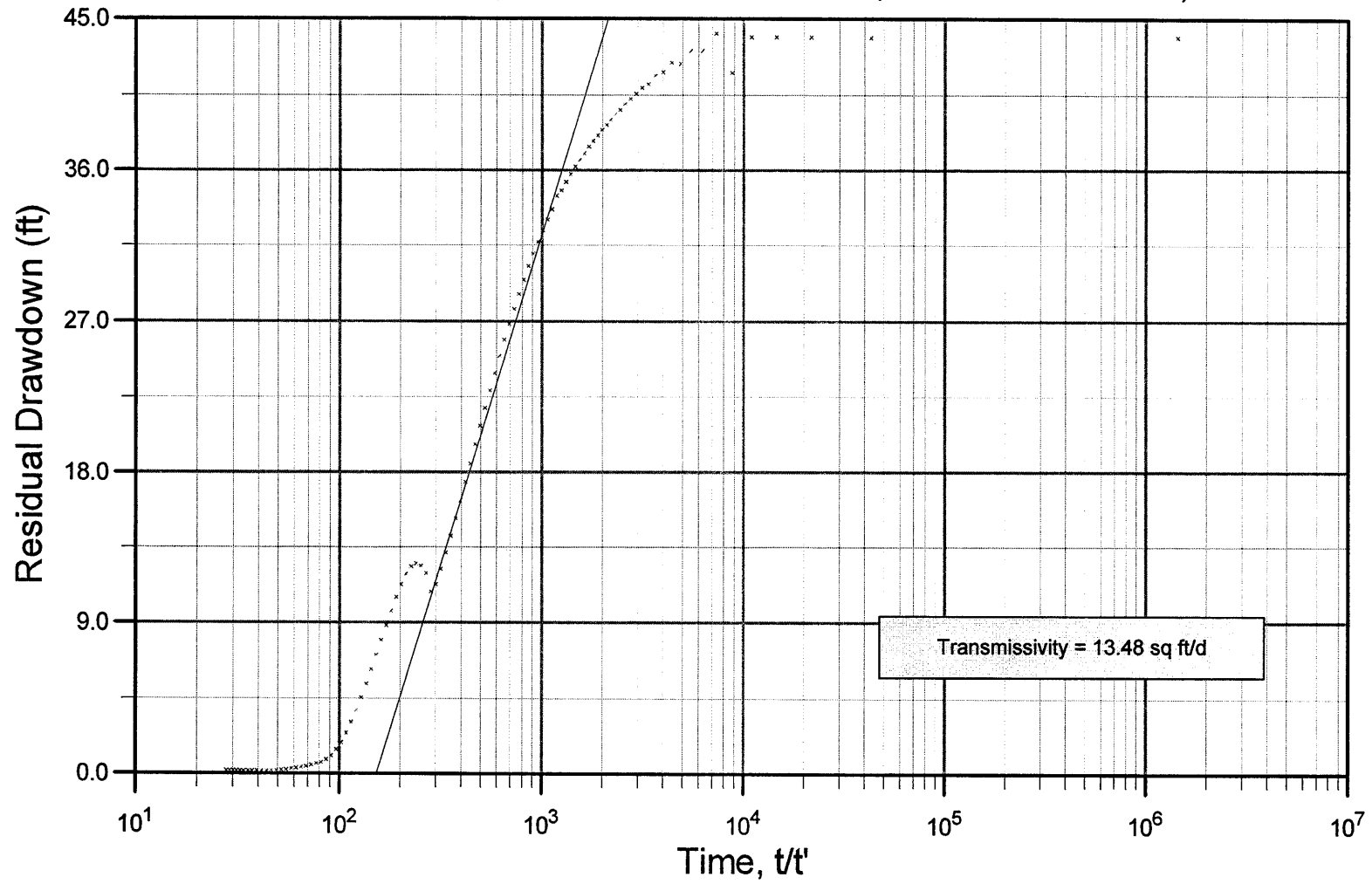
---

APPENDIX J.2

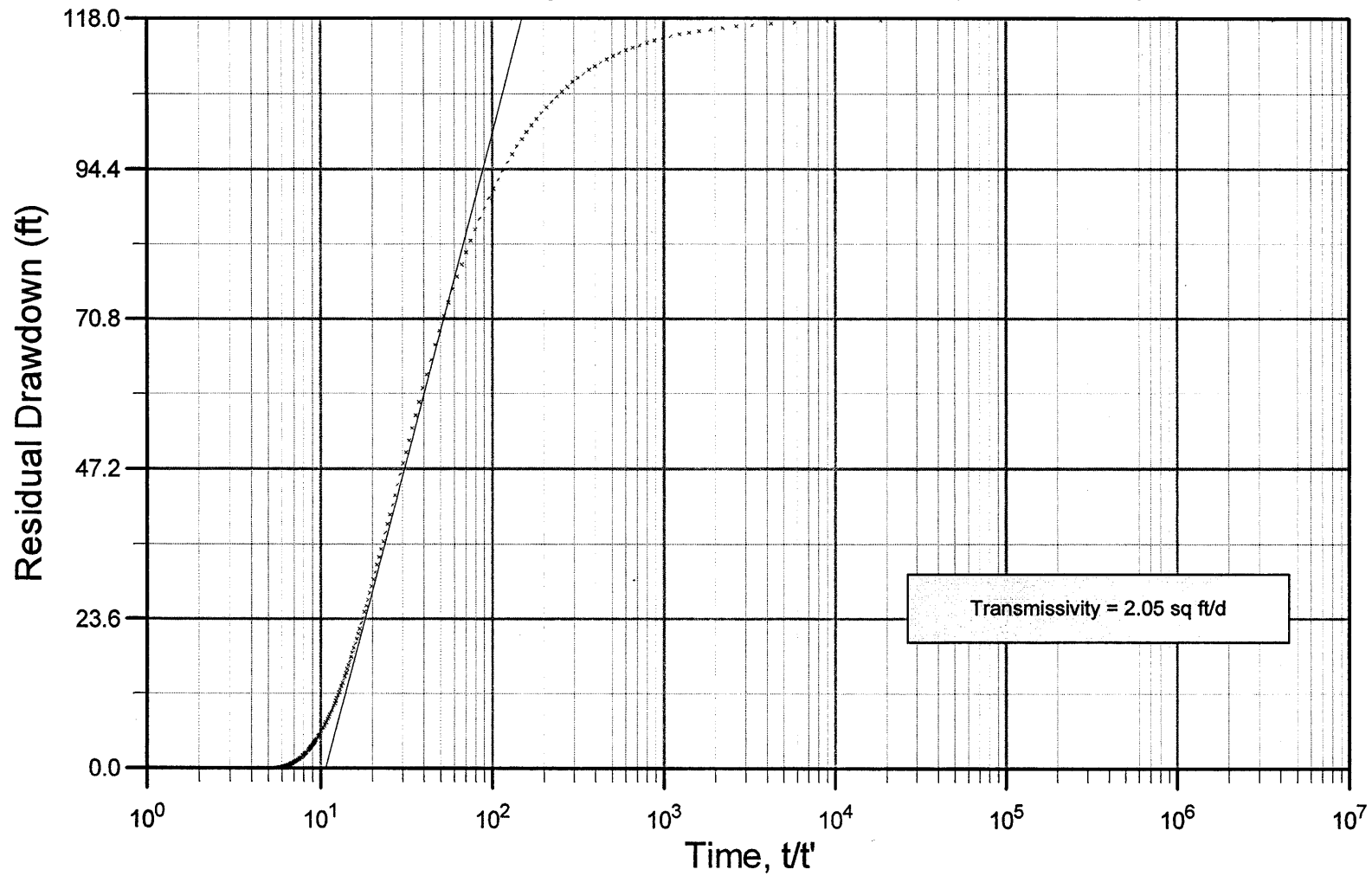
**Theis Recovery Analysis Curves**

---

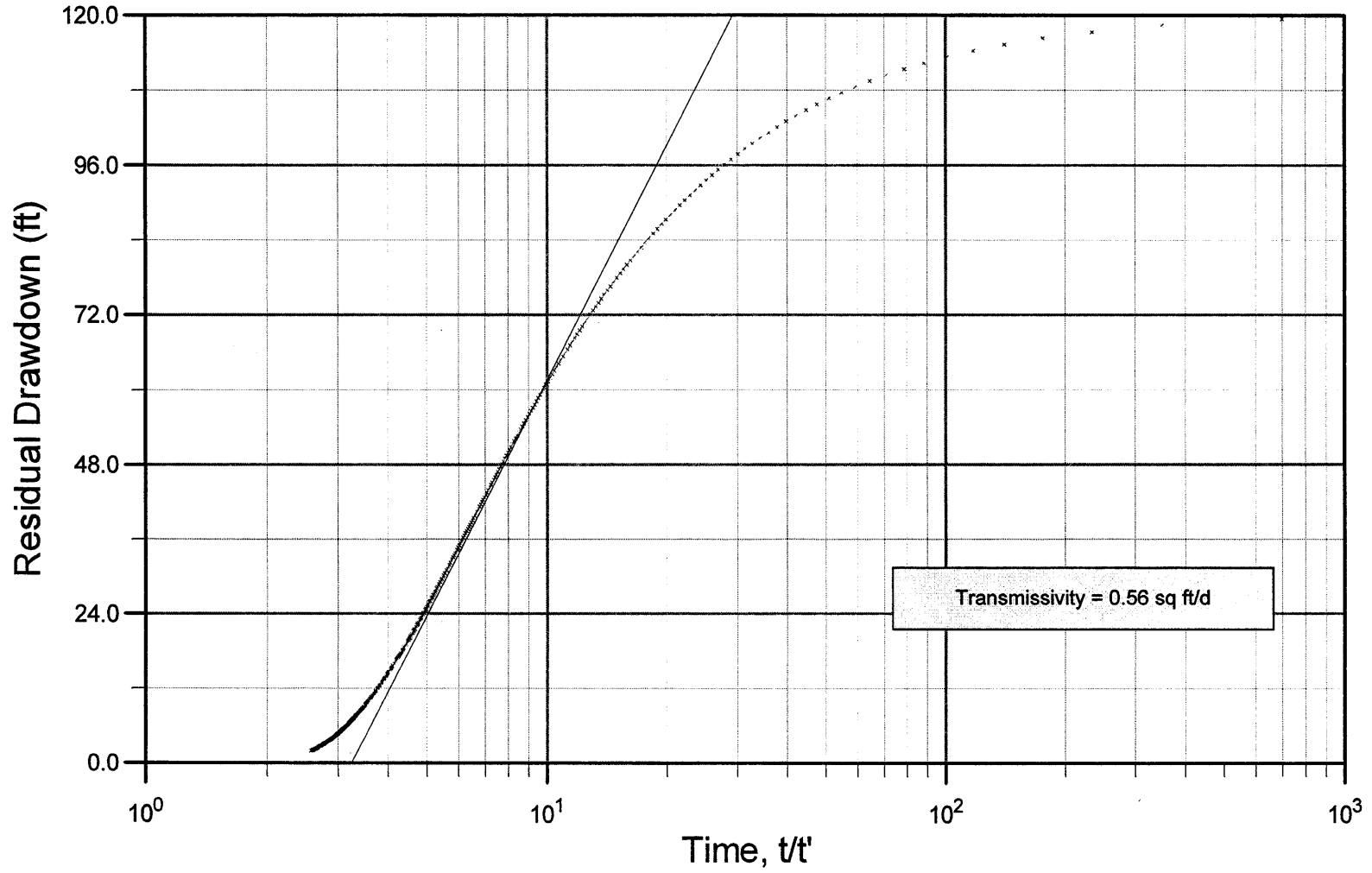
This Recovery - WRF IW Packer Test 1 (1,919 - 1,968 feet bls)



### This Recovery - WRF IW-1 Packer Test 2 (2,290 -2,318)

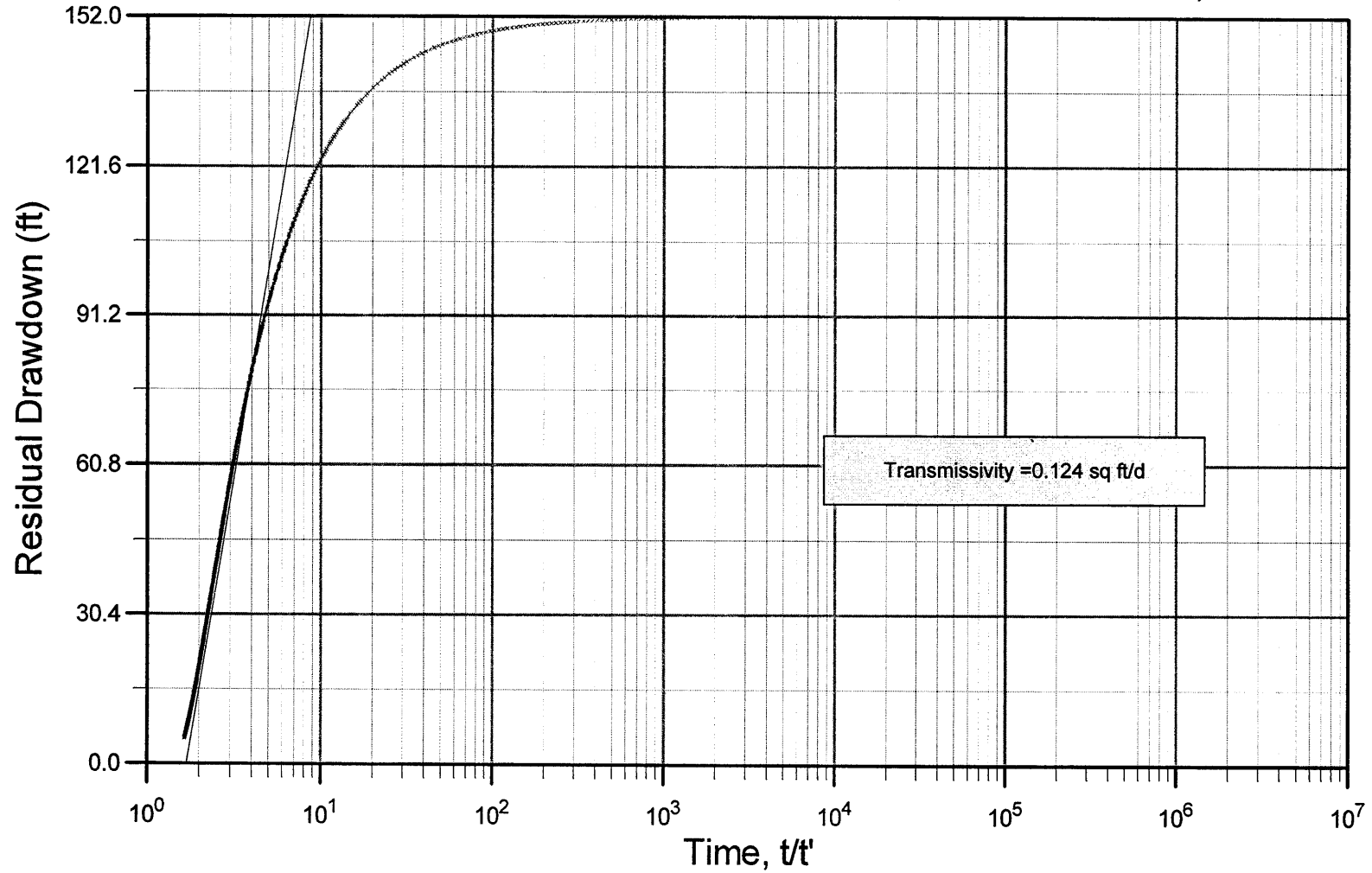


Theis Recovery - WRF IW-1 Packer Test 3 (2,215 - 2,243 feet bls)

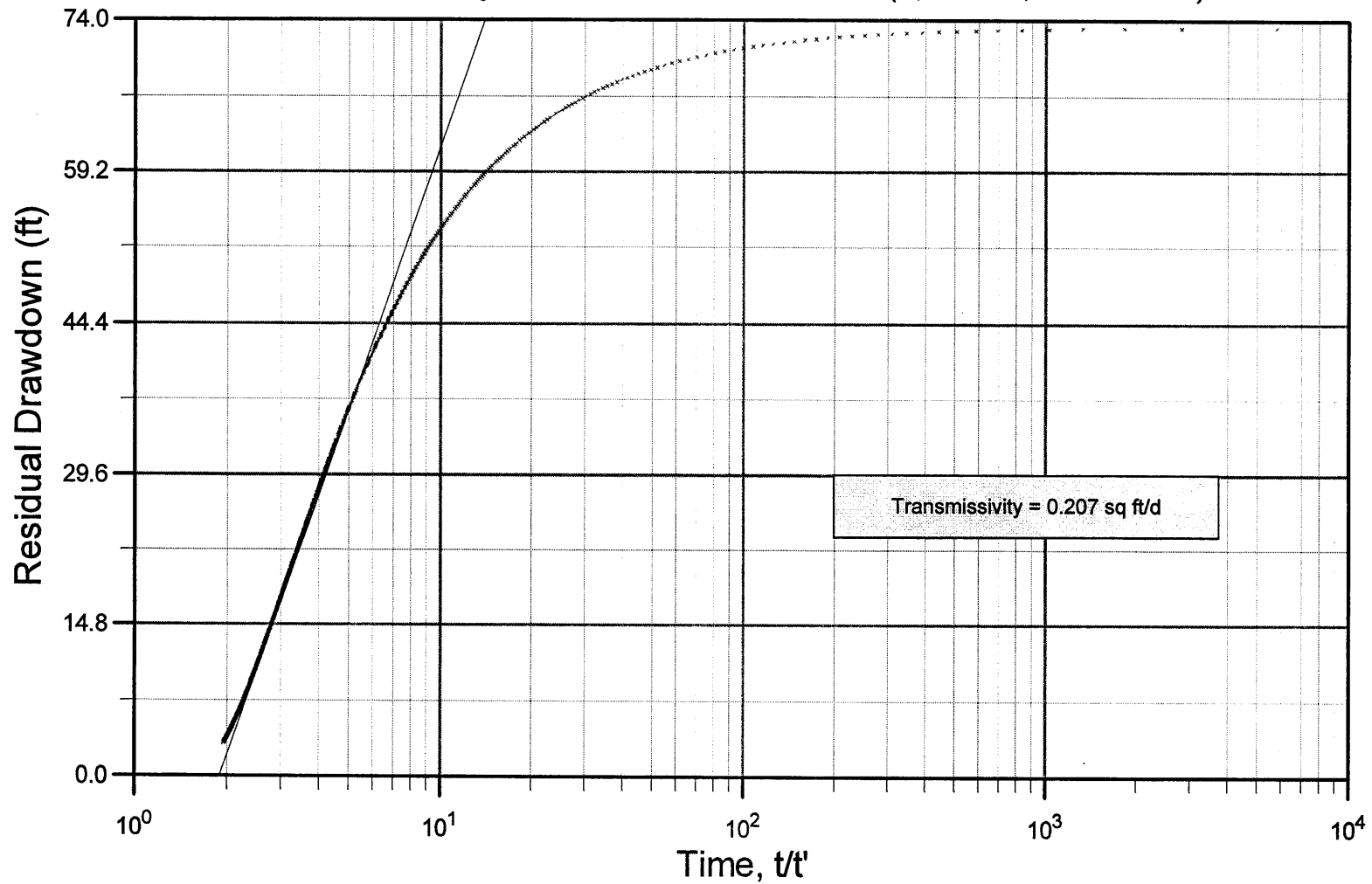




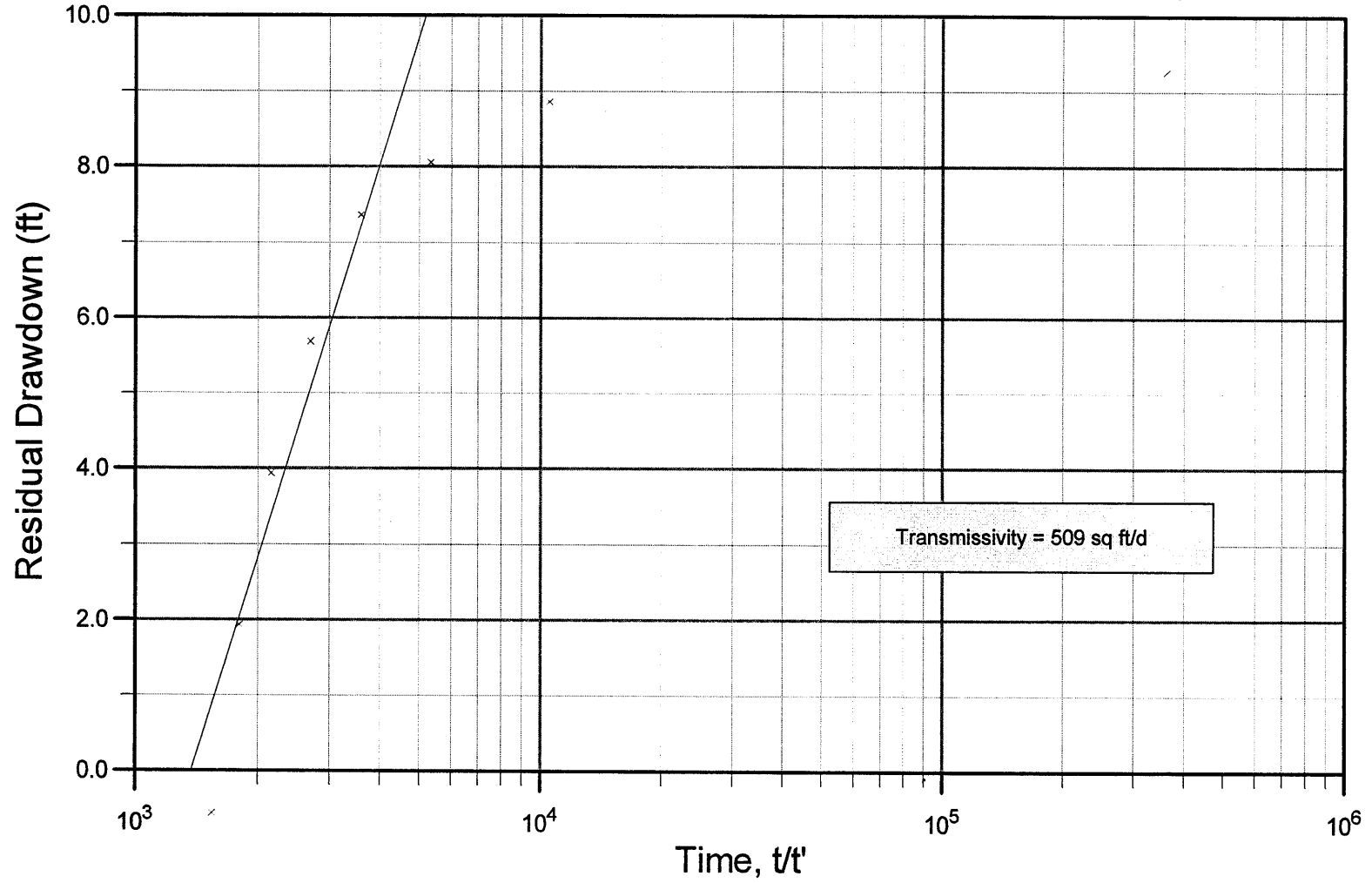
This Recovery - WRF IW-1 Packer Test 4 (2,100 - 2,128 feet bls)



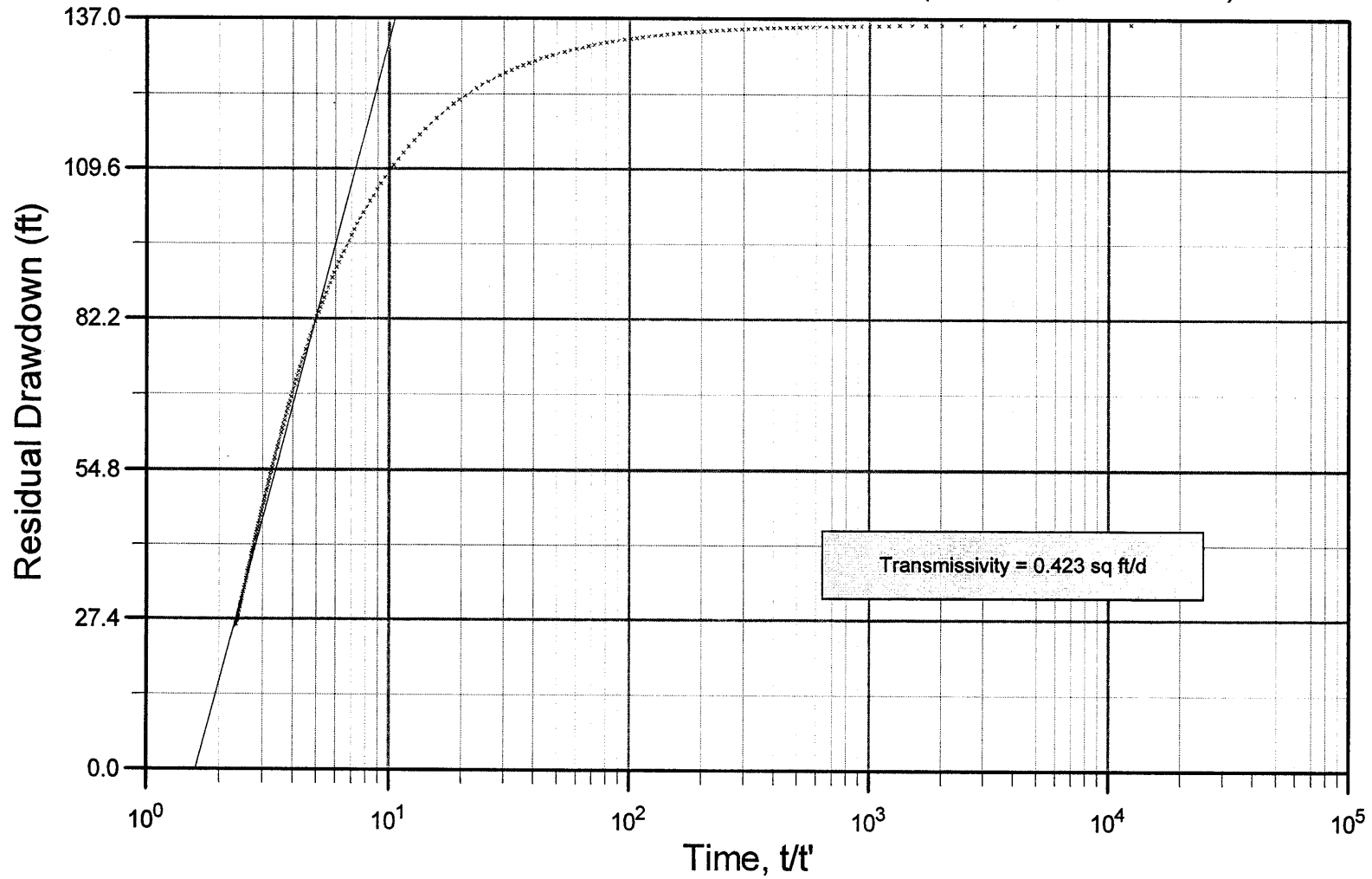
This Recovery - WRF IW-1 Packer Test 5 (1,870 - 1,898 feet bls)



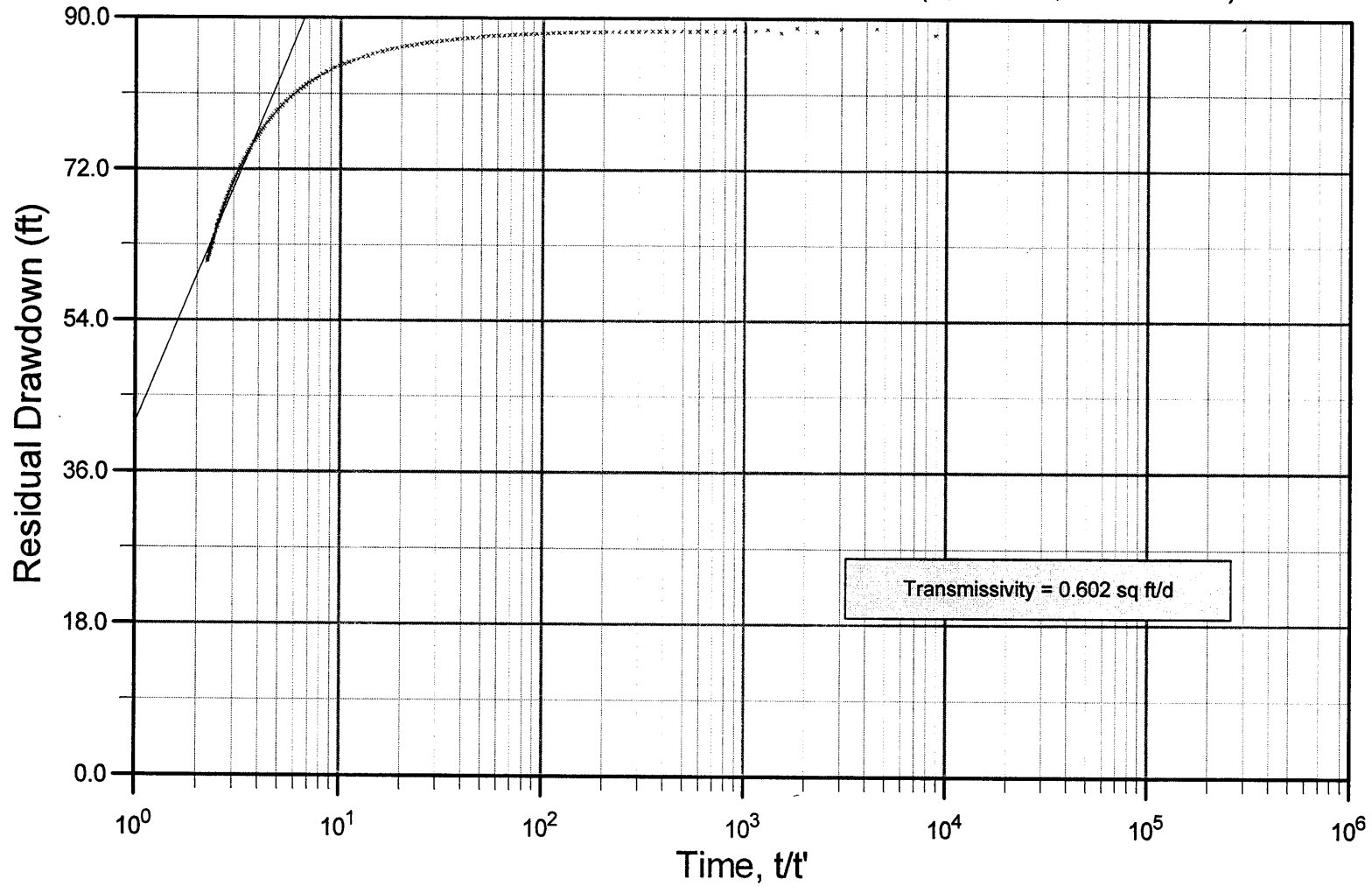
This Recovery - IW-1 Packer Test 6 TR (2,490 - 3,220 feet bls)



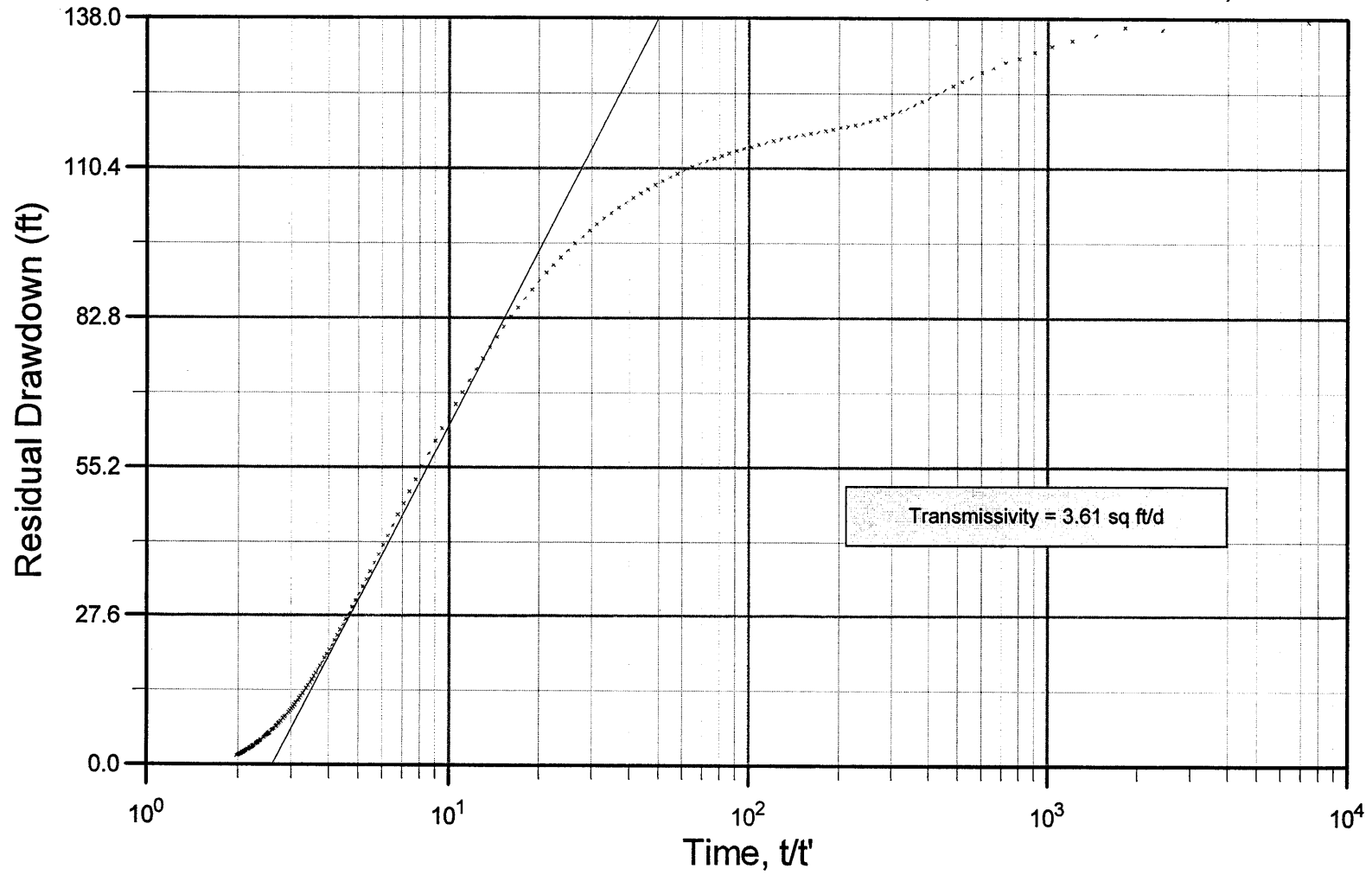
This Recovery - WRF DZMW-1 Packer Test 1 (1,450 - 1,480 feet bls)



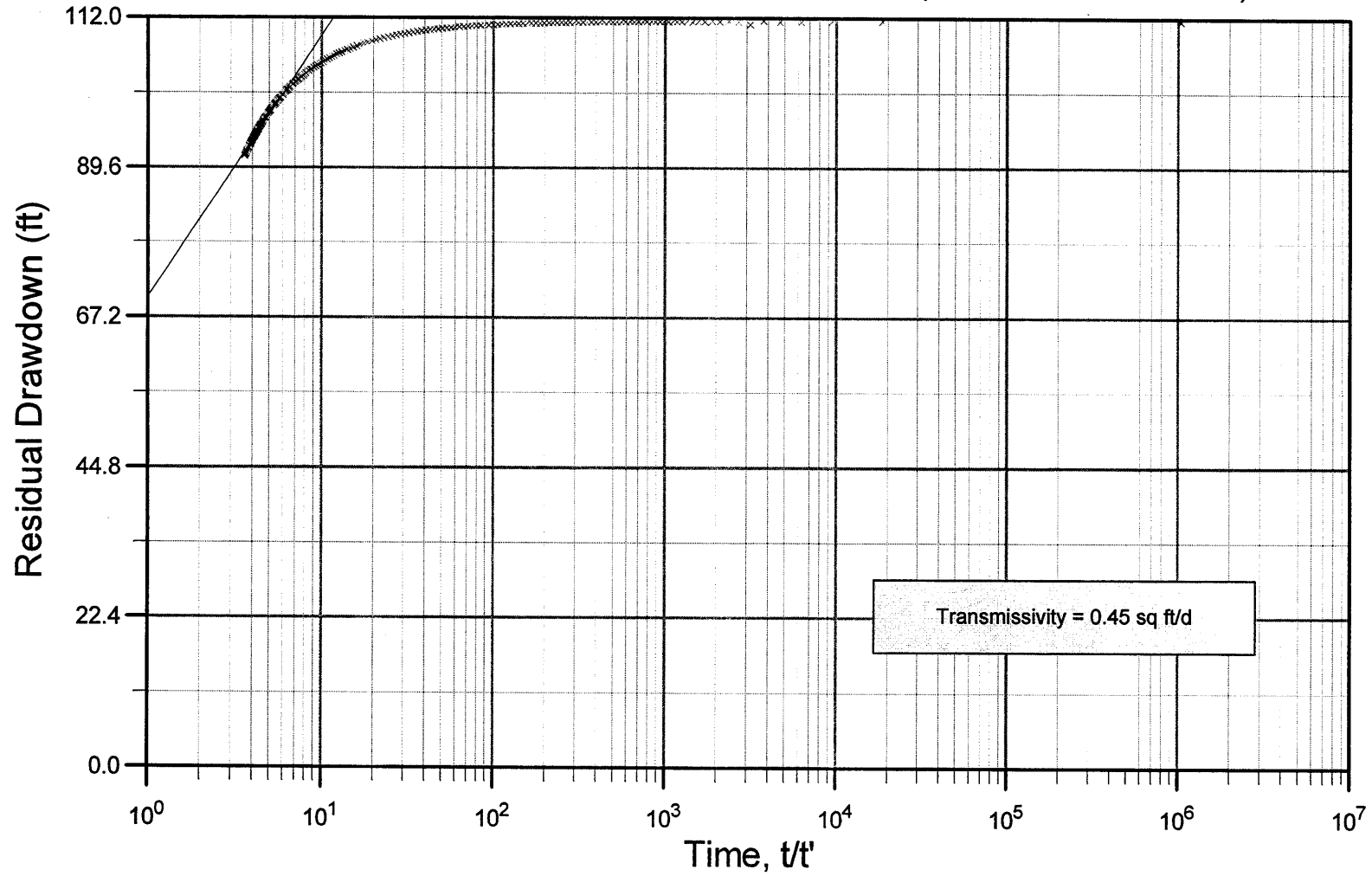
This Recovery - WRF DZMW-1 Packer Test 2 (1,520 - 1,550 feet bls)



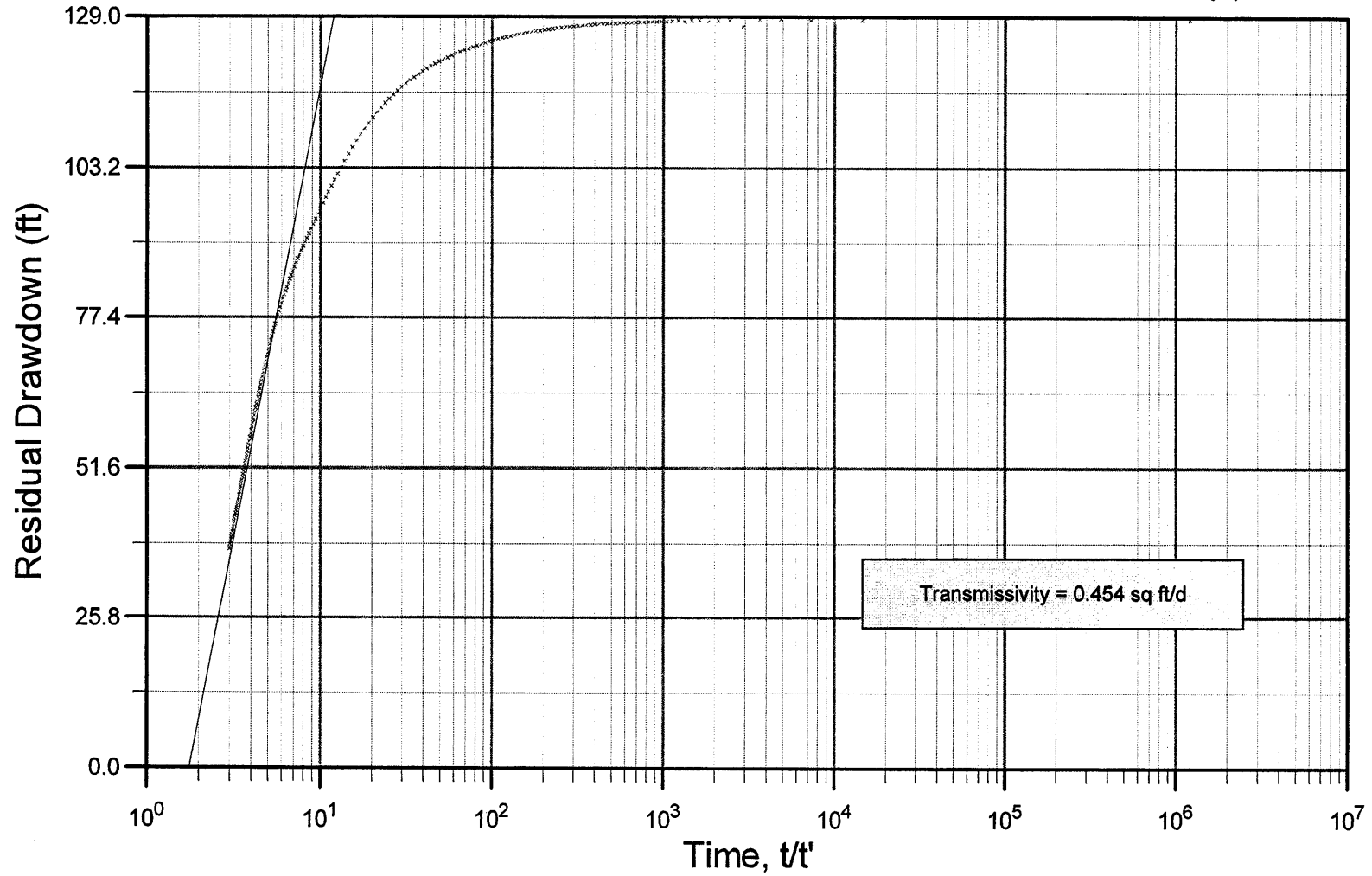
Theis Recovery - WRF DZMW-1 Packer Test 3 (1,680 - 1,710 feet bls)



This Recovery - WRF DZMW-1 Packer Test 4 (1,643 to 1,658 feet bls)

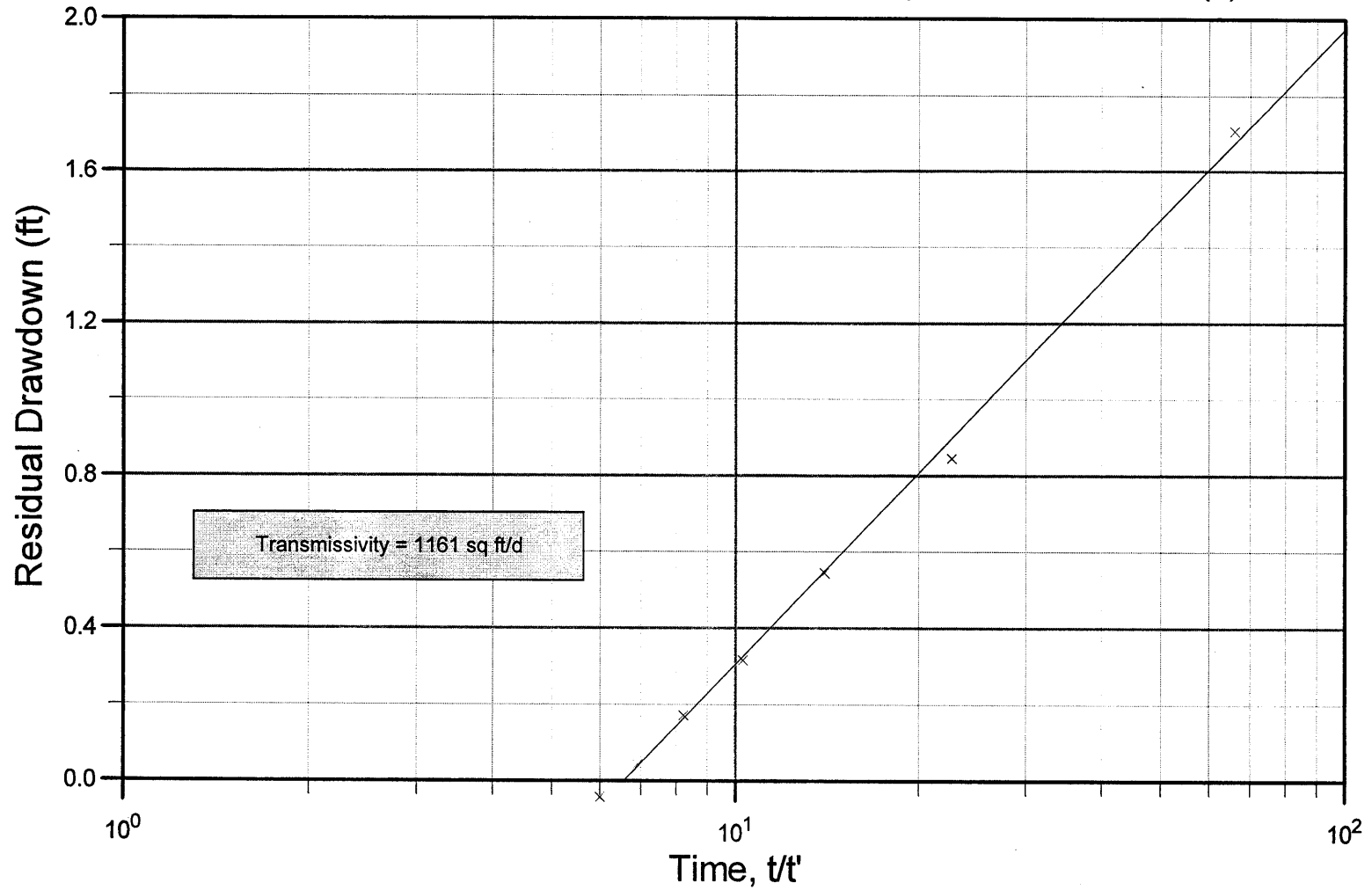


This Recovery - WRF DZMW-1 Packer Test 5 (1,430 to 1,460 feet bpl)

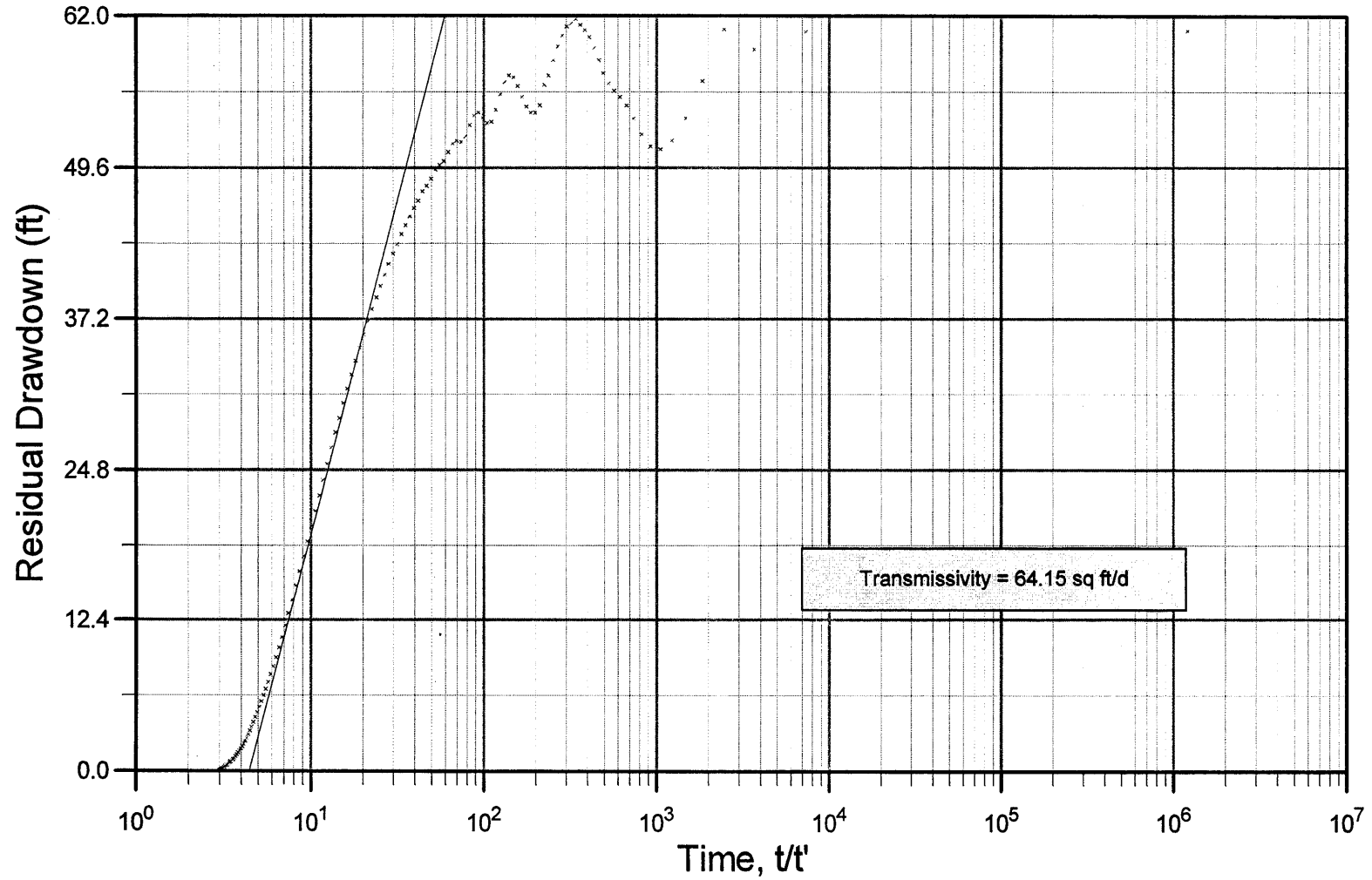




This Recovery - WRF DZMW-1 Packer Test 6 (1,255 to 1,285 feet bpl)



This Recovery - WRF DZMW-1 Packer Test 7 (1,110 to 1,200 feet bpl)



APPENDIX K

**Packer Test Water Quality Laboratory  
Results**

---

APPENDIX K.1

**WRF IW-1 Packer Test Water Quality  
Results**

---

# Lab Project Summary

**Lab Project Num:** F0309225  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 4

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

RECEIVED SEP 26 2003

Client Project: Bonita Springs

Lab Project: F0309225

Report Date: 09/23/03



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0309225-01	Packer Test #1 grab	Ground Water	9/17/03 12:50	8/24/03 13:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20500		2000	mg/L	9/17/03 16:10	BG	E85457
Conductivity	120.1	53600		0.1	umhos/cm	9/19/03 9:30	BG	E85457
Sulfate	375.4	2900		200	mg/L	9/17/03 13:30	BG	E85457
Total Dissolved Solids	160.1	37800	Q	800	mg/L	9/17/03 15:30	BG	E85457

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0309225-02	Packer Test #2 grab	Ground Water	9/17/03 12:50	8/28/03 11:30

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	20500		2000	mg/L	9/17/03 16:10	BG	E85457
Conductivity	120.1	52800		0.1	umhos/cm	9/19/03 9:30	BG	E85457
Sulfate	375.4	2870		200	mg/L	9/17/03 13:30	BG	E85457
Total Dissolved Solids	160.1	36100	Q	800	mg/L	9/17/03 15:30	BG	E85457

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0309225-03	Packer Test #5 grab	Ground Water	9/17/03 12:50	9/10/03 12:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	22200		2000	mg/L	9/17/03 16:10	BG	E85457
Conductivity	120.1	55400		0.1	umhos/cm	9/19/03 9:30	BG	E85457
Sulfate	375.4	2960		200	mg/L	9/17/03 13:30	BG	E85457

Client Project: Bonita Springs

Lab Project: F0309225

Report Date: 09/23/03

## Laboratory Results

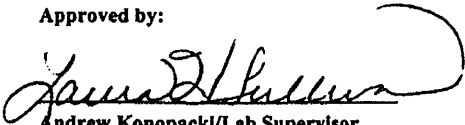
<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0309225-03	Packer Test #5 grab	Ground Water	9/17/03 12:50	9/10/03 12:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Total Dissolved Solids	160.1	38000	Q	800	mg/L	9/17/03 15:30	BG	E85457

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0309225-04	Packer Test #6 grab	Ground Water	9/17/03 12:50	9/13/03 0:50

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	21200		2000	mg/L	9/17/03 16:10	BG	E85457
Conductivity	120.1	53200		0.1	umhos/cm	9/19/03 9:30	BG	E85457
Sulfate	375.4	2870		200	mg/L	9/17/03 13:30	BG	E85457
Total Dissolved Solids	160.1	37600		800	mg/L	9/17/03 15:30	BG	E85457

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments: Q = sample held beyond acceptable holding time.

Test Results meet all the requirements of the NELAC



CHAIN-OF-CUSTODY RECORD

PROJECT # F30 AW

Page \_\_\_\_\_ of \_\_\_\_\_

Client CHAM Hill  
 Address \_\_\_\_\_  
 Phone 239-218-9421 OR 954-646-4933

Report To: CHAM Hill  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DTW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit #: \_\_\_\_\_  
 REQUESTED DUE DATE: RUSH 9/19/03

Sampled By (PRINT) <u>MARK SCHILLING</u>					PRESERVATIVES					ANALYSES REQUEST										Sample ID #														
Sampler Signature <u>M. Schilling</u>					Sample					4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>2</sub>	TDS	Cl-	SULFATE	/ / / / / / / / / / / / / / / /															
Bottle #	SAMPLE DESCRIPTION				DATE	TIME	TYPE	4°C	UNPRESERVED										H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>2</sub>	TDS	Cl-	SULFATE	/	/	/	/	/	/	/	/	Sample ID #
	PACKER TEST # 1				8-24-03	1300	GW		✓					✓	✓	✓										01A								
	↓ ↓ # 2				8-28-03	1130	↓		✓					✓	✓	✓										02A								
	↓ ↓ # 5				9-10-03	1200	↓		✓					✓	✓	✓										03A								
	↓ ↓ # 6				9-13-03	0050	↓		✓					✓	✓	✓										04A								
Bottle Lot # _____					SHIPMENT METHOD					RELINQUISHED BY / AFFILIATION					DATE	TIME	ACCEPTED BY / AFFILIATION					DATE	TIME											
					OUT / DATE RETURNED DATE					VIA					M. Schilling					9-16-03	1400	[Signature]					9/17/03	1225						
										COOLER #					[Signature]					9/17/03	1250	K. [Signature]					9/17/03	1250						
										COOLER SEAL INTACT																								
										Yes No																								

received COMMENTS:  
TDS out of  
hold for some samples  
KS 9/17/03



APPENDIX K.2

**WRF DZMW-1 Packer Test Water  
Quality Results**

---

# Lab Project Summary

**Lab Project Num:** F0311275  
**Client:** CH2M Hill  
4350 W. Cypress St

Total Pages: 3

**Phone:** Tampa FL 33607  
813-874-6522  
**Fax:** 813-874-3056  
**E-mail:**  
**Client Project Name:** BSU WRF DIW  
**Laboratory Contact:** Andy Konopacki

RECEIVED DEC 8 2003

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.



Laboratory Results

CH2M Hill  
4350 W. Cypress St  
Tampa, FL 33607

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0311275-01	DZMW-1/Packer Test #1 grab	Ground Water	11/25/03 12:55	11/22/03 6:05

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	5350		400	mg/L	11/25/03 14:00	BG	E85457
Conductivity	120.1	17100		0.1	umhos/cm	11/25/03 14:30	BG	E85457
Sulfate	375.4	559		50	mg/L	11/25/03 14:15	BG	E85457
Total Dissolved Solids	160.1	10300		160	mg/L	11/25/03 16:20	BG	E85457

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0311275-02	DZMW-1 Packer Test #2 grab	Ground Water	11/25/03 12:55	11/25/03 11:30

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	9000		1000	mg/L	11/25/03 14:00	BG	E85457
Conductivity	120.1	26900		0.1	umhos/cm	11/25/03 14:30	BG	E85457
Sulfate	375.4	576		50	mg/L	11/25/03 14:15	BG	E85457
Total Dissolved Solids	160.1	17100		160	mg/L	11/25/03 16:20	BG	E85457

Approved by:

Comments:

  
Andrew Konopacki/Lab Supervisor  
Laura Sullivan/QA Officer  
Kathrine Bartkiewicz/Lab Supervisor

Test Results meet all the requirements of the NELAC



CHAIN-OF-C OUDY RECORD

PROJECT # FS 11270

Page \_\_\_\_ of \_\_\_\_

Client CH2M Hill

Report To: CH2M Hill

Sample Supply: GW

Address \_\_\_\_\_

Bill To: YBI

Customer Type: \_\_\_\_\_

Phone 239-218-9421 OR 954-646-4933 Fax \_\_\_\_\_

P.O. # \_\_\_\_\_

Field Report #: \_\_\_\_\_

Project Name BSU WRF DIW

Kit # \_\_\_\_\_

Project Location: BSU WRF

\* REQUESTED DUE DATE: RUSH 11/24/03 \*

Sampled By (PRINT)					PRESERVATIVES					ANALYSES REQUEST																						
Sampler Signature					Sample					4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL											Sample ID #							
Bottle #	SAMPLE DESCRIPTION			DATE	TIME	TYPE																										
	DZMW-1 PACKER TEST #1			11-22-03	0603	GW																	01A									
	↓ ↓ ↓ #2			11-25-03	1130	GW																		02A								
Bottle Lot #					SHIPMENT METHOD					RELINQUISHED BY / AFFILIATION					DATE		TIME		ACCEPTED BY / AFFILIATION					DATE		TIME						
OUT / DATE					RETURNED DATE					VIA					COMMENTS:																	
					COOLER #																											
					COOLER SEAL INTACT																											
					Yes No																											

# Lab Project Summary

**Lab Project Num:** N0312151  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 3

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** BSU WRF DIW  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon re
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Lab
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

**RECEIVED DEC 15 2003**

Nokomis Lab ~ 1050 Endeavor Ct. ~ Nokomis, FL 34275-3623 ~ Phone: 941-488-8103 ~ Fax: 941-484-6774 ~ HRS Certification # E84380  
Fort Myers Lab ~ 16880 Gator Road ~ Fort Myers, FL 33912 ~ Phone: 941-590-0337 ~ Fax: 941-590-0536 ~ HRS Certification # E85457

*Invoice # 011870*

Client Project: BSU WRF DIW

Lab Project: N0312151

Report Date: 12/08/03



Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0312151-01	dzmw-1 packer test #5 grab	Ground Water	12/5/03 13:35	12/5/03 9:45

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Chloride	4500Cl-B	6000		1000	mg/L	12/5/03 14:30	JL	E84380
Conductivity	120.1	16800		0.5	umhos/cm	12/8/03 11:00	EW	E84380
Sulfate	375.4	472		100	mg/L	12/8/03 9:00	EW	E84380
Total Dissolved Solids	160.1	10800		10	mg/L	12/5/03 15:00	EW	E84380

Approved by:

Andrew Konopacki/Lab Supervisor  
Laura Sullivan/QA Officer  
Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC standards.

RECEIVED DEC 15 2003

L



# CHAIN-OF-CUSTODY RECORD

PROJECT # N0312151

Page 1 of 1

Client CH2M Hill

Address \_\_\_\_\_

Phone 239-218-9421 or 954-646-4933 Fax \_\_\_\_\_

Report To: CH2M Hill

Bill To: YBI

P.O. # \_\_\_\_\_

Project Name BSU WRF DIW

Project Location: BSU WRF

Sample Supply: \_\_\_\_\_

Customer Type: \_\_\_\_\_

Field Report #: \_\_\_\_\_

Kit # \_\_\_\_\_

\* REQUESTED DUE DATE: RUSH 12/8/03 \*

Sampled By (PRINT)		Sampler Signature		Sample		PRESERVATIVES					ANALYSES REQUEST					Sample ID #			
						4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>3</sub> D	TDAS	CI-	SULFATE					
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>3</sub> D	TDAS	CI-	SULFATE						
	DZMW-1 PACKER TEST #5	12-5-03	0945	GW		✓					X	X	X						-01A

# Lab Project Summary

**Lab Project Num:** F0312179  
**Client:** CH2M Hill  
4350 W. Cypress St

Total Pages: 3

**Phone:** Tampa FL 33607  
813-874-6522  
**Fax:** 813-874-3056  
**E-mail:**  
**Client Project Name:** BSU WRF DIW  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon re
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Lab
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

**RECEIVED**  
**DEC 29 2003**



Client Project: BSU WRF DIW

Lab Project: F0312179

Report Date: 12/16/03



Laboratory Results

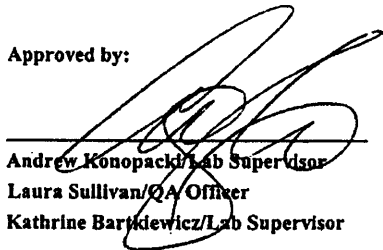
CH2M Hill  
4350 W. Cypress St  
Tampa, FL 33607

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0312179-01	DZMW-1 Packer Test #7 grab	Ground Water	12/13/03 12:15	12/13/03 6:05

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	2550		200	mg/L	12/15/03 11:00	BG	E85457
Conductivity	120.1	7220		0.1	umhos/cm	12/15/03 9:30	BG	E85457
Sulfate	375.4	567		50	mg/L	12/15/03 10:00	BG	E85457
Total Dissolved Solids	160.1	5490		80	mg/L	12/15/03 17:00	BG	E85457

Approved by:

Comments:

  
 Andrew Konopacki Lab Supervisor  
 Laura Sullivan/QA Officer  
 Kathrine Barzdewicz Lab Supervisor

Test Results meet all the requirements of the NELAC



# CHAIN-OF-CUSTODY RECORD

PROJECT # T03 12179

Page \_\_\_\_ of \_\_\_\_

Client CH2M Hill  
 Address \_\_\_\_\_  
 Phone 954-646-4933 Fax 239-992-1321

Report To: CH2M Hill  
 Bill To: YBI  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DIW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_

\* REQUESTED DUE DATE: ROSH \* 12/16

Sampled By (PRINT)				PRESERVATIVES					ANALYSES REQUEST						Sample ID #	
Sampler Signature				4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>2</sub> A	TDS	CL <sup>-</sup>	SULFATE				
Bottle #	SAMPLE DESCRIPTION			DATE	TIME	TYPE										
	DZMW-1 PACKER TEST # 7			12-13-03	0605	GW	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								01A
Bottle Lot #	SHIPMENT METHOD	VIA	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	COMMENTS:		COOLER #	COOLER SEAL INTACT				
			<u>M. Hill / CH2M Hill</u>	12-13-03	0800	<u>R. Hill</u>	12/13/03	1150				Yes No				
			<u>[Signature]</u>	12/13/03	1215	<u>Meadow</u>	12/13/03	1215				Yes No				

Sanders Laboratories, Inc.

# Lab Project Summary

**Lab Project Num:** F0312211  
**Client:** CH2M Hill  
4350 W. Cypress St

Total Pages: 3

**Phone:** Tampa FL 33607  
813-874-6522  
**Fax:** 813-874-3056  
**E-mail:**  
**Client Project Name:** BSU WRF DIW  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon re
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Labo
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

RECEIVED  
IDEC 29 2003



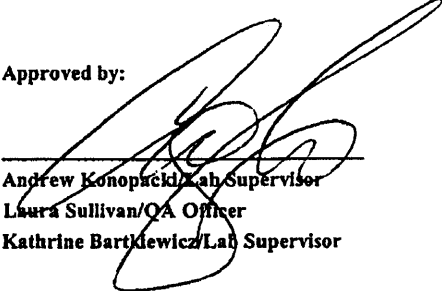
Laboratory Results

CH2M Hill  
4350 W. Cypress St  
Tampa, FL 33607

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
F0312211-01	DZMW-1/Packer Test #6 grab	Ground Water	12/15/03 16:50	12/5/03 21:15

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Chloride	4500Cl-B	5050		400	mg/L	12/16/03 9:00	BG	E85457
Conductivity	120.1	15800		0.1	umhos/cm	12/16/03 10:00	BG	E85457
Sulfate	375.4	506		50	mg/L	12/16/03 8:30	BG	E85457
Total Dissolved Solids	160.1	10000	Q	80	mg/L	12/15/03 17:00	BG	E85457

Approved by:

  
Andrew Konopacki/Lab Supervisor  
Laura Sullivan/OA Officer  
Kathrine Bartkewicz/Lab Supervisor

Comments: Q: Sample held beyond acceptable holding time.

Test Results meet all the requirements of the NELAC standards.



# CHAIN-OF-CUSTODY RECORD

PROJECT # FR 12211

Page \_\_\_\_\_ of \_\_\_\_\_

Client CH2M Hill  
 Address \_\_\_\_\_  
 Phone 954-646-4933  
239-218-9421 Fax 239-992-1321

Report To: CH2M Hill  
 Bill To: YBE  
 P.O. # \_\_\_\_\_  
 Project Name BSU WRF DEW  
 Project Location: BSU WRF

Sample Supply: GW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_

\* REQUESTED DUE DATE: RUSH \* 12/16/03

Sampled By (PRINT)				PRESERVATIVES					ANALYSES REQUEST																
SAMPLER SIGNATURE				4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>2</sub>	IDS	Cl <sup>-</sup>	SULFATE								Sample ID #					
MARK SCHILLING													DATE	TIME	TYPE										
Bottle #	SAMPLE DESCRIPTION			DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	CO <sub>2</sub>	IDS	Cl <sup>-</sup>	SULFATE								Sample ID #		
	DZMW-1 PACKER TEST # 6			12-5-03	2115	GW	✓					✓	✓	✓											01A
SHIPMENT METHOD				RE-INQUISHED BY / AFFILIATION					DATE	TIME	ACCEPTED BY / AFFILIATION					DATE	TIME								
Bottle Lot #	OUT / DATE	RETURNED / DATE	VIA	M. Schilling / CH2M Hill					12-15-03	1650	[Signature]					12/16/03	1600								
COMMENTS:			COOLER #																						
			COOLER SEAL INTACT																						
			Yes No																						

---

APPENDIX L

**Full Scale Geophysical Logs (See volume II)**

---

APPENDIX M

## **Video Log Survey Summaries**

---

# CH2M HILL

## Record of Underwater TV Survey

**Project:** Bonita Springs Utilities WRF Deep Injection Well  
**Well:** IW-1  
**Survey By:** Youngquist Brothers

**Survey Date:** 01/14/2004  
**Pump Rate:** Unknown  
**Witnessed By:** Mark Schilling / CH2M HILL

**Well Depth:** 3,220 feet bpl  
**Survey Depth:** 3,099 feet bpl  
**Casing:** 16-inch to 2,490 feet bpl  
**Drill Bit Size:** 14.5-inch

**Reviewed By:** Mark Schilling/CH2M HILL  
**Remarks:** All depths referenced to pad level

**Date:** 10/14/2004

Depth (feet)	Depth (feet)	Observations
0	100	Begin logging. Visibility is moderate with high turbidity. Casing joints noted at 34 and 74 feet bpl. Casing integrity is good.
100	200	Casing joints noted at 1114 feet bpl, 154 feet bpl, and 195 feet bpl. Visibility degrades as camera speed is greater than pumping rate. Camera is occasionally stopped to allow visibility to clear
200	300	Casing joints noted at 235 feet bpl and 275 feet bpl.
300	400	Casing joints noted at 314 feet bpl, 355 feet bpl, and 394 feet bpl.
400	500	Casing joints noted at 434 feet bpl and 474 feet bpl.
500	600	Casing joints noted at 514 feet bpl, 554 feet bpl, and 594 feet bpl.
600	700	Casing joints noted at 634 feet bpl and 674 feet bpl.
700	800	Casing joints noted at 715 feet bpl, 755 feet bpl, and 795 feet bpl.
800	900	Casing joints noted at 835 feet bpl and 875 feet bpl.
900	1,000	Casing joints noted at 915 feet bpl, 956 feet bpl, and 996 feet bpl.
1,000	1,100	Casing joints noted at 1,035 feet bpl and 1,076 feet bpl.
1,100	1,200	Casing joints noted at 1,116 feet bpl, 1,156 feet bpl, and 1,196 feet bpl.
1,200	1,300	Casing joints noted at 1,236 feet bpl and 1,276 feet bpl.
1,300	1,400	Casing joints noted at 1,316 feet bpl, 1,357 feet bpl, and 1,396 feet bpl.
1,400	1,500	Casing joints noted at 1,436 feet bpl and 1,477 feet bpl.
1,500	1,600	Casing joints noted at 1,517 feet bpl, 1,557 feet bpl, and 1,597 feet bpl.
1,600	1,700	Casing joints noted at 1,637 feet bpl and 1,677 feet bpl.
1,700	1,800	Casing joints noted at 1,717 feet bpl, 1,757 feet bpl, and 1,797 feet bpl.
1,800	1,900	Casing joints noted at 1,837 feet bpl and 1,877 feet bpl.
1,900	2,000	Casing joints noted at 1,917 feet bpl, 1,957 feet bpl, and 1,997 feet bpl.
2,000	2,100	Casing joints noted at 2,038 feet bpl and 2,078 feet bpl.
2,100	2,200	Casing joints noted at 2,118 feet bpl, 2,158 feet bpl, and 2,198 feet bpl.
2,200	2,300	Casing joints noted at 2,238 feet bpl and 2,278 feet bpl.
2,300	2,400	Casing joints noted at 2,319 feet bpl, 2,359 feet bpl, and 2,398 feet bpl.
2,400	2,490	Casing joints noted at 2,438 feet bpl and 2,478 feet bpl.
2,490	2,490	Base of 16-inch steel casing noted at 2,490 feet bpl.
2,490	2,506	Gauged borehole, smooth, low porosity limestone with sparse vuggy regions.
2,506	2,694	Gauged borehole, fractured, interspersed with small to medium caverns
2694	2726	Very large void noted, highly fractured
2726	2870	Gauged borehole, fractured, vuggy interspersed with small to medium caverns
2870	2883	Large void noted, highly fractured
2883	2945	Vuggy limestone and dolomite, several verticals fractures and small voids noted, borehole is relatively gauged.
2945	2980	Borehole is relatively gauged, with little fracturing. Water quality deteriorating
2980	3031	Borehole is relatively gauged, with little fracturing. Water quality very cloudy
3031	3099	Borehole is relatively gauged, with little fracturing. Water quality improves
3099	3099	Total depth of well.



**CH2M HILL****Record of Underwater TV Survey**

**Project:** Bonita Springs Utilities WRF Deep Injection Well  
**Well:** DZMW-1  
**Survey By:** Youngquist Brothers

**Survey Date:** 01/14/2004  
**Pump Rate:** N/A  
**Witnessed By:** Mark Schilling / CH2M HILL

**Well Depth:** 1640 feet bpl  
**Survey Depth:** 1,693 feet bpl  
**Casing:** 6.625-inch FRP to 1,570 feet bpl  
**Drill Bit Size:** 12.25 inch diameter

**Reviewed By:** Mark Schilling/CH2M HILL  
**Remarks:** All depths referenced to pad level

**Date:** 10/14/2004

Depth in Feet		Observations
From	To	
0	12	Begin video log. Visibility is excellent.
		Stainless steel casing weld noted at 12 feet bpl.
12	100	Stainless steel casing/FRP connection noted at 32 feet bpl.
		FRP Casing joints noted at 62 feet bpl and 92 feet bpl.
100	200	Casing joints noted at 122 feet bpl, 152 feet bpl, and 181 feet bpl.
200	300	Casing joints noted at 211 feet bpl, 241 feet bpl, 270 feet bpl, and 300 feet bpl.
300	400	Casing joints noted at 330 feet bpl, 359 feet bpl, and 389 feet bpl.
400	500	Casing joints noted at 418 feet bpl, 448 feet bpl, and 478 feet bpl.
		String is noted attached to the 448 feet bpl casing joint
500	600	Casing joints noted at 507 feet bpl, 537 feet bpl, 567 feet bpl, and 596 feet bpl.
600	700	Casing joints noted at 626 feet bpl, 655 feet bpl, and 685 feet bpl.
700	800	Casing joints noted at 715 feet bpl, 744 feet bpl, and 773 feet bpl.
800	900	Casing joints noted at 803 feet bpl, 833 feet bpl, 8629 feet bpl, and 892 feet bpl.
900	1,000	Casing joints noted at 921 feet bpl, 951 feet bpl, and 981 feet bpl.
1,000	1,100	Casing joints noted at 1,010 feet bpl, 1,040 feet bpl, 1,069 feet bpl, and 1,099 feet bpl.
1,100	1,200	Casing joints noted at 1,128 feet bpl, 1,157 feet bpl, and 1,186 feet bpl.
		Cement is noted surrounding the casing joint at 1,128 feet bpl.
1,200	1,300	Casing joints noted at 1,215 feet bpl, 1,244 feet bpl, and 1,273 feet bpl.
		Cement is noted surrounding the casing joint at 1,244 feet bpl.
1,300	1,400	Casing joints noted at 1,302 feet bpl, 1,332 feet bpl, 1,361 feet bpl, and 1,390 feet bpl.
1,400	1,500	Casing joints noted at 1,419 feet bpl, 1,448 feet bpl, and 1,478 feet bpl.
1,500	1,565	Casing joints noted at 1,507 feet bpl and 1,536 feet bpl.
1,565	1,570	Base of FRP casing noted at 1,570 feet bpl. Stainless steel packer noted between 1,565 feet and 1,570 feet bpl
1,570	1,580	Gauged borehole, smooth texture, low porosity. Visibility deteriorates.
1,580	1,580	Bottom of borehole noted.

APPENDIX N

**Video Tapes (Volume III)**

---

APPENDIX O

**Geophysical Combination Logs  
(TDS Derived Log)**

---

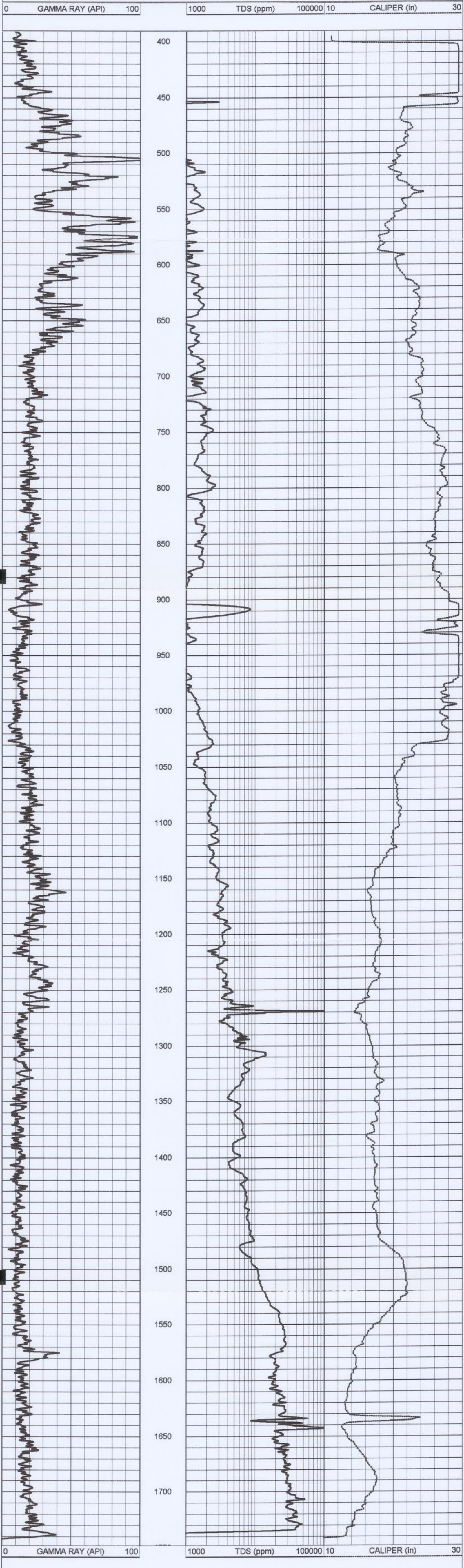
APPENDIX O.1

# **WRF IW-1 Geophysical combination Log**

---



Database File: bswrfiw2.db  
 Dataset Pathname: run3/TDS  
 Presentation Format: tds  
 Dataset Creation: Thu Jun 12 17:44:55 2003  
 Charted by: Depth in Feet scaled 1:600





APPENDIX O.2

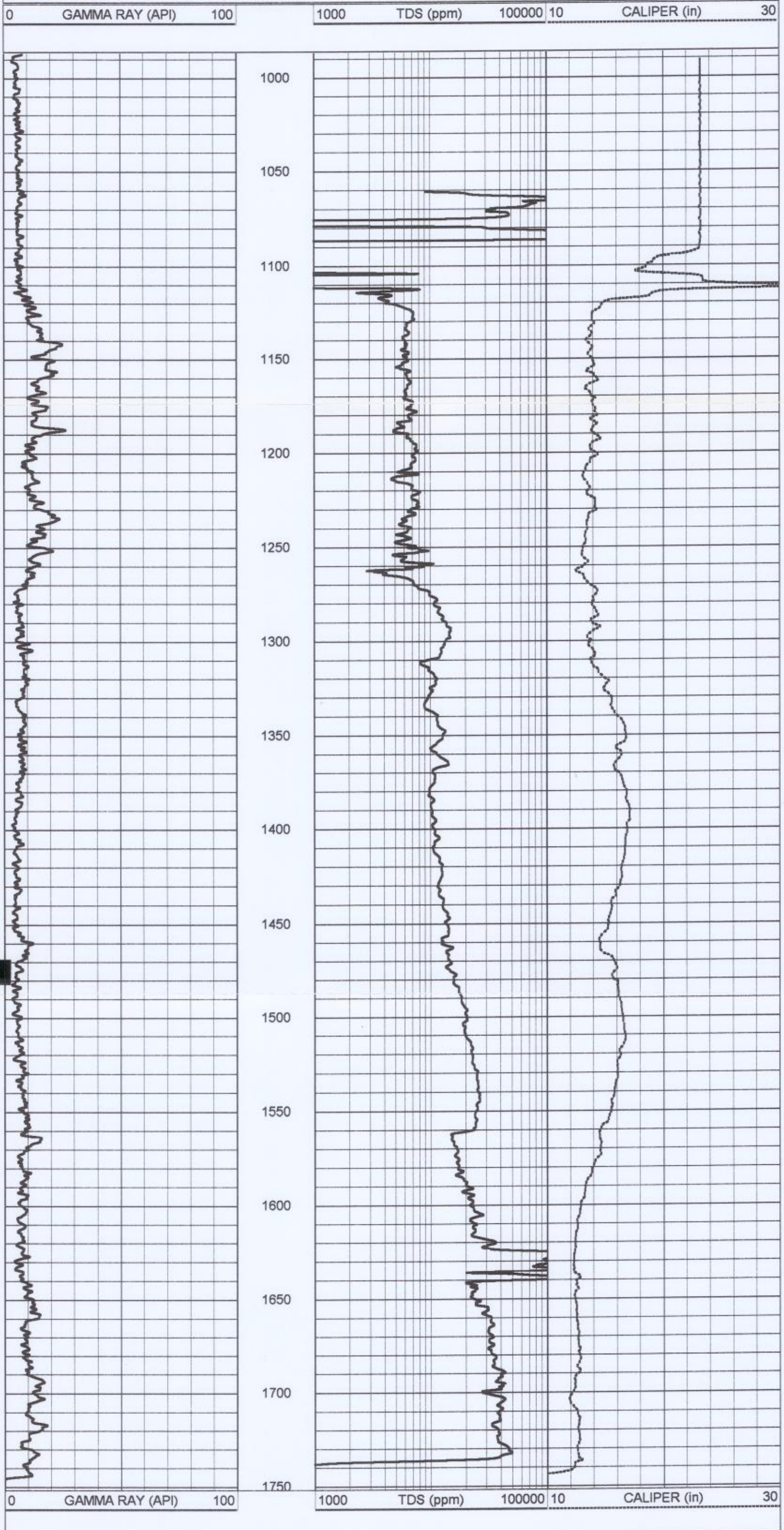
**WRF DZMW-1 Geophysical combination Log**

---



# LOG DERIVED TDS DZMW

Database File: bsdzmw1.db  
Dataset Pathname: run5/TDS  
Presentation Format: tds  
Dataset Creation: Tue Nov 25 16:15:51 2003  
Charted by: Depth in Feet scaled 1:600

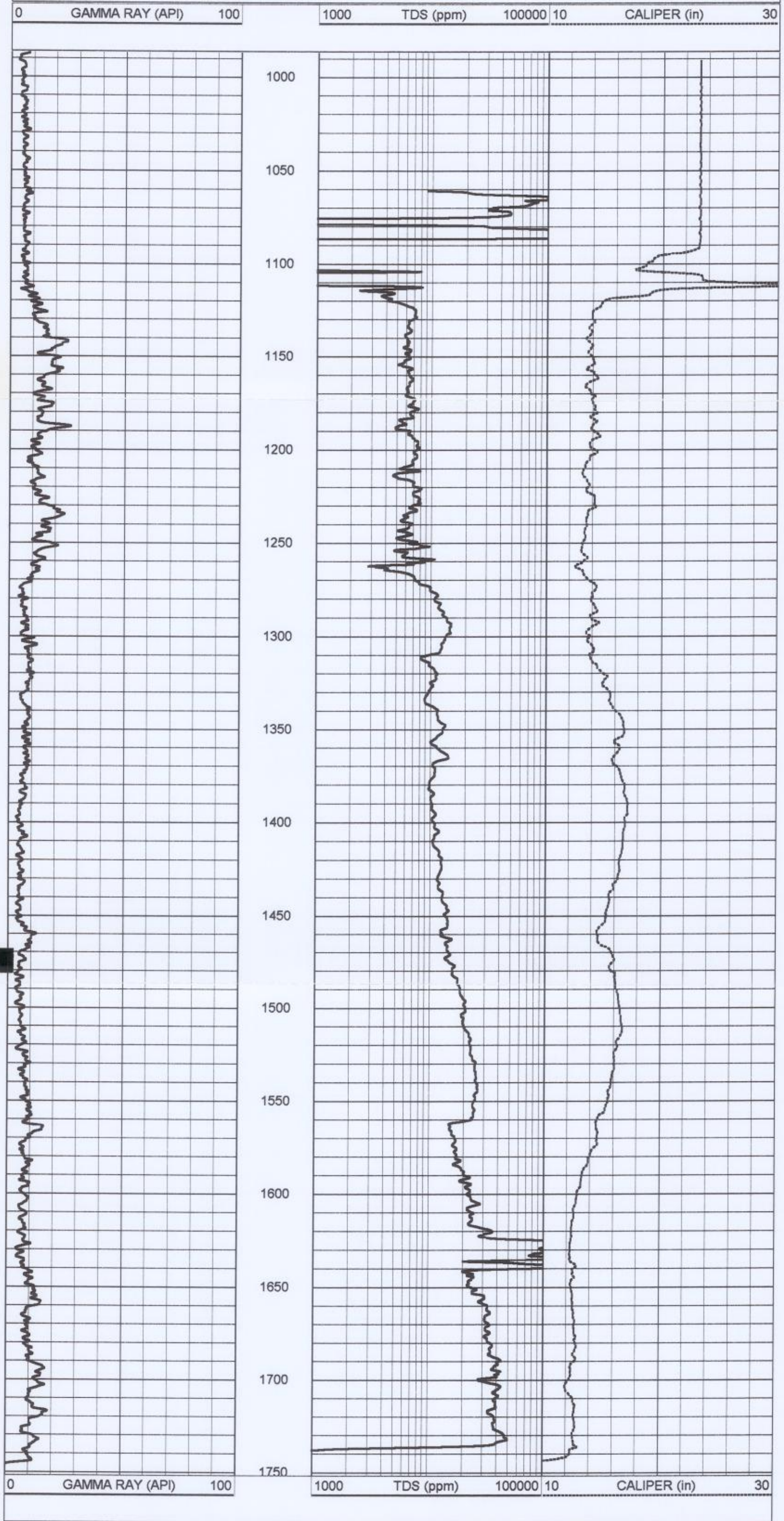






# LOG DERIVED TDS DZMW

Database File: bsdzmw1.db  
Dataset Pathname: run5/TDS  
Presentation Format: tds  
Dataset Creation: Tue Nov 25 16:15:51 2003  
Charted by: Depth in Feet scaled 1:600





APPENDIX P

**Ambient Water Quality – FDEP**  
**Primary and Secondary Drinking Water Standards**

---

APPENDIX P.1

## **WRF IW-1 Ambient Water Quality**

---

# Lab Project Summary

**b Project Num:** N0310299  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 18

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

- 
- \* A statement of estimated uncertainty of results is available upon request.
  - \* Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.
  - \* Sanders Laboratories follows DEP standard operating procedures for field sampling.

APPROVED 10/10/03 ZTR

Client Project: Bonita Springs

Lab Project: N0310299

Report Date: 11/07/03



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

Lab ID	Sample Description	Sample Source	Received Date/Time	Sample Date/Time
N0310299-01	wrf-iw-1 grab	Ground Water	10/20/03 14:55	10/20/03 13:00

Analysis	Method	Results	Qual	Detection Limit	Units	AnalysisDate/Time	Analyst	Cert ID
Air Temperature-field	170.1	30.0		0.1	C	10/20/03 13:00	NO/SO	E84380
Aluminum	200.7	6.32		0.005	mg/L	10/29/03 17:04	JPW	E84380
Ammonia-N	350.3	< 0.05		0.05	mg/L	10/24/03 10:00	JL	E84380
Antimony	200.7	< 0.003		0.003	mg/L	10/29/03 17:04	JPW	E84380
Arsenic	200.7	0.010		0.001	mg/L	10/29/03 17:04	JPW	E84380
Barium	200.7	< 0.003		0.003	mg/L	10/29/03 17:04	JPW	E84380
Beryllium	200.7	0.005		0.0001	mg/L	10/29/03 17:04	JPW	E84380
Cadmium	200.7	< 0.001		0.001	mg/L	10/29/03 17:04	JPW	E84380
Chloride	4500Cl-B	19700		1000	mg/L	10/21/03 9:00	JL	E84380
Chromium	200.7	< 0.001		0.001	mg/L	10/29/03 17:04	JPW	E84380
Color	2120B	7		1	PtCo units	10/22/03 8:00	JL	E84380
Copper	200.7	0.042		0.001	mg/L	10/29/03 17:04	JPW	E84380
Iron	200.7	22.5		0.006	mg/L	10/29/03 17:04	JPW	E84380
Lead	200.7	0.159		0.001	mg/L	10/29/03 17:04	JPW	E84380
Manganese	200.7	1.11		0.001	mg/L	10/29/03 17:04	JPW	E84380
Mercury	245.1	< 0.001		0.001	mg/L	10/24/03 11:45	JPW	E84380
Nickel	200.7	0.009		0.002	mg/L	10/29/03 17:04	JPW	E84380
Nitrate-N	353.2	0.15		0.01	mg/L	10/21/03 13:38	SJ	E84380

Client Project: Bonita Springs

Lab Project: N0310299

Report Date: 11/07/03

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>
N0310299-01	wrf-iw-1 grab	Ground Water	10/20/03 14:55	10/20/03 13:00

<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Nitrite-N	353.2	0.02		0.01	mg/L	10/21/03 12:03	SJ	E84380
Nitrogen, Organic	351.2/350.3	2.23		0.50	mg/L	10/29/03 12:50	SJ	E84380
Nitrogen, Total	351.2/353.2	2.40		0.50	mg/L	10/29/03 12:50	SJ	E84380
Nitrogen, Total Kjeldahl	351.2	2.23		0.50	mg/L	10/29/03 12:50	SJ	E84380
Odor	SM2150B	< 1		1	TON	10/20/03 14:55	EW	E84380
Ortho-phosphate	365.2	< 0.010		0.010	mg/L	10/21/03 13:30	JL	E84380
pH-field	150.1	7.63		0.01	pH units	10/20/03 13:00	NO/SO	E84380
Phosphorus, Total	365.2	0.022		0.010	mg/L	10/28/03 11:00	JL	E84380
See attached results	Subcontract					10/21/03 13:42	SUB	
Selenium	200.7	< 0.001		0.001	mg/L	10/29/03 17:04	JPW	E84380
Silver	200.7	< 0.001		0.001	mg/L	10/29/03 17:04	JPW	E84380
Sodium	200.7	12000		5.00	mg/L	10/29/03 17:04	JPW	E84380
Specific Conductance-field	120.1	52200		0.1	umhos/cm	10/20/03 13:00	NO/SO	E84380
Sulfate	375.4	3070		100	mg/L	10/21/03 10:00	EW	E84380
Thallium	200.7	< 0.002		0.002	mg/L	10/29/03 17:04	JPW	E84380
Total Coliform, MF	9222B	TNTC-NO N		1	col/100ml	10/20/03 15:00	RG	E84380
Total Dissolved Solids	160.1	37800		10	mg/L	10/22/03 12:20	AE	E84380
Water Temperature-field	170.1	31.5		0.1	C	10/20/03 13:00	NO/SO	E84380
Weather-field	DEPSOP	p. cloudy, N 5-10		n/a	none	10/20/03 13:00	NO/SO	E84380
Zinc	200.7	0.373		0.002	mg/L	10/29/03 17:04	JPW	E84380

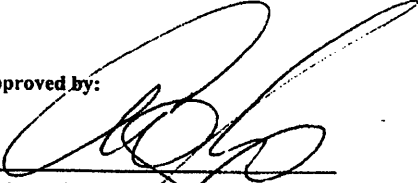
Client Project: Bonita Springs

Lab Project: N0310299

Report Date: 11/07/03

**Laboratory Results**

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 SAYVIEW BOULEVARD, OLDSMAR, FL 34677 (813) 992-1411 FAX (813) 992-2018

---

Tami Bright  
Sanders Laboratories  
1050 Endeavor Court  
Nokomis, FL 34275-3623

November 4, 2003  
Project No: 38463

## Laboratory Report

---

FDEP Report Form attached for the following sample(s):

Client Project Description: N0310299

<u>Sample Number</u>	<u>Sample Description</u>	<u>Date &amp; Time Collected</u>	<u>Date &amp; Time Received</u>
38463.01	N0310299-01	10/20/03 13:00	10/21/03 11:45

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax: 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Non-Regulated Analysis (Additional Parameter)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
Anthracene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzo(k)fluoranthene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
4-Nitrophenol		38463.01	50 U	ug/l	EPA 625	10/28/03	50	E84129
Fluorene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
4-Chlorophenyl-phenylether		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
N-Nitrosodiphenylamine		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
4-Bromophenyl-phenylether		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Hexachlorobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Acenaphthene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Phenanthrene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Acenaphthylene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Fluoranthene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzidine		38463.01	30 U	ug/l	EPA 625	10/28/03	30	E84129
Pyrene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzo(a)anthracene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
3,3'-Dichlorobenzidine		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Chrysene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Bis(2-ethylhexyl)phthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzo(b)fluoranthene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Pentachlorophenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2-Nitrophenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
N-Nitrosodimethylamine		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Bis(2-chloroethyl)ether		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
1,3-Dichlorobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
1,4-Dichlorobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
1,2-Dichlorobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Bis(2-chloroisopropyl)ether		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
N-Nitrosodi-n-propylamine		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2,4-Dinitrophenol		38463.01	50 U	ug/l	EPA 625	10/28/03	50	E84129
Nitrobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
1,2,4-Trichlorobenzene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2,4-Dimethylphenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2,4-Dichlorophenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Naphthalene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Hexachlorobutadiene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
4-Chloro-3-methylphenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Hexachlorocyclopentadiene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2-Chloronaphthalene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2,6-Dinitrotoluene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Hexachloroethane		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.



# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax: 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Non-Regulated Analysis

(Additional Parameter)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzo(a)pyrene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Indeno(1,2,3-cd)pyrene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Dibenzo(a,h)anthracene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Benzo(g,h,i)perylene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
1,2-Diphenylhydrazine as Azobenzen		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
Bis(2-chloroethoxy)methane		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2262 Isophorone		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2270 2,4-Dinitrotoluene		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2282 Dimethylphthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2284 Diethylphthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2290 Di-n-butylphthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
2294 Butylbenzylphthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
9089 Di-n-octylphthalate		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
9108 2-Chlorophenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
9112 4,6-Dinitro-o-cresol		38463.01	50 U	ug/l	EPA 625	10/28/03	50	E84129
9115 Phenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129
9116 2,4,6-Trichlorophenol		38463.01	10 U	ug/l	EPA 625	10/28/03	10	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax: 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Trihalomethane Analysis 62-550.310(3) (PWS027)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2941 Chloroform		38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2942 Bromoform		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2943 Bromodichloromethane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2944 Dibromochloromethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2950 Total Trihalomethanes	0.08	38463.01	0.0002 U	mg/l	EPA 502.2	10/24/03	0.0002	E84129

Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Volatile Organic Analysis 62-550.310(4)a (PWS028)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2378 1,2,4 Trichlorobenzene	70	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2380 cis-1,2-Dichloroethene	70	38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2955 o-xylene		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2955 m/p-xylenes		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2955 Xylenes (Total)	10000	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2964 Methylene Chloride	5	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2968 o-Dichlorobenzene	600	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2969 p-Dichlorobenzene	75	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2976 Vinyl chloride	1	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2977 1,1-Dichloroethene	7	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2979 trans-1,2-Dichloroethene	100	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2980 1,2-Dichloroethane	3	38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2981 1,1,1-Trichloroethane	200	38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2982 Carbon tetrachloride	3	38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2983 1,2-Dichloropropane	5	38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2984 Trichloroethene	3	38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2985 1,1,2-Trichloroethane	5	38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2987 Tetrachloroethene	3	38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2989 Chlorobenzene	100	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2990 Benzene	1	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2991 Toluene	1000	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2992 Ethylbenzene	700	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2996 Styrene	100	38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax: 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Pesticide/PCB Analysis 62-550.310(4)b (PWS029)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2005 Endrin	2	38463.01	0.1 U	ug/l	EPA 525.2	10/31/03	0.1	E84129
2010 gamma-BHC (Lindane)	0.2	38463.01	0.06 U	ug/l	EPA 525.2	10/31/03	0.06	E84129
2015 Methoxychlor	40	38463.01	0.05 U	ug/l	EPA 525.2	10/31/03	0.05	E84129
2020 Toxaphene	3	38463.01	0.5 U	ug/l	EPA 508.1	11/03/03	0.5	E84129
2031 Dalapon	200	38463.01	1 U	ug/l	EPA 515.3	10/28/03	1	E84129
2032 Diquat	20	38463.01	1 U	ug/l	EPA 549.2	10/27/03	1	E84129
2033 Endothall	100	38463.01	20 U	ug/l	EPA 548.1	10/29/03	20	E84129
2034 Glyphosate	700	38463.01	10 U	ug/l	EPA 547	10/28/03	10	E84129
2035 Di(2-ethylhexyl)adipate	400	38463.01	0.34 C2	ug/l	EPA 525.2	10/31/03	0.3	E84129
2036 Oxamyl (Vydate)	200	38463.01	0.5 U	ug/l	EPA 531.1	10/30/03	0.5	E84129
2037 Simazine	4	38463.01	0.07 U	ug/l	EPA 525.2	10/31/03	0.07	E84129
2039 Di(2-ethylhexyl)phthalate	6	38463.01	1.4 C2	ug/l	EPA 525.2	10/31/03	1.0	E84129
2040 Picloram	500	38463.01	0.75 U	ug/l	EPA 515.3	10/28/03	0.75	E84129
2041 Dinoseb	7	38463.01	0.5 U	ug/l	EPA 515.3	10/28/03	0.5	E84129
2042 Hexachlorocyclopentadiene	50	38463.01	0.2 U	ug/l	EPA 525.2	10/31/03	0.2	E84129
2046 Carbofuran	40	38463.01	0.5 U	ug/l	EPA 531.1	10/30/03	0.5	E84129
2050 Atrazine	3	38463.01	0.06 U	ug/l	EPA 525.2	10/31/03	0.06	E84129
2051 Alachlor	2	38463.01	0.2 U	ug/l	EPA 525.2	10/31/03	0.2	E84129
2065 Heptachlor	0.4	38463.01	0.08 U	ug/l	EPA 525.2	10/31/03	0.08	E84129
2067 Heptachlor Epoxide	0.2	38463.01	0.1 U	ug/l	EPA 525.2	10/31/03	0.1	E84129
2105 2,4-D	70	38463.01	1 U	ug/l	EPA 515.3	10/28/03	1	E84129
2110 2,4,5-TP (Silvex)	50	38463.01	0.25 U	ug/l	EPA 515.3	10/28/03	0.25	E84129
2274 Hexachlorobenzene	1	38463.01	0.05 U	ug/l	EPA 525.2	10/31/03	0.05	E84129
2306 Benzo(a)pyrene	0.2	38463.01	0.1 U	ug/l	EPA 525.2	10/31/03	0.1	E84129
2326 Pentachlorophenol	1	38463.01	0.1 U	ug/l	EPA 515.3	10/28/03	0.1	E84129
2383 PCBs	0.5	38463.01	0.2 U	ug/l	EPA 508.1	11/03/03	0.2	E84129
2931 Dibromochloropropane	0.2	38463.01	0.005 U	ug/l	EPA 504.1	10/27/03	0.005	E84129
2946 Ethylene dibromide	0.02	38463.01	0.005 U	ug/l	EPA 504.1	10/27/03	0.005	E84129
2959 Chlordane	2	38463.01	0.05 U	ug/l	EPA 508.1	11/03/03	0.05	E84129
504.1 Date Extracted		38463.01	10/24/03		EPA 504.1			E84129
508.1 Date Extracted		38463.01	10/30/03		EPA 508.1			E84129
515.3 Date Extracted		38463.01	10/24/03		EPA 515.3			E84129
525.2 Date Extracted		38463.01	10/30/03		EPA 525.2			E84129
548.1 Date Extracted		38463.01	10/23/03		EPA 548.1			E84129
549.2 Date Extracted		38463.01	10/27/03		EPA 549.2			E84129

### Footnotes:

- C2 Compound confirmed by analysis of a second aliquot of sample.
- U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1344 fax 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Inorganic Analysis 62-550.310(1) (PWS030)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
1024 Cyanide	0.2	38463.01	0.005 U	mg/l	SM 4500 CN E	10/27/03	0.005	E84129
1025 Fluoride	4	38463.01	1.0	mg/l	EPA 300.0	10/24/03	0.003	E84129

Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

Secondary Analysis  
62-550.320  
(PWS031)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2905 Foaming Agents (LAS, mol wt 342)	0.5	38463.01	0.05 U	mg/l	SM 5540 C	10/22/03	0.05	E84129

Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1344 fax: 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

## Unreg Group II Analysis 62-550.400 (PWS034)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2210 Bromoform		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2212 Dichlorodifluoromethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2214 Bromomethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2216 Chloroethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2218 Trichlorofluoromethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2251 Methyl-tert-butyl-ether		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2408 Dibromomethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2410 1,1-Dichloropropene		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2412 1,3-Dichloropropane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2413 1,3-Dichloropropene, Total		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2414 1,2,3-Trichloropropane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2416 2,2-Dichloropropane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2941 Chloroform		38463.01	0.2 U	ug/l	EPA 502.2	10/24/03	0.2	E84129
2942 Bromoform		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2943 Bromodichloromethane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2944 Dibromochloromethane		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2965 o-Chlorotoluene		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2966 p-Chlorotoluene		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2967 m-Dichlorobenzene		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129
2978 1,1-Dichloroethane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2986 1,1,1,2-Tetrachloroethane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2988 1,1,2,2-Tetrachloroethane		38463.01	0.3 U	ug/l	EPA 502.2	10/24/03	0.3	E84129
2993 Bromobenzene		38463.01	0.5 U	ug/l	EPA 502.2	10/24/03	0.5	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0310299

November 4, 2003  
Project No: 38463

Sample ID: N0310299-01

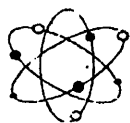
## Unreg Group I Analysis 62-550.400 (PWS035)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
Date Extracted		38463.01	10/30/03		EPA 525.2			E84129
2045 Metolachlor		38463.01	0.05 U	ug/l	EPA 525.2	10/31/03	0.05	E84129
2076 Butachlor		38463.01	0.06 U	ug/l	EPA 525.2	10/31/03	0.06	E84129
2077 Propachlor		38463.01	0.07 U	ug/l	EPA 525.2	10/31/03	0.07	E84129
2356 Aldrin		38463.01	0.08 U	ug/l	EPA 525.2	10/31/03	0.08	E84129
2364 Dieldrin		38463.01	0.06 U	ug/l	EPA 525.2	10/31/03	0.06	E84129
2595 Metribuzin		38463.01	0.1 U	ug/l	EPA 525.2	10/31/03	0.1	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.





# Florida Radiochemistry Services, Inc.

## Sample Login

<b>Client:</b>	<b>Sanders Laboratories</b>	<b>Date / Time Received</b>	<b>Work order #</b>
<b>Client Contact:</b>	<b>Tami Bright</b>	<b>10/22/03 09:50</b>	<b>0310290</b>
<b>Client P.O.</b>			
<b>Project I.D.</b>	<b>N0310299</b>		
<b>Lab Sample I.D.</b>	<b>Client Sample I.D.</b>	<b>Sample Date/Time</b>	<b>Analysis Requested</b>
<b>0310290-01</b>	<b>N0310299-01</b>	<b>10/20/03 13:00</b>	<b>Ga, Ra226, Ra228</b>

## Analysis Results

<b>Gross Alpha</b>	<b>&lt;52.4 **</b>
<b>Error +/-</b>	<b>14.2</b>
<b>MDL</b>	<b>52.4</b>
<b>EPA Method</b>	<b>900.0</b>
<b>Prep Date</b>	<b>11/04/03</b>
<b>Analysis Date</b>	<b>11/05/03</b>
<b>Analyst</b>	<b>MJN</b>

<b>Radium 226</b>	<b>1.2</b>
<b>Error +/-</b>	<b>0.3</b>
<b>MDL</b>	<b>0.3</b>
<b>EPA Method</b>	<b>903.1</b>
<b>Prep Date</b>	<b>11/01/03</b>
<b>Analysis Date</b>	<b>11/07/03</b>
<b>Analyst</b>	<b>MJN</b>

<b>Radium 228</b>	<b>&lt;1.0</b>
<b>Error +/-</b>	<b>0.6</b>
<b>MDL</b>	<b>1.0</b>
<b>EPA Method</b>	<b>Ra-05</b>
<b>Prep Date</b>	<b>11/01/03</b>
<b>Analysis Date</b>	<b>11/06/03</b>
<b>Analyst</b>	<b>KLN</b>

**Units**

**pCi/l**

**Units**

**pCi/l**



Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Gross Alpha	0310266-01	11/05/03	<1.1	10.2	9.6	9.7	94	1.0
Radium 226	0310299-01	11/07/03	0.6	23.5	23.0	24.0	95	4.3
Radium 228	0310299-01	11/06/03	<0.9	6.9	7.1	6.3	103	11.9

	Quality Control	Limits
	% RPD	% Rec.
Gross Alpha	15.8	65-125
Radium 226	18.3	70-118
Radium 228	19.1	77-115



Florida Radiochemistry Services, Inc.

## Case Narrative

**NOTE: \*\* Gross Alpha:**

**Sample 0310290-01 had an elevated detection limit and/or counting error due to a low volume of sample used. The sample had high TDS (Total Dissolved Solids). The high TDS interferes with the sample counting efficiency. This is caused by the solids absorbing the sample activity (Sample self-absorption). The sample counting efficiency is decreased because of this. Therefore, the counting time was increased (the sample was counted over night or as long as possible) to help reduce the detection limit and counting error.**



# CHAIN-OF-CUSTODY RECORD

PROJECT #

NO310244

Page 1 of 1

Client Youngquist

Report To: \_\_\_\_\_

Sample Supply: GW

Address \_\_\_\_\_

Bill To: \_\_\_\_\_

Customer Type: \_\_\_\_\_

Phone \_\_\_\_\_ Fax \_\_\_\_\_

P.O. # \_\_\_\_\_

Field Report #: \_\_\_\_\_

Project Name BSU WRF IW-1

Kit #: \_\_\_\_\_

Project Location: \_\_\_\_\_

REQUESTED DUE DATE: 10/31/03

Sampled By (PRINT) <u>Noah Olenych / Shalina Odeged</u>		PRESERVATIVES			ANALYSES REQUEST												Sample ID #		
Sampler Signature <u>Noah Olenych / Shalina Odeged</u>		4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	Primary Inorganics	Secondary Inorganics	OP	TRIP ONLINE TKN	GA 16 d 276 288	GA 285	Full 502 Z	TDM COLL	Pest / PCB				
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	Primary Inorganics	Secondary Inorganics	OP	TRIP ONLINE TKN	GA 16 d 276 288	GA 285	Full 502 Z	TDM COLL	Pest / PCB	Sample ID #
	WRF-IW-1	10/20/03	1300	G						X	X	X	X	X	X	X	X	X	-01
Bottle Lot #	SHIPMENT METHOD	OUT / DATE	RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION		DATE	TIME	ACCEPTED BY / AFFILIATION		DATE	TIME							
					<u>Noah Olenych</u>		10-20	1455	<u>i. Bright</u>		10/20/03	1455							
	COMMENTS:	COOLER #																	
		COOLER SEAL INTACT																	
		Yes No																	

APPENDIX P.2

**WRF DZMW-1 Upper Zone Ambient  
Water Quality**

---

Client Project: Bonita Springs

Lab Project: N0401137

Report Date: 02/12/04



## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>	<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
N0401137-01	upper zone grab	Ground Water	1/27/04 12:30	1/27/04 9:50	Air Temperature-field	170.1	23.8		0.1	C	1/27/04 9:50	NO	E84380
					Aluminum	200.7	0.962		0.005	mg/L	1/28/04 15:52	JPW	E84380
					Ammonia-N	350.3	0.59		0.05	mg/L	1/29/04 9:00	JL	E84380
					Antimony	200.7	<0.003	U	0.003	mg/L	1/28/04 15:52	JPW	E84380
					Arsenic	200.7	0.005		0.001	mg/L	1/28/04 15:52	JPW	E84380
					Barium	200.7	0.313		0.003	mg/L	1/28/04 15:52	JPW	E84380
					Beryllium	200.7	<0.0001	U	0.0001	mg/L	1/28/04 15:52	JPW	E84380
					Cadmium	200.7	<0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380
					Chloride	4500Cl-B	5000		1000	mg/L	1/28/04 9:00	JL	E84380
					Chromium	200.7	0.001		0.001	mg/L	1/28/04 15:52	JPW	E84380
					Color	2120B	4		1	PtCo units	1/27/04 13:45	JL	E84380
					Copper	200.7	<0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380
					Iron	200.7	2.01		0.006	mg/L	1/28/04 15:52	JPW	E84380
					Lead	200.7	0.019		0.001	mg/L	1/28/04 15:52	JPW	E84380
					Manganese	200.7	0.063		0.001	mg/L	1/28/04 15:52	JPW	E84380
					Mercury	245.1	<0.001	U	0.001	mg/L	2/6/04 14:23	JPW	E84380
					Nickel	200.7	<0.002	U	0.002	mg/L	1/28/04 15:52	JPW	E84380
					Nitrate+Nitrite-N	353.2	0.01		0.01	mg/L	1/27/04 16:12	SJ	E84380

Client Project: Bonita Springs

Lab Project: N0401137

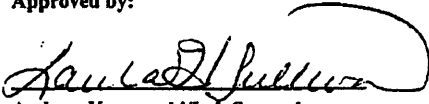
Report Date: 02/12/04

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0401137-01	upper zone grab	Ground Water	1/27/04 12:30	1/27/04 9:50				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Nitrate-N	353.2	0.01		0.01	mg/L	1/27/04 16:12	SJ	E84380
Nitrite-N	353.2	< 0.01	U	0.01	mg/L	1/27/04 15:44	SJ	E84380
Nitrogen, Organic	351.2/350.3	< 0.50	U	0.50	mg/L	2/7/04 12:25	SJ	E84380
Nitrogen, Total	351.2/353.2	0.75		0.50	mg/L	2/7/04 12:25	SJ	E84380
Nitrogen, Total Kjeldahl	351.2	0.74		0.50	mg/L	2/7/04 12:25	SJ	E84380
Odor	SM2150B	< 1	U	1	TON	1/27/04 13:15	EW	E84380
Ortho-phosphate	365.2	< 0.010	U	0.010	mg/L	1/27/04 14:00	JL	E84380
pH-field	150.1	7.94		0.01	pH units	1/27/04 9:50	NO	E84380
Phosphorus, Total	365.2	0.068		0.010	mg/L	1/28/04 11:00	JL	E84380
See attached results	Subcontract					1/28/04 12:05	SUB	
Selenium	200.7	0.007		0.001	mg/L	1/28/04 15:52	JPW	E84380
Silver	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380
Sodium	200.7	2610		10	mg/L	1/28/04 15:52	JPW	E84380
Specific Conductance-field	120.1	15000		0.1	umhos/cm	1/27/04 9:50	NO	E84380
Sulfate	375.4	440		100	mg/L	1/28/04 11:30	EW	E84380
Thallium	200.7	< 0.002	U	0.002	mg/L	1/28/04 15:52	JPW	E84380
Total Coliform, MF	9222B	TNTC-no n		1	col/100ml	1/27/04 15:00	RG	E84380
Total Dissolved Solids	160.1	9160		10	mg/L	1/27/04 17:00	EW	E84380
Water Temperature-field	170.1	31.8		0.1	C	1/27/04 9:50	NO	E84380
Weather-field	DEPSOP	cloudy, rain		n/a	none	1/27/04 9:50	NO	E84380
inc	200.7	0.003		0.002	mg/L	1/28/04 15:52	JPW	E84380

**Laboratory Results**

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC



# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

---

Tami Bright  
Sanders Laboratories  
1050 Endeavor Court  
Nokomis, FL 34275-3623

February 11, 2004  
Project No: 40101


## Laboratory Report

---

FDEP Report Form attached for the following sample(s):

Client Project Description: N0401137

<u>Sample Number</u>	<u>Sample Description</u>	<u>Date &amp; Time Collected</u>	<u>Date &amp; Time Received</u>
40101.01	N0401137-01	01/27/04 09:50	01/28/04 11:20



# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Landers Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Non-Regulated Analysis

(Additional Parameter)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2282		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2284		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2294		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9108		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9115		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9116		40101.01	10 U	ug/l	EPA 625	01/29/04	10	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Trihalomethane Analysis 62-550.310(3) (PWS027)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2941 Chloroform		40101.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2942 Bromoform		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2943 Bromodichloromethane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2944 Dibromochloromethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2950 Total Trihalomethanes	0.08	40101.01	0.0002 U	mg/l	EPA 502.2	01/29/04	0.0002	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Landers Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Volatile Organic Analysis 62-550.310(4)a (PWS028)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2378 1,2,4 Trichlorobenzene	70	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2380 cis-1,2-Dichloroethylene	70	40101.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2955 Xylenes (Total)	10,000	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2964 Dichloromethane	5	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2968 o-Dichlorobenzene	600	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2969 para-Dichlorobenzene	75	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2976 Vinyl chloride	1	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2977 1,1-Dichloroethylene	7	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2979 trans-1,2-Dichloroethylene	100	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2980 1,2-Dichloroethane	3	40101.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2981 1,1,1-Trichloroethane	200	40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2982 Carbon tetrachloride	3	40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2983 1,2-Dichloropropane	5	40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2984 Trichloroethylene	3	40101.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2985 1,1,2-Trichloroethane	5	40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2987 Tetrachloroethylene	3	40101.01	4.8 C1	ug/l	EPA 502.2	01/29/04	0.2	E84129
2989 Monochlorobenzene	100	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2990 Benzene	1	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2991 Toluene	1,000	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2992 Ethylbenzene	700	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2996 Styrene	100	40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129

### Footnotes:

- C1 Compound confirmed by secondary column.  
U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Pesticide/PCB Analysis 62-550.310(4)b (PWS029)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2005 Endrin	2	40101.01	0.1 U	ug/l	EPA 525.2	02/04/04	0.1	E84129
2010 Lindane	0.2	40101.01	0.06 U	ug/l	EPA 525.2	02/04/04	0.06	E84129
2015 Methoxychlor	40	40101.01	0.05 U	ug/l	EPA 525.2	02/04/04	0.05	E84129
2020 Toxaphene	3	40101.01	0.5 U	ug/l	EPA 508.1	01/31/04	0.5	E84129
2031 Dalapon	200	40101.01	1 U	ug/l	EPA 515.3	02/05/04	1	E84129
2032 Diquat	20	40101.01	1 U	ug/l	EPA 549.2	02/02/04	1	E84129
2033 Endothal	100	40101.01	20 U	ug/l	EPA 548.1	02/06/04	20	E84129
2034 Glyphosate	700	40101.01	10 U	ug/l	EPA 547	02/04/04	10	E84129
2035 Di(2-ethylhexyl)adipate	400	40101.01	0.3 U	ug/l	EPA 525.2	02/04/04	0.3	E84129
2036 Oxamyl (Vydate)	200	40101.01	0.5 U	ug/l	EPA 531.1	01/30/04	0.5	E84129
2037 Simazine	4	40101.01	0.07 U	ug/l	EPA 525.2	02/04/04	0.07	E84129
2039 Di(2-ethylhexyl)phthalate	6	40101.01	1.0 U	ug/l	EPA 525.2	02/04/04	1.0	E84129
2040 Picloram	500	40101.01	0.75 U	ug/l	EPA 515.3	02/05/04	0.75	E84129
2041 Dinoseb	7	40101.01	0.5 U	ug/l	EPA 515.3	02/05/04	0.5	E84129
2042 Hexachlorocyclopentadiene	50	40101.01	0.2 U	ug/l	EPA 525.2	02/04/04	0.2	E84129
2046 Carbofuran	40	40101.01	0.5 U	ug/l	EPA 531.1	01/30/04	0.5	E84129
2050 Atrazine	3	40101.01	0.06 U	ug/l	EPA 525.2	02/04/04	0.06	E84129
2051 Alachlor	2	40101.01	0.2 U	ug/l	EPA 525.2	02/04/04	0.2	E84129
2065 Heptachlor	0.4	40101.01	0.08 U	ug/l	EPA 525.2	02/04/04	0.08	E84129
2067 Heptachlor Epoxide	0.2	40101.01	0.1 U	ug/l	EPA 525.2	02/04/04	0.1	E84129
2105 2,4-D	70	40101.01	1 U	ug/l	EPA 515.3	02/05/04	1	E84129
2110 2,4,5-TP (Silvex)	50	40101.01	0.25 U	ug/l	EPA 515.3	02/05/04	0.25	E84129
2274 Hexachlorobenzene	1	40101.01	0.05 U	ug/l	EPA 525.2	02/04/04	0.05	E84129
2306 Benzo(a)pyrene	0.2	40101.01	0.1 U	ug/l	EPA 525.2	02/04/04	0.1	E84129
2326 Pentachlorophenol	1	40101.01	0.1 U	ug/l	EPA 515.3	02/05/04	0.1	E84129
2383 Polychlorinated biphenyls (PCBs)	0.5	40101.01	0.2 U	ug/l	EPA 508.1	01/31/04	0.2	E84129
2931 Dibromochloropropane	0.2	40101.01	0.005 U	ug/l	EPA 504.1	02/02/04	0.005	E84129
2946 Ethylene Dibromide (EDB)	0.02	40101.01	0.005 U	ug/l	EPA 504.1	02/02/04	0.005	E84129
2959 Chlordane	2	40101.01	0.05 U	ug/l	EPA 508.1	01/31/04	0.05	E84129
504.1 Date Extracted		40101.01	01/30/04		EPA 504.1			E84129
508.1 Date Extracted		40101.01	01/29/04		EPA 508.1			E84129
515.3 Date Extracted		40101.01	02/03/04		EPA 515.3			E84129
525.2 Date Extracted		40101.01	02/04/04		EPA 525.2			E84129
548.1 Date Extracted		40101.01	01/30/04		EPA 548.1			E84129
549.2 Date Extracted		40101.01	01/29/04		EPA 549.2			E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Inorganic Analysis 62-550.310(1) (PWS030)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
1024 Cyanide	0.2	40101.01	0.005 U	mg/l	SM 4500 CN E	02/02/04	0.005	E84129
1025 Fluoride	4	40101.01	1.8	mg/l	EPA 300.0	01/29/04	0.003	E84129

**Footnotes:**

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Landers Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Secondary Analysis 62-550.320 (PWS031)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2905 Foaming Agents	0.5	40101.01	0.10	mg/l	SM 5540 C	01/29/04	0.05	E84129

Footnotes:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Wanders Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Unreg Group II Analysis 62-550.400 (PWS034)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2210 Chloromethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2212 Dichlorodifluoromethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2214 Bromomethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2216 Chloroethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2218 Trichlorofluoromethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2251 Methyl-tert-butyl-ether		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2408 Dibromomethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2410 1,1-Dichloropropene		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2412 1,3-Dichloropropane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2413 1,3-Dichloropropene, Total		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2414 1,2,3-Trichloropropane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2416 2,2-Dichloropropane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2941 Chloroform		40101.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2942 Bromoform		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2943 Bromodichloromethane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2944 Dibromochloromethane		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2965 o-Chlorotoluene		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2966 p-Chlorotoluene		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2967 m-Dichlorobenzene		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2978 1,1-Dichloroethane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2986 1,1,1,2-Tetrachloroethane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2988 1,1,2,2-Tetrachloroethane		40101.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2993 Bromobenzene		40101.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.



# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401137

February 11, 2004  
Project No: 40101

Sample ID: N0401137-01

## Unreg Group I Analysis 62-550.400 (PWS035)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
Date Extracted		40101.01	02/04/04		EPA 525.2			E84129
2045 Metolachlor		40101.01	0.05 U	ug/l	EPA 525.2	02/04/04	0.05	E84129
2076 Butachlor		40101.01	0.06 U	ug/l	EPA 525.2	02/04/04	0.06	E84129
2077 Propachlor		40101.01	0.07 U	ug/l	EPA 525.2	02/04/04	0.07	E84129
2356 Aldrin		40101.01	0.08 U	ug/l	EPA 525.2	02/04/04	0.08	E84129
2364 Dieldrin		40101.01	0.06 U	ug/l	EPA 525.2	02/04/04	0.06	E84129
2595 Metribuzin		40101.01	0.1 U	ug/l	EPA 525.2	02/04/04	0.1	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.



# Florida Radiochemistry Services, Inc.

Contact: Michael J. Naumann

5456 Hoffner Ave., Suite 201 Orlando, FL 32812

Phone: (407) 382-7733 Fax: (407)382-7744

Certification I. D. # E83033

Work Order #: 0401181

Report Date: 02/11/04

Report to:

Sanders Laboratories

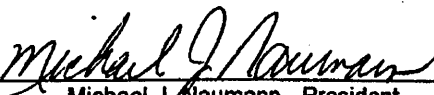
1050 Endeavor Ct.

Nokomis, FL 34275

Attention: Tami Bright

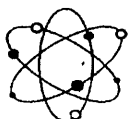
I do hereby affirm that this record contains no willful misrepresentations and that this information given by me is true to the best of my knowledge and belief. I further certify that the methods and quality control measures used to produce these laboratory results were implemented in accordance with the requirements of this laboratory's certification and NELAC Standards.

Signed

  
Michael J. Naumann - President

Date

2-11-04



# Florida Radiochemistry Services, Inc.

## Sample Login

<b>Client:</b>	<b>Sanders Laboratories, Inc.</b>	<b>Date / Time Received</b>	<b>Work order #</b>
		<b>01/28/04 10:20</b>	<b>0401181</b>
<b>Client Contact:</b>	<b>Tami Bright</b>		
<b>Client P.O.</b>	<b>N0401137</b>		
<b>Project I.D.</b>	<b>N0401137</b>		
<b>Lab Sample I.D.</b>	<b>Client Sample I.D.</b>	<b>Sample Date/Time</b>	<b>Analysis Requested</b>
<b>0401181-01</b>	<b>N0401137-01</b>	<b>01/27/04 09:50</b>	<b>Ga, Ra226, Ra228</b>

## Analysis Results

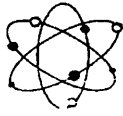
<b>Gross Alpha</b>	<b>&lt;19.6 **</b>
<b>Error +/-</b>	<b>12.0</b>
<b>MDL</b>	<b>19.6</b>
<b>EPA Method</b>	<b>900.0</b>
<b>Prep Date</b>	<b>02/02/04</b>
<b>Analysis Date</b>	<b>02/03/04</b>
<b>Analyst</b>	<b>MJN</b>

<b>Radium 226</b>	<b>2.4</b>
<b>Error +/-</b>	<b>0.5</b>
<b>MDL</b>	<b>0.2</b>
<b>EPA Method</b>	<b>903.1</b>
<b>Prep Date</b>	<b>02/03/04</b>
<b>Analysis Date</b>	<b>02/09/04</b>
<b>Analyst</b>	<b>MJN</b>

<b>Radium 228</b>	<b>&lt;0.9</b>
<b>Error +/-</b>	<b>0.6</b>
<b>MDL</b>	<b>0.9</b>
<b>EPA Method</b>	<b>Ra-05</b>
<b>Prep Date</b>	<b>02/03/04</b>
<b>Analysis Date</b>	<b>02/08/04</b>
<b>Analyst</b>	<b>PJ</b>

**Units**                      **pCi/l**

**Units**                      **pCi/l**

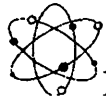


Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Gross Alpha	0401180-01	02/03/04	4.7	10.2	13.6	13.8	87	1.5
Radium 226	0401180-01	02/09/04	1.0	23.5	25.0	24.4	102	2.4
Radium 228	0401180-01	02/08/04	<0.8	6.6	6.3	6.9	95	9.1

	Quality Control	Limits
	% RPD	% Rec.
Gross Alpha	15.9	69-115
Radium 226	21.1	73-117
Radium 228	18.1	75-125



Florida Radiochemistry Services, Inc.

## Case Narrative

**NOTE: \*\* Gross Alpha:**

**Sample 0401181-01 had an elevated detection limit and/or counting error due to a low volume of sample used. The sample had high TDS (Total Dissolved Solids). The high TDS interferes with the sample counting efficiency. This is caused by the solids absorbing the sample activity (Sample self-absorption). The sample counting efficiency is decreased because of this. Therefore, the counting time was increased (the sample was counted over night or as long as possible) to help reduce the detection limit and counting error.**



CHAIN-OF-CU JDY RECORD

PROJECT # 10040113

Page 1 of 1

Client YQ  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

Report To: Edw/Craig  
 Bill To: \_\_\_\_\_  
 PO. # \_\_\_\_\_  
 Project Name BSU  
 Project Location: BSU

Sample Supply TEN/NGW  
 Customer Type \_\_\_\_\_  
 Field Report # \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUESTED DUE DATE: 1/30/04

Sampled By (PRINT)		Sample			PRESERVATIVES				ANALYSES REQUEST										Sample ID #				
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	705 CI-	SO <sub>4</sub> CALOR ID	ODN	PHS metals	NOX metals	TCU	Pesticides	VOC Metals	MMS.F	CA	Cross Lead	EPA 625	Sample ID #	
	UPPER ZONE	2/20/04	0950	G						1													1A
																							B
																							C
																							D
																							E
																							F
Bottle Lot #	OUT / DATE	SHIPMENT METHOD RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME														
				<u>Naoh</u>	01/27/04	1230	<u>T. Br...</u>	01/27/04	1230														
COMMENTS:			COOLER #																				
			COOLER SEAL INTACT Yes No																				

APPENDIX P.3

**WRF DZMW-1 Lower Zone Ambient  
Water Quality**

---

# Lab Project Summary

**Lab Project #:** N0401138  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 18

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

---

## QUALIFIER DEFINITIONS

- B: Results based upon colony counts outside the acceptable range.
  - J3: The reported value failed to meet the established quality control criteria.
  - J4: The sample matrix interfered with the ability to make an accurate determination.
  - J5: The data is questionable because of improper lab or field protocols.
  - K: Off scale low, actual value is less than the value given.
  - L: Off scale high, actual value is known to be greater than the value given.
  - Q: Sample held beyond acceptable holding time.
  - U: The compound was analyzed for, but not detected.
  - V: The analyte was detected in both the sample and the associated method blank.
  - Y: The sample was unpreserved or improperly preserved.
  - Z: Too many colonies present (TNTC).
- ^ Meets and/or exceeds acceptable drinking water limits, per FAC 62-550.  
\* This is an uncertified result.  
HACH results are uncertified.

A statement of estimated uncertainty of results is available upon request.  
Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.  
Sanders Laboratories follows DEP standard operating procedures for field sampling.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of \$25.00 per report. Reports older than 1 year are available for a fee of \$50.00 per report. Copies will be provided within 1 week of the time of the request.





## Laboratory Results

Youngquist Brothers, Inc.  
15465 Pine Ridge Road  
Ft. Myers, FL 33908

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>						
N0401138-01	lower zone grab	Ground Water	1/27/04 12:30	1/27/04 9:30						
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>		
Air Temperature-field	170.1	23.8		0.1	C	1/27/04 9:30	NO	E84380		
Aluminum	200.7	0.154		0.005	mg/L	1/28/04 15:52	JPW	E84380		
Ammonia-N	350.3	0.61		0.05	mg/L	1/29/04 9:00	JL	E84380		
Antimony	200.7	< 0.003	U	0.003	mg/L	1/28/04 15:52	JPW	E84380		
Arsenic	200.7	0.004		0.001	mg/L	1/28/04 15:52	JPW	E84380		
Barium	200.7	< 0.003	U	0.003	mg/L	1/28/04 15:52	JPW	E84380		
Beryllium	200.7	0.0004		0.0001	mg/L	1/28/04 15:52	JPW	E84380		
Cadmium	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380		
Chloride	4500Cl-B	16700		1000	mg/L	1/28/04 9:00	JL	E84380		
Chromium	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380		
Color	2120B	3		1	PtCo units	1/27/04 13:45	JL	E84380		
Copper	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380		
Iron	200.7	0.246		0.006	mg/L	1/28/04 15:52	JPW	E84380		
Lead	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380		
Manganese	200.7	0.051		0.001	mg/L	1/28/04 15:52	JPW	E84380		
Mercury	245.1	< 0.001	U	0.001	mg/L	2/6/04 14:23	JPW	E84380		
Nickel	200.7	0.003		0.002	mg/L	1/28/04 15:52	JPW	E84380		
Nitrate+Nitrite-N	353.2	0.02		0.01	mg/L	1/27/04 16:12	SJ	E84380		

Client Project: Bonita Springs

Lab Project: N0401138

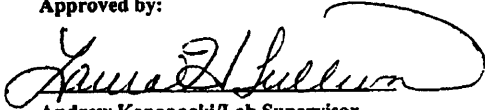
Report Date: 02/12/04

## Laboratory Results

<u>Lab ID</u>	<u>Sample Description</u>	<u>Sample Source</u>	<u>Received Date/Time</u>	<u>Sample Date/Time</u>				
N0401138-01	lower zone grab	Ground Water	1/27/04 12:30	1/27/04 9:30				
<u>Analysis</u>	<u>Method</u>	<u>Results</u>	<u>Qual</u>	<u>Detection Limit</u>	<u>Units</u>	<u>AnalysisDate/Time</u>	<u>Analyst</u>	<u>Cert ID</u>
Nitrate-N	353.2	0.02		0.01	mg/L	1/27/04 16:12	SJ	E84380
Nitrite-N	353.2	< 0.01	U	0.01	mg/L	1/27/04 15:44	SJ	E84380
Nitrogen, Organic	351.2/350.3	0.59		0.50	mg/L	2/7/04 12:25	SJ	E84380
Nitrogen, Total	351.2/353.2	1.22		0.50	mg/L	2/7/04 12:25	SJ	E84380
Nitrogen, Total Kjeldahl	351.2	1.20		0.50	mg/L	2/7/04 12:25	SJ	E84380
Odor	SM2150B	8		1	TON	1/27/04 13:15	EW	E84380
Ortho-phosphate	365.2	< 0.010	U	0.010	mg/L	1/27/04 14:00	JL	E84380
pH-field	150.1	7.58		0.01	pH units	1/27/04 9:30	NO	E84380
Phosphorus, Total	365.2	0.062		0.010	mg/L	1/28/04 11:00	JL	E84380
See attached results	Subcontract					1/28/04 12:05	SUB	
Selenium	200.7	0.002		0.001	mg/L	1/28/04 15:52	JPW	E84380
Silver	200.7	< 0.001	U	0.001	mg/L	1/28/04 15:52	JPW	E84380
Sodium	200.7	11000		10	mg/L	1/28/04 15:52	JPW	E84380
Specific Conductance-field	120.1	45000		0.1	umhos/cm	1/27/04 9:30	NO	E84380
Sulfate	375.4	1620		100	mg/L	1/28/04 11:30	EW	E84380
Thallium	200.7	< 0.002	U	0.002	mg/L	1/28/04 15:52	JPW	E84380
Total Coliform, MF	9222B	TNTC-no n		1	col/100ml	1/27/04 15:00	RG	E84380
Total Dissolved Solids	160.1	28800		10	mg/L	1/27/04 17:00	EW	E84380
Water Temperature-field	170.1	31.9		0.1	C	1/27/04 9:30	NO	E84380
Weather-field	DEPSOP	cloudy, rain		n/a	none	1/27/04 9:30	NO	E84380
inc	200.7	0.015		0.002	mg/L	1/28/04 15:52	JPW	E84380

**Laboratory Results**

Approved by:



Andrew Konopacki/Lab Supervisor

Laura Sullivan/QA Officer

Kathrine Bartkiewicz/Lab Supervisor

Comments:

Test Results meet all the requirements of the NELAC standards.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

---

Jami Bright  
Sanders Laboratories  
1050 Endeavor Court  
Nokomis, FL 34275-3623

February 11, 2004  
Project No: 40102

## Laboratory Report

---

FDEP Report Form attached for the following sample(s):

Client Project Description: N0401138

<u>Sample Number</u>	<u>Sample Description</u>	<u>Date &amp; Time Collected</u>	<u>Date &amp; Time Received</u>
40102.01	N0401138-01	01/27/04 09:30	01/28/04 11:20

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Non-Regulated Analysis

(Additional Parameter)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2282		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2284		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
2294		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9108		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9115		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129
9116		40102.01	10 U	ug/l	EPA 625	01/29/04	10	E84129

### Footnotes:

U

Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Sanders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Trihalomethane Analysis 62-550.310(3) (PWS027)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2941 Chloroform		40102.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2942 Bromoform		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2943 Bromodichloromethane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2944 Dibromochloromethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2950 Total Trihalomethanes	0.08	40102.01	0.0002 U	mg/l	EPA 502.2	01/29/04	0.0002	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Janders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Volatile Organic Analysis 62-550.310(4)a (PWS028)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2378 1,2,4 Trichlorobenzene	70	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2380 cis-1,2-Dichloroethylene	70	40102.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2955 Xylenes (Total)	10,000	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2964 Dichloromethane	5	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2968 o-Dichlorobenzene	600	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2969 para-Dichlorobenzene	75	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2976 Vinyl chloride	1	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2977 1,1-Dichloroethylene	7	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2979 trans-1,2-Dichloroethylene	100	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2980 1,2-Dichloroethane	3	40102.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2981 1,1,1-Trichloroethane	200	40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2982 Carbon tetrachloride	3	40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2983 1,2-Dichloropropane	5	40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2984 Trichloroethylene	3	40102.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2985 1,1,2-Trichloroethane	5	40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2987 Tetrachloroethylene	3	40102.01	10 C1	ug/l	EPA 502.2	01/29/04	0.2	E84129
2989 Monochlorobenzene	100	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2990 Benzene	1	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2991 Toluene	1,000	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2992 Ethylbenzene	700	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2996 Styrene	100	40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129

### Footnotes:

- C1 Compound confirmed by secondary column.  
U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Pesticide/PCB Analysis 62-550.310(4)b (PWS029)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2005 Endrin	2	40102.01	0.1 U	ug/l	EPA 525.2	01/30/04	0.1	E84129
2010 Lindane	0.2	40102.01	0.06 U	ug/l	EPA 525.2	01/30/04	0.06	E84129
2015 Methoxychlor	40	40102.01	0.05 U	ug/l	EPA 525.2	01/30/04	0.05	E84129
2020 Toxaphene	3	40102.01	0.5 U	ug/l	EPA 508.1	01/31/04	0.5	E84129
2031 Dalapon	200	40102.01	1 U	ug/l	EPA 515.3	02/06/04	1	E84129
2032 Diquat	20	40102.01	1 U	ug/l	EPA 549.2	02/02/04	1	E84129
2033 Endothal	100	40102.01	20 U	ug/l	EPA 548.1	02/06/04	20	E84129
2034 Glyphosate	700	40102.01	10 U	ug/l	EPA 547	02/04/04	10	E84129
2035 Di(2-ethylhexyl)adipate	400	40102.01	0.3 U	ug/l	EPA 525.2	01/30/04	0.3	E84129
2036 Oxamyl (Vydate)	200	40102.01	0.5 U	ug/l	EPA 531.1	01/30/04	0.5	E84129
2037 Simazine	4	40102.01	0.07 U	ug/l	EPA 525.2	01/30/04	0.07	E84129
2039 Di(2-ethylhexyl)phthalate	6	40102.01	1.0 U	ug/l	EPA 525.2	01/30/04	1.0	E84129
2040 Picloram	500	40102.01	0.75 U	ug/l	EPA 515.3	02/06/04	0.75	E84129
2041 Dinoseb	7	40102.01	0.5 U	ug/l	EPA 515.3	02/06/04	0.5	E84129
2042 Hexachlorocyclopentadiene	50	40102.01	0.2 U	ug/l	EPA 525.2	01/30/04	0.2	E84129
2046 Carbofuran	40	40102.01	0.5 U	ug/l	EPA 531.1	01/30/04	0.5	E84129
2050 Atrazine	3	40102.01	0.06 U	ug/l	EPA 525.2	01/30/04	0.06	E84129
2051 Alachlor	2	40102.01	0.2 U	ug/l	EPA 525.2	01/30/04	0.2	E84129
2065 Heptachlor	0.4	40102.01	0.08 U	ug/l	EPA 525.2	01/30/04	0.08	E84129
2067 Heptachlor Epoxide	0.2	40102.01	0.1 U	ug/l	EPA 525.2	01/30/04	0.1	E84129
2105 2,4-D	70	40102.01	1 U	ug/l	EPA 515.3	02/06/04	1	E84129
2110 2,4,5-TP (Silvex)	50	40102.01	0.25 U	ug/l	EPA 515.3	02/06/04	0.25	E84129
2274 Hexachlorobenzene	1	40102.01	0.05 U	ug/l	EPA 525.2	01/30/04	0.05	E84129
2306 Benzo(a)pyrene	0.2	40102.01	0.1 U	ug/l	EPA 525.2	01/30/04	0.1	E84129
2326 Pentachlorophenol	1	40102.01	0.1 U	ug/l	EPA 515.3	02/06/04	0.1	E84129
2383 Polychlorinated biphenyls (PCBs)	0.5	40102.01	0.2 U	ug/l	EPA 508.1	01/31/04	0.2	E84129
2931 Dibromochloropropane	0.2	40102.01	0.005 U	ug/l	EPA 504.1	02/02/04	0.005	E84129
2946 Ethylene Dibromide (EDB)	0.02	40102.01	0.005 U	ug/l	EPA 504.1	02/02/04	0.005	E84129
2959 Chlordane	2	40102.01	0.05 U	ug/l	EPA 508.1	01/31/04	0.05	E84129
504.1 Date Extracted		40102.01	01/30/04		EPA 504.1			E84129
508.1 Date Extracted		40102.01	01/29/04		EPA 508.1			E84129
515.3 Date Extracted		40102.01	02/03/04		EPA 515.3			E84129
525.2 Date Extracted		40102.01	01/29/04		EPA 525.2			E84129
548.1 Date Extracted		40102.01	01/30/04		EPA 548.1			E84129
549.2 Date Extracted		40102.01	01/29/04		EPA 549.2			E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.



# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Janders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Inorganic Analysis 62-550.310(1) (PWS030)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
1024 Cyanide	0.2	40102.01	0.005 U	mg/l	SM 4500 CN E	02/02/04	0.005	E84129
1025 Fluoride	4	40102.01	2.5	mg/l	EPA 300.0	01/30/04	0.003	E84129

**Footnotes:**

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Secondary Analysis 62-550.320 (PWS031)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2905 Foaming Agents	0.5	40102.01	0.05	mg/l	SM 5540 C	01/29/04	0.05	E84129

Footnotes:

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Anders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Unreg Group II Analysis 62-550.400 (PWS034)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
2210 Chloromethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2212 Dichlorodifluoromethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2214 Bromomethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2216 Chloroethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2218 Trichlorofluoromethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2251 Methyl-tert-butyl-ether		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2408 Dibromomethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2410 1,1-Dichloropropene		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2412 1,3-Dichloropropane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2413 1,3-Dichloropropene, Total		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2414 1,2,3-Trichloropropane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2416 2,2-Dichloropropane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2941 Chloroform		40102.01	0.2 U	ug/l	EPA 502.2	01/29/04	0.2	E84129
2942 Bromoform		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2943 Bromodichloromethane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2944 Dibromochloromethane		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2965 o-Chlorotoluene		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2966 p-Chlorotoluene		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2967 m-Dichlorobenzene		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129
2978 1,1-Dichloroethane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2986 1,1,1,2-Tetrachloroethane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2988 1,1,2,2-Tetrachloroethane		40102.01	0.3 U	ug/l	EPA 502.2	01/29/04	0.3	E84129
2993 Bromobenzene		40102.01	0.5 U	ug/l	EPA 502.2	01/29/04	0.5	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.

# SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Janders Laboratories  
N0401138

February 11, 2004  
Project No: 40102

Sample ID: N0401138-01

## Unreg Group I Analysis 62-550.400 (PWS035)

Parameter ID and Name	MCL	Sample Number	Analysis Result	Units	Analytical Method	Analysis Date	Detection Limit	Lab ID
Date Extracted		40102.01	01/29/04		EPA 525.2			E84129
2045 Metolachlor		40102.01	0.05 U	ug/l	EPA 525.2	01/30/04	0.05	E84129
2076 Butachlor		40102.01	0.06 U	ug/l	EPA 525.2	01/30/04	0.06	E84129
2077 Propachlor		40102.01	0.07 U	ug/l	EPA 525.2	01/30/04	0.07	E84129
2356 Aldrin		40102.01	0.08 U	ug/l	EPA 525.2	01/30/04	0.08	E84129
2364 Dieldrin		40102.01	0.06 U	ug/l	EPA 525.2	01/30/04	0.06	E84129
2595 Metribuzin		40102.01	0.1 U	ug/l	EPA 525.2	01/30/04	0.1	E84129

### Footnotes:

U Analyte was not detected; indicated concentration is method detection limit.



# Florida Radiochemistry Services, Inc.

Contact: Michael J. Naumann

5456 Hoffner Ave., Suite 201 Orlando, FL 32812

Phone: (407) 382-7733 Fax: (407)382-7744

Certification I. D. # E83033

Work Order #: 0401182

Report Date: 02/11/04

Report to:

Sanders Laboratories

1050 Endeavor Ct.

Nokomis, FL 34275

Attention: Tami Bright

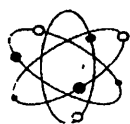
I do hereby affirm that this record contains no willful misrepresentations and that this information given by me is true to the best of my knowledge and belief. I further certify that the methods and quality control measures used to produce these laboratory results were implemented in accordance with the requirements of this laboratory's certification and NELAC Standards.

Signed

  
Michael J. Naumann - President

Date

2-11-04



## Florida Radiochemistry Services, Inc.

### Sample Login

<b>Client:</b>	<b>Sanders Laboratories, Inc.</b>	<b>Date / Time Received</b> 01/28/04 10:20	<b>Work order #</b> 0401182
<b>Client Contact:</b>	<b>Tami Bright</b>		
<b>Client P.O.</b>	<b>N0401138</b>		
<b>Project I.D.</b>	<b>N0401138</b>		
<b>Lab Sample I.D.</b>	<b>Client Sample I.D.</b>	<b>Sample Date/Time</b>	<b>Analysis Requested</b>
0401182-01	N0401138-01	01/27/04 09:30	Ga, Ra226, Ra228

### Analysis Results

<b>Gross Alpha</b>	<b>&lt;41.0 **</b>
<b>Error +/-</b>	<b>27.2</b>
<b>MDL</b>	<b>41.0</b>
<b>EPA Method</b>	<b>900.0</b>
<b>Prep Date</b>	<b>02/02/04</b>
<b>Analysis Date</b>	<b>02/03/04</b>
<b>Analyst</b>	<b>MJN</b>

<b>Radium 226</b>	<b>2.2</b>
<b>Error +/-</b>	<b>0.4</b>
<b>MDL</b>	<b>0.2</b>
<b>EPA Method</b>	<b>903.1</b>
<b>Prep Date</b>	<b>02/03/04</b>
<b>Analysis Date</b>	<b>02/09/04</b>
<b>Analyst</b>	<b>MJN</b>

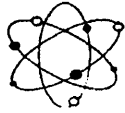
<b>Radium 228</b>	<b>1.2</b>
<b>Error +/-</b>	<b>0.6</b>
<b>MDL</b>	<b>0.9</b>
<b>EPA Method</b>	<b>Ra-05</b>
<b>Prep Date</b>	<b>02/03/04</b>
<b>Analysis Date</b>	<b>02/08/04</b>
<b>Analyst</b>	<b>PJ</b>

**Units**

**pCi/l**

**Units**

**pCi/l**

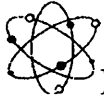


Florida Radiochemistry Services, Inc.

QA Page

Analyte	Sample #	Date Analyzed	Sample Result	Amount Spiked	Spike Result	Spike /Dup Result	Spike % Rec.	Spike Dup % Rpd
Gross Alpha	0401185-08	02/03/04	<1.1	10.2	9.7	9.2	95	5.3
Radium 226	0401180-01	02/09/04	1.0	23.5	25.0	24.4	102	2.4
Radium 228	0401180-01	02/08/04	<0.8	6.6	6.3	6.9	95	9.1

	Quality % RPD	Control	Limits % Rec.
Gross Alpha	15.9		69-115
Radium 226	21.1		73-117
Radium 228	18.1		75-125



Florida Radiochemistry Services, Inc.

## Case Narrative

**NOTE: \*\* Gross Alpha:**

**Sample 0401182-01 had an elevated detection limit and/or counting error due to a low volume of sample used. The sample had high TDS (Total Dissolved Solids). The high TDS interferes with the sample counting efficiency. This is caused by the solids absorbing the sample activity (Sample self-absorption). The sample counting efficiency is decreased because of this. Therefore, the counting time was increased (the sample was counted over night or as long as possible) to help reduce the detection limit and counting error.**





CHAIN-OF-CUSTODY RECORD

PROJECT # 10401138

Page 1 of 1

Client YQ  
 Address \_\_\_\_\_  
 Phone \_\_\_\_\_ Fax \_\_\_\_\_

Report To: Edm/Craig  
 Bill To: \_\_\_\_\_  
 P.O. # \_\_\_\_\_  
 Project Name BSU  
 Project Location: BSU

Sample Supplier GCW  
 Customer Type: \_\_\_\_\_  
 Field Report #: \_\_\_\_\_  
 Kit # \_\_\_\_\_  
 REQUIRED DUE DATE: 1/30/04

Sampled By (PRINT)		Sample			PRESERVATIVES					ANALYSES REQUEST											Sample ID #		
Bottle #	SAMPLE DESCRIPTION	DATE	TIME	TYPE	4°C	UNPRESERVED	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCL	TPSC	Sev. Metals	DDAC	PAH Metals	Hex. PCBs	VOC	PCB A-Peak	VOC/THM's	Metals	Ca	Mercury	EPA 625	Sample ID #	
	Lower Zone	1-27-04	0130	G						1	1												A
											1												B
																							C
																							D
																							E
																							F

Bottle Lot #	SHIPMENT METHOD OUT / DATE	RETURNED DATE	VIA	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
				<u>W. J. Oby</u>	01/27/04	1230	<u>T. BRYAN</u>	01/27/04	1230
COMMENTS:			COOLER #						
			COOLER SEAL INTACT						
			Yes No						

# Lab Project Summary

**Lab Project #:** N0401137  
**Client:** Youngquist Brothers, Inc.  
15465 Pine Ridge Road

Total Pages: 18

**Phone:** Ft. Myers FL 33908  
941-489-4444  
**Fax:** 941-489-4545  
**E-mail:**  
**Client Project Name:** Bonita Springs  
**Laboratory Contact:** Andy Konopacki

---

## QUALIFIER DEFINITIONS

- B: Results based upon colony counts outside the acceptable range.
  - J3: The reported value failed to meet the established quality control criteria.
  - J4: The sample matrix interfered with the ability to make an accurate determination.
  - J5: The data is questionable because of improper lab or field protocols.
  - K: Off scale low, actual value is less than the value given.
  - L: Off scale high, actual value is known to be greater than the value given.
  - Q: Sample held beyond acceptable holding time.
  - U: The compound was analyzed for, but not detected.
  - V: The analyte was detected in both the sample and the associated method blank.
  - Y: The sample was unpreserved or improperly preserved.
  - Z: Too many colonies present (TNTC).
- Meets and/or exceeds acceptable drinking water limits, per FAC 62-550.  
This is an uncertified result.  
HACH results are uncertified.

A statement of estimated uncertainty of results is available upon request.  
Laboratory report shall not be reproduced except in full, without the written approval of Sanders Laboratories.  
Sanders Laboratories follows DEP standard operating procedures for field sampling.

Reports are archived for a minimum of 5 years. Copies of reports which are less than 1 year old are available for a fee of \$25.00 per report. Reports older than 1 year are available for a fee of \$50.00 per report. Copies will be provided within 1 week of the time of the request.

APPENDIX Q

**Casing Pressure Test Data and Pressure  
Gauge Calibration Certifications**

---

APPENDIX Q.1

## **WRF IW-1 Casing Pressure Test Data**

---



<b>Final Pressure Test of 16-inch Casing</b>				
<b>Bonita Springs Utilities WRF</b>				
<b>Injection Well (IW-1)</b>				
<b>January 7, 2004</b>				
<b>Pressure Reading (PSI)</b>	<b>Time</b>	<b>Elapsed Time (minutes)</b>	<b>Change in Pressure (PSI)</b>	<b>Comments</b>
108.25	1355	0	0.00	Start test
108.25	1405	10	0.00	
108.25	1415	20	0.00	
108.25	1425	30	0.00	
108.25	1435	40	0.00	
108.50	1445	50	0.25	
108.75	1455	60	0.25	J. Myers of FDEP leaves site
108.75	1505	70	0.00	
109.00	1515	80	0.25	
109.00	1525	90	0.00	
109.00	1535	100	0.00	
109.00	1545	110	0.00	
109.00	1555	120	0.00	Bled off 9 gallons to reach 0 psi

Witnessed by: Mark Schilling  
CH2M HILL

Floyd Benson, III  
DRILLER

Jack Myers  
FDEP

APPENDIX Q.2

**WRF DZMW-1 Casing Pressure Test Data**

---

**CASING PRESSURE TEST**



**CH2MHILL**

<b>Final Pressure Test of 6.625-inch FRP Casing</b>				
<b>Bonita Springs Utilities WRF</b>				
<b>Dual-Zone Monitor Well (DZMW-1)</b>				
<b>January 9, 2004</b>				
<b>Pressure Reading (PSI)</b>	<b>Time</b>	<b>Elapsed Time (minutes)</b>	<b>Overall Change in Pressure (PSI)</b>	<b>Comments</b>
52.50	1550	0	0.00	Start test - No representative from FDEP present
52.50	1600	10	0.00	
51.75	1610	20	0.75	
51.75	1620	30	0.75	
51.00	1630	40	1.50	
51.00	1640	50	1.50	
50.50	1650	60	2.00	Bled off 0.75 gallons to reach 0

Witnessed by: Mark Schilling  
CH2M HILL

Floyd Benson, III  
DRILLER

Not Present  
FDEP

APPENDIX Q.3

# **Pressure Gauge Calibration Certificates**

---





# Kimball Electronic Laboratory, Inc.

Precision Measurement Equipment Specialists

## Certificate of Calibration # 131015

YOUNGQUIST BROTHERS, INC.  
15465 PINE RIDGE ROAD  
FORT MYERS, FL 33908

Customer P.O.# N/A  
Manufacturer: WIKA  
Model Number: 200 PSI  
Nomenclature: PRESSURE TEST GAUGE  
SN/ID/Asset # 9160  
Bar Code # N/A  
Specifications: 0-200 PSI +/- .25% F.S.  
Cal. Procedure: MP16/G2  
KELI Control # YOU-23709

The accuracy and calibration of this instrument is traceable to the National Institute of Standards and Technology through certified standards maintained in the laboratories of KELI Labs., Inc. or derived by the ratio of self-calibration techniques and is guaranteed to meet published specifications. The metrology procedures utilized satisfy the requirements set forth in ANSI/NCSL 540-1.

In Tolerance When Received?  Y Cal. Tech:098 Relative Humidity: 50% Temperature: 74 Deg. F  
In-House  Y Cal. Cycle: 12 Mos. Calibration Date: 12/11/2003 Calibration Due: 12/11/2004

Remarks: PERFORMED ROUTINE CALIBRATION/CERTIFICATION

I.D. #	Standards Used	Cal. Date	Cal. Due
609	DRESSER PTE-1 PRESSURE CALIBRATOR	08/06/2003	08/06/2004
610	DRESSER HSQ-2 PRESSURE TRANSDUCER	08/06/2003	08/06/2004

Quality Assurance

This report may not be reproduced, except in full, unless permission for the publication of an approved abstract is obtained in writing from KELI Labs., Inc.  
Kimball Electronic Lab., Inc. - 8081 W. 21 Lane - Hialeah, Florida 33016

milcert 0103



# Kimball Electronic Laboratory, Inc.

Precision Measurement Equipment Specialists

## Certificate of Test # 131015

Customer: YOUNGQUIST BROTHERS, INC.  
15465 PINE RIDGE ROAD  
FORT MYERS, FL. 33908

Manufacturer/Model: WIKA 200 PSI  
Nomenclature: PRESSURE TEST GAUGE  
S.N./I.D. 9160 KELI # YOU-23709  
W.O. # 281359 Customer P.O.# N/A

Range	Nominal	Pre-Cal	Post-Cal	Low Limit	High Limit
200 PSI	40	40.1	40.1	39.5	40.5
	80	80.0	80.0	79.5	80.5
	120	120.1	120.1	119.5	120.5
	160	160.0	160.0	159.5	160.5
	200	200.0	200.0	199.5	200.5

The accuracy and calibration of this instrument is traceable to the National Institute of Standards and Technology through certified standards maintained in the laboratories of KELI Labs., Inc. or derived by the ratio of self-calibration techniques and is guaranteed to meet published specifications. The metrology procedures utilized satisfy the requirements set forth in ANSI/NCCL 540-1.

Cal. Procedure: MP16/G2 Rcvd. in tol. Y Tech: 098 Temp. (F): 74 R.H. % 50  
Specifications: 0-200 PSI +/- .25% F.S. In-House: Y Cal. Date: 12/11/2003 Cal. Due: 12/11/2004  
Remarks: PERFORMED ROUTINE CALIBRATION/CERTIFICATION

I.D. #	Standards Used	Cal. Date	Cal. Due
609	DRESSER PTE-1 PRESSURE CALIBRATOR	08/06/2003	08/06/2004
610	DRESSER HSQ-2 PRESSURE TRANSDUCER	08/06/2003	08/06/2004



Quality Assurance