Marco Lakes ASR 2 and ASR 3
UIC Operating Permit Application
and
Engineering Report

for:

Florida Water Services Corp.
P.O. Box 609520
Orlando, Florida 32860-9520

April 2003

Water Resource Solutions, Inc
428 Pine Island Road, S.W.
Cape Coral, Fl 33991.

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Florida Water SERVICES

bc: Bart Bradshaw
Frank Kane
Bob Leetch
Jake Rohrich

April 3, 2003

Mr. Jack Myers, P.G.
Florida Department of Environmental Protection
Underground Injection Program
2295 Victoria Avenue, Suite 364
Ft. Myers, Florida 33901

Re: Marco Lakes Raw Water Facility
Applications to Operate Two ASR Wells (ASR2 and ASR3)

Dear Mr. Myers:

Florida Water Services is submitting Operating Permit Applications and the associated engineering report for Marco Lakes ASR wells ASR2 and ASR3. These wells are currently being operated under construction permit numbers 141218-001UIC and 141218-002UIC. The required application fee for two Class V wells of $1500.00 ($750 for each well) is also included.

A Water Quality Exemption for Color was previously requested in January of 2003. The request was submitted to Mr. Richard Deuerling. The Water Quality Exemption for Color was submitted at that time so that the color exemption and the operating permit can be issued simultaneously. The timing of these submissions was recommended by both yourself and Mr. Haberfeld so that these two wells can continue to operate under the construction permit until both the new Water Quality Exemption for Color and the new operating permits are issued.

As you are aware, issuance of the operating permit without the color exemption requires that the wells not be operated until the color exemption is issued. Since the current construction permits allow the wells to be operated into 2004, there is no need to issue the operating permit before the color exemption request is approved and issued.

If you should have questions, please do not hesitate to call me at (407) 598-4126.

Sincerely,

FLORIDA WATER SERVICES CORPORATION

Sandra J. Joiner, P.E.
Senior Project Engineer

Enclosure
c: Craig Anderson, Florida Water Services
Mark Pearce, Water Resource Solutions
Joe Haberfeld, Florida Department of Environmental Protection
Nancy Marsh, United States Environmental Protection Agency, Region IV
Steven Anderson, South Florida Water Management District
Ron Reese, United States Geological Survey

TABLE OF CONTENTS

PART I

CLASS V UIC OPERATING PERMIT APPLICATIONS FOR ASR 2 AND ASR 3

Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

DEP Form No:	62-528.900(1)
Form Title:	Application to Construct/ Operate/Abandon Class I, III, or V Injection Well Systems
Effective Date:	
DEP Application No.:	(Filled in by DEP)

APPLICATION TO CONSTRUCT/OPERATE/ABANDON CLASS I, III, OR V INJECTION WELL SYSTEMS

Part I. Directions

A. All applicable items must be completed in full in order to avoid delay in processing this application. Where attached sheets or other technical documentation are utilized in lieu of the blank space provided, indicate appropriate cross-reference in the space and provide copies to the Department in accordance with C. below. Where certain items do not appear applicable to the project, indicate N/A in the appropriate spaces.

B. All information is to be typed or printed in ink.

C. Four (4) copies of this application and four (4) copies of supporting information such as plans, reports, drawings and other documents shall be submitted to the appropriate District/Subdistrict office. An engineering report is also required to be submitted to support this application pursuant to the applicable sections of Rule 62-528, F.A.C. The attached list* shall be used to determine completeness of supporting data submitted or previously received. A check for the application fee in accordance with Rule 62-4.050, F.A.C., made payable to the Department shall accompany the application.

D. For projects involving construction, this application is to be accompanied by four (4) sets of engineering drawings, specifications and design data as prepared by a Professional Engineer registered in Florida, where required by Chapter 471, Florida Statutes.

E. Attach 8 1/2" x 11" USGS site location map indicating township, range and section and latitude/longitude for the project.

PART II. General Information

A. Applicant Name Florida Water Services Corp. Title _____

Address P.O. Box 609520

City Orlando State Florida Zip 32860

Telephone Number (407) 880-0058

B. Project Status: ☐ New ☒ Existing

☐ Modification (specify) _____

*"Engineering and Hydrogeologic Data Required for Support of Application to Construct, Operate and Abandon Class I, III, or V Injection Wells"

C. Well Type: ☐ Exploratory Well ☒ Test/Injection Well

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D. Type of Permit Application

- ☐ Class I Test/Injection Well Construction and Testing Permit
- ☐ Class I Well Operation Permit
- ☐ Class I Well Operation Repermitting
- ☐ Class I Well Plugging and Abandonment Permit
- ☐ Class III Well Construction/Operation/Plugging and Abandonment Permit
- ☐ Class I Exploratory Well Construction and testing Permit
- ☐ Class V Well Construction Permit
- ☒ Class V Well Operation Permit
- ☐ Class V Well Plugging and Abandonment Permit
- ☐ Monitor Well Only

E. Facility Identification:

Name Marco Island Raw Water Source at Marco Lakes

Facility Location: Street C.R. 951

City N/A County Collier County

SIC Code(s)

F. Proposed facility located on Indian Lands: Yes ☐ No ☒

G. Well Identification:

Well No. 2 of 3 (total #) Wells

Purpose (Proposed Use) Storage of Partially Treated Surface Water

Well Location: Latitude: 26 ° 4 ' 0.9958 " Longitude: 81 ° 41 '33.3135 "
(attach separate sheet(s), if necessary, for multiple wells)

Subpart B. General Project Description:

H. General Project Description: Describe the nature, extent and schedule of the injection well project. Refer to existing and/or future pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance with the requirements of Chapter 403, F.S., and all rules of the Department. Attach additional sheet(s) if necessary or cross-reference the engineering report.

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PART III. Statement by Applicant and Engineer

A. Applicant

I, the owner/authorized representative* of Florida Water Services Corp., certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I understand that this certification also applies to all subsequent reports submitted pursuant to this permit. Where construction is involved, I agree to retain the design engineer, or other professional engineer registered in Florida, to provide inspection of construction in accordance with Rule 62-528.455(1)(c), F.A.C.

Signed — Date: 4-3-03

Craig J. Anderson, Vice President Environmental Services — (407) 598-4100
Name and Title (Please Type) — Telephone Number

*Attach a Letter of Authorization.

B. Professional Engineer Registered in Florida

This is to certify that the engineering features of this injection well have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that the well, when properly maintained and operated, will discharge the effluent in compliance with all applicable statutes of the State of Florida and the rules of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for proper maintenance and operation of the well.

Signed

Lloyd E. Horvath, P.E.
Name (Please Type)

Water Resource Solutions, Inc.
Company Name (Please Type)

(Please Affix Seal)

428 Pine Island Road, S.W., Cape Coral, Florida 33991
Mailing Address(Please Type)

Florida Registration No. 25260 Date 3-31-03 Phone No. (239) 574-1919

DEP Form No:	62-528.900(1)
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ENGINEERING AND HYDROLOGIC DATA
REQUIRED FOR SUPPORT OF APPLICATION
TO CONSTRUCT, OPERATE, AND ABANDON
CLASS I, III, OR V INJECTION WELL SYSTEMS

The following information shall be provided for each type of permit application.

A. CLASS I TEST/INJECTION WELL CONSTRUCTION AND TESTING PERMIT

1. A map showing the location of the proposed injection wells of well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone, confining zone, or proposed monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Proposed operating data.

   (a) Average and maximum daily rate and volume of the fluid to be injected;

   (b) Average and maximum injection pressure; and,

   (c) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids.

7. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection zone.

8. Proposed stimulation program.

9. Proposed injection procedure.

10. Engineering drawings of the surface and subsurface construction details of the system.

11. Contingency plans to cope with all shut-ins or well failures, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

12. Plans (including maps) and proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

13. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

14. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, proposed blowout protection (if necessary), and a drilling, testing and coring program.

15. A certification that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

B. CLASS I INJECTION WELL OPERATION PERMIT

1. A report shall be submitted with each application for a Class I Well operating permit, which shall include, but not be limited to, the following information:

   (a) Results of the information obtained under the construction permit described in A. CLASS I TEST/INJECTION WELL CONSTRUCTION AND TESTING PERMIT, including:

      (1) All available logging and testing program data and construction data on the well or well field;

      (2) A satisfactory demonstration of mechanical integrity for all new wells pursuant to Rule 62-528.300(6), F.A.C;

      (3) The actual operating data, including injection pressures versus pumping rates where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

      (4) The actual injection procedure;

      (5) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and,

      (6) The status of corrective action on defective wells in the area of review.

   (b) Record drawings, based upon inspections by the engineer or persons under his direct supervision, with all deviations noted;

   (c) Certification of completion submitted by the engineer of record;

   (d) If requested by the Department, operation manual including emergency procedures;

(e) Proposed monitoring program and data to be submitted;

(f) Proof that the existence of the well has been recorded on the surveyor's plan at the county courthouse; and,

(g) Proposed plugging and abandonment plan pursuant to Rule 62-528.435(2), F.A.C.

C. CLASS I WELL OPERATION REPERMITTING

1. An updated map showing the location of the injection wells or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of pubic record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the injection zone, confining zone, or monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Contingency plans to cope with all shut-ins or well failures, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

7. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

8. A certification that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

9. A report shall be submitted with each application for repermitting of Class I Well operation which shall include the following information:

   (a) All available logging and testing program data and construction data on the well or well field;

(b) A satisfactory demonstration of mechanical integrity for all wells pursuant to Rule 62-528.300(6), F.A.C.;

(c) The actual operating data, including injection pressures versus pumping rates where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

(d) The actual injection procedure;

(e) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone;

(f) The status of corrective actin on defective wells in the area of review;

(g) Record drawings, based upon inspections by the engineer or persons under his direct supervision, with all deviations noted;

(h) Certification of completion submitted by the engineer of record;

(i) An updated operation manual including emergency procedures;

(j) Proposed revisions to the monitoring program or data to be submitted; and,

(k) Proposed plugging and abandonment plan pursuant to Rule 62-528.435(2), F.A.C.

D. CLASS I WELL PLUGGING AND ABANDONMENT PERMIT

1. The reasons for abandonment.

2. A proposed plan for plugging and abandonment describing the preferred and alternate methods, and justification for use.

   (a) The type and number of plugs to be used;

   (b) The placement of each plug including the elevation of the top and bottom;

   (c) The type and grade and quantity of cement or any other approved plugging material to be used; and,

   (d) The method for placement of the plugs.

3. The procedure to be used to meet the requirements of Rule 62-528.435, F.A.C.

E. CLASS III WELLS CONSTRUCTION/OPERATION/PLUGGING AND ABANDONMENT PERMIT

Construction Phase

1. A map showing the location of the proposed injection wells or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water system, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone, confining zone, or proposed monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Proposed operating data:

   (a) Average and maximum daily rate and volume of the fluid to be injected;

   (b) Average and maximum injection pressure; and,

   (c) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids, including any additives.

7. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection zone.

8. Proposed stimulation program.

9. Proposed injection procedure.

10. Engineering drawings of the surface and subsurface construction details of the system.

11. Contingency plans to cope with all shut-ins or well failures or catastrophic collapse, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

12. Plans (including maps) and proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

13. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

14. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, and a drilling, testing and coring program.

15. A certificate that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

16. Expected changes in pressure, native fluid displacement, direction of movement of injection fluid.

17. A proposed monitoring plan, which includes a plan for detecting migration of fluids into underground sources of drinking water, a plan to detect water quality violation in the monitoring wells, and the proposed monitoring data to be submitted.

Operation Phase

1. The following information shall be provided to the Department prior to granting approval for the operation of the well or well field:

   (a) All available logging and testing program data and construction data on the well or well field;

   (b) A satisfactory demonstration of mechanical integrity for all new wells pursuant to Rule 62-528.300(6), F.A.C.;

   (c) The actual operating data, including injection pressure versus pumping rate where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

   (d) The results of the formation testing program;

   (e) The actual injection procedure; and,

   (f) The status of corrective action on defective wells in the area of review.

Plugging and abandonment Phase

1. The justification for abandonment.

2. A proposed plan for plugging and abandonment describing the preferred and alternate methods.

   (a) The type and number of plugs to be used;

   (b) The placement of each plug including the elevation of the top and bottom;

   (c) The type and grade and quantity of cement or any other approved plugging material to be used; and,

   (d) The method for placement of the plugs.

3. The procedure to be used to meet the requirements of Rule 62-528.435, F.A.C.

F. EXPLORATORY WELL CONSTRUCTION AND TESTING PERMIT

1. Conceptual plan of the injection project. Include number of injection wells, proposed injection zone, nature and volume of injection fluid, and proposed monitoring program.

2. Preliminary Area of Review Study. Include the proposed radius of the area of review with justification for that radius. Provide a map showing the location of the proposed injection well or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

3. Proposed other uses of the exploratory well.

4. Drilling and testing plan for the exploratory well. The drilling plan must specify the proposed drilling program, sampling, coring, and testing procedures.

5. Abandonment Plan.

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G. CLASS V WELL CONSTRUCTION PERMIT

(This form should be used for Class V Wells instead of Form 62-528.900(3), F.A.C., when there is a need for a Technical Advisory Committee and an engineering report.)

1. Type and number of proposed Class V Wells:

_____ Wells Receiving Domestic Waste

_____ Desalination Process Concentrate Wells (Reverse Osmosis, etc.)

_____ Aquifer Storage and Recovery Wells

_____ Aquifer Remediation Wells

_____ Salt-water Intrusion Barrier Wells

_____ Cooling Water Return Flow Wells Open-looped System

_____ Subsidence Control Wells

_____ Sand Backfill Wells

_____ Experimental Technology Wells

_____ Wells used to inject spent brine after halogen recovery

_____ Radioactive Waste Disposal Wells*

_____ Borehole Slurry Mining Wells

_____ Other non-hazardous Industrial or Commercial Disposal Wells

(explain) _____

_____ Other (explain) _____

*Provided the concentrations of the waste do not exceed drinking water standards contained in Chapter 62-550, F.A.C.

2. Project Description:

(a) Description and use of proposed injection system;

(b) Nature and volume of injected fluid (the Department may require an analysis including bacteriological analysis) in accordance with Rule 62-528.635(2)(b), F.A.C.; and,

(c) Proposed pretreatment.

3. Water well contractor's name, title, state license number, address, phone number and signature.

4. Well Design and Construction Details. (For multi-casing configurations or unusual construction provisions, an elevation drawing of the proposed well should be attached.)

   (a) Proposed total depth;

   (b) Proposed depth and type of casing(s);

   (c) Diameter of well;

   (d) Cement type, depth, thickness; and,

   (e) Injection pumps (if applicable): _____ gpm @ _____ psi

   Controls: _____

   _____

   _____

5. Water Supply Wells - When required by Rule 62-528.635(1), F.A.C., attach a map section showing the locations of all water supply wells within a one-half (1/2) mile radius of the proposed well. The well depths and casing depths should be included. When required by Rule 62-528.635(2), F.A.C., results of bacteriological examinations of water from all water supply wells within one-half (1/2) mile and drilled to approximate depth of proposed well should be attached.

6. Area of review (When required by Rule 62-528.300(4), F.A.C.)

   Include the proposed radius of the area of review with justification for that radius. Provide a map showing the location of the proposed injection well or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

H. CLASS V WELL OPERATION PERMIT

(Final report of the construction that includes the following information may be submitted with the application to operate.)

1. Permit Number of Class V Construction Permit: 14128-001UIC

2. Owner's Name: Florida Water Services Corporation

3. Type of Wells: Class V Aquifer Storage and Recovery

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4. Construction and Testing Summary: See Attached Report for Details.

(a) Actual Dimensions:

Diameter (inches)	Well Depth (feet)	Casing Depth (feet)

(b) Result of Initial Testing

5. Proposed Operating Data: See Attached Report for Details.

(a) Injection Rate (GPM);

(b) Description of injected waste; and,

(c) Injection pressure and pump controls.

6. Proposed Monitoring Plan (if any): See Attached Report for Details.

(a) Number of monitoring wells;

(b) Depth(s);

(c) Parameters;

(d) Frequency of sampling; and,

(e) Instrumentation (if applicable) Flow _____

Pressure _____

I. CLASS V WELLS PLUGGING AND ABANDONMENT PERMIT

1. Permit number of Class V construction or operating permit.

2. Type of well.

3. Proposed plugging procedures, plans and specifications.

4. Reasons for abandonment.

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J. MONITOR WELL PERMIT

This section should be used only when application is made for a monitor well only. If a monitor well is to be constructed under a Class I, III, or V injection well construction permit, it is necessary to fill in this section.

1. A site map showing the location of the proposed monitor wells for which a permit is sought. The map must be to scale and show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, water wells and other pertinent surface features including structures and roads.

2. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

3. Maps and cross sections detailing the hydrology and geologic structures of the local area.

4. Generalized maps and cross sections illustrating the regional geologic setting.

5. Proposed formation testing program to obtain an anlysis of the chemical, physical and radiological characteristics of and other information on the monitor zone(s).

6. Proposed monitoring procedure.

7. Engineering drawings of the surface and subsurface construction details of the monitoring system.

8. Proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

9. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, proposed blowout protection (if necessary), and a drilling, testing and coring program

10. Monitor Well Information:

☐ On-site ☐ Multizone ☐ Single-zone

☐ Regional ☐ Other (specify) _____

Proposed Monitoring Interval(s) _____

Distance and Direction From Associated Injection Well _____

_____

Florida Department of Environmental Protection

Twin Towers Office Bldg., 2600 Blair Stone Road, Tallahassee, Florida 32399-2400

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APPLICATION TO CONSTRUCT/OPERATE/ABANDON
CLASS I, III, OR V INJECTION WELL SYSTEMS

Part I. Directions

A. All applicable items must be completed in full in order to avoid delay in processing this application. Where attached sheets or other technical documentation are utilized in lieu of the blank space provided, indicate appropriate cross-reference in the space and provide copies to the Department in accordance with C. below. Where certain items do not appear applicable to the project, indicate N/A in the appropriate spaces.

B. All information is to be typed or printed in ink.

C. Four (4) copies of this application and four (4) copies of supporting information such as plans, reports, drawings and other documents shall be submitted to the appropriate District/Subdistrict office. An engineering report is also required to be submitted to support this application pursuant to the applicable sections of Rule 62-528, F.A.C. The attached list* shall be used to determine completeness of supporting data submitted or previously received. A check for the application fee in accordance with Rule 62-4.050, F.A.C., made payable to the Department shall accompany the application.

D. For projects involving construction, this application is to be accompanied by four (4) sets of engineering drawings, specifications and design data as prepared by a Professional Engineer registered in Florida, where required by Chapter 471, Florida Statutes.

E. Attach 8 1/2" x 11" USGS site location map indicating township, range and section and latitude/longitude for the project.

PART II. General Information

A. Applicant Name Florida Water Services Corp. Title _____

Address P.O. Box 609520

City Orlando State Florida Zip 32860

Telephone Number (407) 880-0058

B. Project Status: ☐ New ☒ Existing

☐ Modification (specify) _____

*"Engineering and Hydrogeologic Data Required for Support of Application to Construct, Operate and Abandon Class I, III, or V Injection Wells"

C. Well Type: ☐ Exploratory Well ☒ Test/Injection Well

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- ☐ Class I Well Operation Repermitting
- ☐ Class I Well Plugging and Abandonment Permit
- ☐ Class III Well Construction/Operation/Plugging and Abandonment Permit
- ☐ Class I Exploratory Well Construction and testing Permit
- ☐ Class V Well Construction Permit
- ☒ Class V Well Operation Permit
- ☐ Class V Well Plugging and Abandonment Permit
- ☐ Monitor Well Only

E. Facility Identification:

Name Marco Island Raw Water Source at Marco Lakes

Facility Location: Street C.R. 951

City N/A County Collier County

SIC Code(s) _____

F. Proposed facility located on Indian Lands: Yes ☐ No ☒

G. Well Identification:

Well No. 3 of 3 Wells
(total #)

Purpose (Proposed Use) Storage of Partially Treated Surface Water

Well Location: Latitude: 26° 4 '4.2054 " Longitude: 81° 41 '30.7843 "
(attach separate sheet(s), if necessary, for multiple wells)

Subpart B. General Project Description:

H. General Project Description: Describe the nature, extent and schedule of the injection well project. Refer to existing and/or future pollution control facilities, expected improvement in performance of the facilities and state whether the project will result in full compliance with the requirements of Chapter 403, F.S., and all rules of the Department. Attach additional sheet(s) if necessary or cross-reference the engineering report.

DEP Form No:	62-528.900(1)
Form Title:	Application to Construct/ Operate/Abandon Class I, III, or V Injection Well Systems
Effective Date:	
DEP Application No.:	(Filled in by DEP)

PART III. Statement by Applicant and Engineer

A. Applicant

I, the owner/authorized representative* of Florida Water Services Corp., certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I understand that this certification also applies to all subsequent reports submitted pursuant to this permit. Where construction is involved, I agree to retain the design engineer, or other professional engineer registered in Florida, to provide inspection of construction in accordance with Rule 62-528.455(1)(c), F.A.C.

Signed — Date: 4-3-03

Craig J. Anderson, Vice President Environmental Services — (407) 598-4100
Name and Title (Please Type) — Telephone Number

*Attach a Letter of Authorization.

B. Professional Engineer Registered in Florida

This is to certify that the engineering features of this injection well have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the disposal of pollutants characterized in the permit application. There is reasonable assurance, in my professional judgement, that the well, when properly maintained and operated, will discharge the effluent in compliance with all applicable statutes of the State of Florida and the rules of the Department. It is also agreed that the undersigned will furnish the applicant a set of instructions for proper maintenance and operation of the well.

Signed

Lloyd E. Horvath, P.E.
Name (Please Type)

Water Resource Solutions, Inc.
Company Name (Please Type)

(Please Affix Seal)

428 Pine Island Road, S.W., Cape Coral, Florida 33991
Mailing Address(Please Type)

Florida Registration No. 25260 Date 3-31-03 Phone No. (239) 574-1919

DEP Form No:	62-528.900(1)
Form Title:	Application to Construct/ Operate/Abandon Class I, III, or V Injection Well Systems
Effective Date:	
DEP Application No.:	(Filled in by DEP)

ENGINEERING AND HYDROLOGIC DATA
REQUIRED FOR SUPPORT OF APPLICATION
TO CONSTRUCT, OPERATE, AND ABANDON
CLASS I, III, OR V INJECTION WELL SYSTEMS

The following information shall be provided for each type of permit application.

A. CLASS I TEST/INJECTION WELL CONSTRUCTION AND TESTING PERMIT

1. A map showing the location of the proposed injection wells of well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone, confining zone, or proposed monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Proposed operating data.

   (a) Average and maximum daily rate and volume of the fluid to be injected;

   (b) Average and maximum injection pressure; and,

   (c) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids.

7. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection zone.

8. Proposed stimulation program.

9. Proposed injection procedure.

10. Engineering drawings of the surface and subsurface construction details of the system.

11. Contingency plans to cope with all shut-ins or well failures, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

12. Plans (including maps) and proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

13. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

14. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, proposed blowout protection (if necessary), and a drilling, testing and coring program.

15. A certification that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

B. CLASS I INJECTION WELL OPERATION PERMIT

1. A report shall be submitted with each application for a Class I Well operating permit, which shall include, but not be limited to, the following information:

   (a) Results of the information obtained under the construction permit described in A. CLASS I TEST/INJECTION WELL CONSTRUCTION AND TESTING PERMIT, including:

      (1) All available logging and testing program data and construction data on the well or well field;

      (2) A satisfactory demonstration of mechanical integrity for all new wells pursuant to Rule 62-528.300(6), F.A.C;

      (3) The actual operating data, including injection pressures versus pumping rates where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

      (4) The actual injection procedure;

      (5) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone; and,

      (6) The status of corrective action on defective wells in the area of review.

   (b) Record drawings, based upon inspections by the engineer or persons under his direct supervision, with all deviations noted;

   (c) Certification of completion submitted by the engineer of record;

   (d) If requested by the Department, operation manual including emergency procedures;

(e) Proposed monitoring program and data to be submitted;

(f) Proof that the existence of the well has been recorded on the surveyor's plan at the county courthouse; and,

(g) Proposed plugging and abandonment plan pursuant to Rule 62-528.435(2), F.A.C.

C. CLASS I WELL OPERATION REPERMITTING

1. An updated map showing the location of the injection wells or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of pubic record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the injection zone, confining zone, or monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Contingency plans to cope with all shut-ins or well failures, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

7. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

8. A certification that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

9. A report shall be submitted with each application for repermitting of Class I Well operation which shall include the following information:

   (a) All available logging and testing program data and construction data on the well or well field;

(b) A satisfactory demonstration of mechanical integrity for all wells pursuant to Rule 62-528.300(6), F.A.C.;

(c) The actual operating data, including injection pressures versus pumping rates where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

(d) The actual injection procedure;

(e) The compatibility of injected waste with fluids in the injection zone and minerals in both the injection zone and the confining zone;

(f) The status of corrective actin on defective wells in the area of review;

(g) Record drawings, based upon inspections by the engineer or persons under his direct supervision, with all deviations noted;

(h) Certification of completion submitted by the engineer of record;

(i) An updated operation manual including emergency procedures;

(j) Proposed revisions to the monitoring program or data to be submitted; and,

(k) Proposed plugging and abandonment plan pursuant to Rule 62-528.435(2), F.A.C.

D. CLASS I WELL PLUGGING AND ABANDONMENT PERMIT

1. The reasons for abandonment.

2. A proposed plan for plugging and abandonment describing the preferred and alternate methods, and justification for use.

   (a) The type and number of plugs to be used;

   (b) The placement of each plug including the elevation of the top and bottom;

   (c) The type and grade and quantity of cement or any other approved plugging material to be used; and,

   (d) The method for placement of the plugs.

3. The procedure to be used to meet the requirements of Rule 62-528.435, F.A.C.

E. CLASS III WELLS CONSTRUCTION/OPERATION/PLUGGING AND ABANDONMENT PERMIT

Construction Phase

1. A map showing the location of the proposed injection wells or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water system, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

2. A tabulation of data on all wells within the area of review which penetrate into the proposed injection zone, confining zone, or proposed monitoring zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Department may require.

3. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

4. Maps and cross sections detailing the hydrology and geologic structures of the local area.

5. Generalized maps and cross sections illustrating the regional geologic setting.

6. Proposed operating data:

   (a) Average and maximum daily rate and volume of the fluid to be injected;

   (b) Average and maximum injection pressure; and,

   (c) Source and an analysis of the chemical, physical, radiological and biological characteristics of injection fluids, including any additives.

7. Proposed formation testing program to obtain an analysis of the chemical, physical and radiological characteristics of and other information on the injection zone.

8. Proposed stimulation program.

9. Proposed injection procedure.

10. Engineering drawings of the surface and subsurface construction details of the system.

11. Contingency plans to cope with all shut-ins or well failures or catastrophic collapse, so as to protect the quality of the waters of the State as defined in Rule 62-3 and 62-520, F.A.C., including alternate or emergency discharge provisions.

12. Plans (including maps) and proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

13. For wells within the area of review which penetrate the injection zone but are not properly completed or plugged, the corrective action proposed to be taken under Rule 62-528.300(5), F.A.C.

14. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, and a drilling, testing and coring program.

15. A certificate that the applicant has ensured, through a performance bond or other appropriate means, the resources necessary to close, plug or abandon the well as required by Rule 62-528.435(9), F.A.C.

16. Expected changes in pressure, native fluid displacement, direction of movement of injection fluid.

17. A proposed monitoring plan, which includes a plan for detecting migration of fluids into underground sources of drinking water, a plan to detect water quality violation in the monitoring wells, and the proposed monitoring data to be submitted.

Operation Phase

1. The following information shall be provided to the Department prior to granting approval for the operation of the well or well field:

   (a) All available logging and testing program data and construction data on the well or well field;

   (b) A satisfactory demonstration of mechanical integrity for all new wells pursuant to Rule 62-528.300(6), F.A.C.;

   (c) The actual operating data, including injection pressure versus pumping rate where feasible, or the anticipated maximum pressure and flow rate at which the permittee will operate, if approved by the Department;

   (d) The results of the formation testing program;

   (e) The actual injection procedure; and,

   (f) The status of corrective action on defective wells in the area of review.

Plugging and abandonment Phase

1. The justification for abandonment.

2. A proposed plan for plugging and abandonment describing the preferred and alternate methods.

   (a) The type and number of plugs to be used;

   (b) The placement of each plug including the elevation of the top and bottom;

   (c) The type and grade and quantity of cement or any other approved plugging material to be used; and,

   (d) The method for placement of the plugs.

3. The procedure to be used to meet the requirements of Rule 62-528.435, F.A.C.

F. EXPLORATORY WELL CONSTRUCTION AND TESTING PERMIT

1. Conceptual plan of the injection project. Include number of injection wells, proposed injection zone, nature and volume of injection fluid, and proposed monitoring program.

2. Preliminary Area of Review Study. Include the proposed radius of the area of review with justification for that radius. Provide a map showing the location of the proposed injection well or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

3. Proposed other uses of the exploratory well.

4. Drilling and testing plan for the exploratory well. The drilling plan must specify the proposed drilling program, sampling, coring, and testing procedures.

5. Abandonment Plan.

G. CLASS V WELL CONSTRUCTION PERMIT

(This form should be used for Class V Wells instead of Form 62-528.900(3), F.A.C., when there is a need for a Technical Advisory Committee and an engineering report.)

1. Type and number of proposed Class V Wells:

_____ Wells Receiving Domestic Waste

_____ Desalination Process Concentrate Wells (Reverse Osmosis, etc.)

_____ Aquifer Storage and Recovery Wells

_____ Aquifer Remediation Wells

_____ Salt-water Intrusion Barrier Wells

_____ Cooling Water Return Flow Wells Open-looped System

_____ Subsidence Control Wells

_____ Sand Backfill Wells

_____ Experimental Technology Wells

_____ Wells used to inject spent brine after halogen recovery

_____ Radioactive Waste Disposal Wells*

_____ Borehole Slurry Mining Wells

_____ Other non-hazardous Industrial or Commercial Disposal Wells

(explain) _____

_____ Other (explain) _____

*Provided the concentrations of the waste do not exceed drinking water standards contained in Chapter 62-550, F.A.C.

2. Project Description:

(a) Description and use of proposed injection system;

(b) Nature and volume of injected fluid (the Department may require an analysis including bacteriological analysis) in accordance with Rule 62-528.635(2)(b), F.A.C.; and,

(c) Proposed pretreatment.

3. Water well contractor's name, title, state license number, address, phone number and signature.

4. Well Design and Construction Details. (For multi-casing configurations or unusual construction provisions, an elevation drawing of the proposed well should be attached.)

   (a) Proposed total depth;

   (b) Proposed depth and type of casing(s);

   (c) Diameter of well;

   (d) Cement type, depth, thickness; and,

   (e) Injection pumps (if applicable): _____ gpm @ _____ psi

   Controls: _____

   _____

   _____

5. Water Supply Wells - When required by Rule 62-528.635(1), F.A.C., attach a map section showing the locations of all water supply wells within a one-half (1/2) mile radius of the proposed well. The well depths and casing depths should be included. When required by Rule 62-528.635(2), F.A.C., results of bacteriological examinations of water from all water supply wells within one-half (1/2) mile and drilled to approximate depth of proposed well should be attached.

6. Area of review (When required by Rule 62-528.300(4), F.A.C.)

   Include the proposed radius of the area of review with justification for that radius. Provide a map showing the location of the proposed injection well or well field area for which a permit is sought and the applicable area of review. Within the area of review, the map must show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, surface bodies of water, springs, public water systems, mines (surface and subsurface), quarries, water wells and other pertinent surface features including residences and roads. The map should also show faults, if known or suspected. Only information of public record and pertinent information known to the applicant is required to be included on this map.

H. CLASS V WELL OPERATION PERMIT

(Final report of the construction that includes the following information may be submitted with the application to operate.)

1. Permit Number of Class V Construction Permit: 14128-002UIC

2. Owner's Name: Florida Water Services Corporation

3. Type of Wells: Class V Aquifer Storage and Recovery

4. Construction and Testing Summary: See Attached Report for Details.

(a) Actual Dimensions:

Diameter (inches)	Well Depth (feet)	Casing Depth (feet)

(b) Result of Initial Testing

5. Proposed Operating Data: See Attached Report for Details.

(a) Injection Rate (GPM);

(b) Description of injected waste; and,

(c) Injection pressure and pump controls.

6. Proposed Monitoring Plan (if any): See Attached Report for Details.

(a) Number of monitoring wells;

(b) Depth(s);

(c) Parameters;

(d) Frequency of sampling; and,

(e) Instrumentation (if applicable) Flow _____

Pressure _____

I. CLASS V WELLS PLUGGING AND ABANDONMENT PERMIT

1. Permit number of Class V construction or operating permit.

2. Type of well.

3. Proposed plugging procedures, plans and specifications.

4. Reasons for abandonment.

J. MONITOR WELL PERMIT

This section should be used only when application is made for a monitor well only. If a monitor well is to be constructed under a Class I, III, or V injection well construction permit, it is necessary to fill in this section.

1. A site map showing the location of the proposed monitor wells for which a permit is sought. The map must be to scale and show the number or name, and location of all producing wells, injection wells, abandoned wells, dry holes, water wells and other pertinent surface features including structures and roads.

2. Maps and cross sections indicating the general vertical and lateral limits within the area of review of all underground sources of drinking water, their position relative to the injection formation and the direction of water movement, where known, in each underground source of drinking water which may be affected by the proposed injection.

3. Maps and cross sections detailing the hydrology and geologic structures of the local area.

4. Generalized maps and cross sections illustrating the regional geologic setting.

5. Proposed formation testing program to obtain an anlysis of the chemical, physical and radiological characteristics of and other information on the monitor zone(s).

6. Proposed monitoring procedure.

7. Engineering drawings of the surface and subsurface construction details of the monitoring system.

8. Proposed monitoring data to be reported for meeting the monitoring requirements in Rule 62-528.425, F.A.C.

9. Construction procedures including a cementing and casing program, logging procedures, deviation checks, proposed methods for isolating drilling fluids from surficial aquifers, proposed blowout protection (if necessary), and a drilling, testing and coring program

10. Monitor Well Information:

☐ On-site ☐ Multizone ☐ Single-zone

☐ Regional ☐ Other (specify) _____

Proposed Monitoring Interval(s) _____

Distance and Direction From Associated Injection Well _____

_____

PART II

ENGINEERING REPORT

ENGINEERING REPORT
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ENGINEERING REPORT
SUBMITTED WITH THE APPLICATION FOR A CLASS V
UIC OPERATING PERMIT FOR FLORIDA WATER SERVICES CORPORATION
MARCO LAKES RAW WATER FACILITY ASR WELLS 2 AND 3 (ASR#2 and ASR#3)
PERMIT NUMBERS 141218-001UIC AND 141218-002UIC

1.0 INTRODUCTION

This report and accompanying application are being submitted in accordance with the basic permitting requirements specified in Rule 62-528.640 F.A.C. and the information requested on FDEP Form 62-528.900(1) for Florida Water Services Corporation (Florida Water) regarding the Marco Lakes ASR#2 and ASR#3 wells. Marco Lakes is located on County Road 941, just north of the intersection with Route 41, in Collier County, Florida. Figure 1.1 provides a site location map. Well locations at this site are indicated on Figure 1.2.

2.0 AREA OF REVIEW UPDATE

The previous area of review (AOR) based on a 1-mile radius of investigation has been utilized for this investigation. The anticipated plume radius is not expected to extend beyond 4000 feet. The current plume radius based on measured concentrations in the monitoring wells is less than 1100 feet from any well.

2.1 Updated Area of Review

The 1-mile radius for the area of review around ASR wellfield has been reviewed and an updated Area of Review Map has been created (Figure 2.1). An inventory was conducted to identify wells constructed or previously unidentified during the previous area of reviews undertaken during the permitting for the original ASR well and for the wellfield expansion. The AOR encompasses an area within a 1-mile radius from the site. The study area includes Sections 26, 27, 28, 33, 34, and 35 in Township 50 S., Range 26 E. and Sections 2, 3, 4, 9, 10, and 11 in Township 51 S., Range 26 E. The study area also lies within the area bounded by latitude 26° 02' N. to 26° 05' N. and longitude 81° 40' W. to 81° 43' W. The locations of the identified wells are shown on Figure 2.1. Many of the wells are listed by section only and their precise location within the section is not discernible. Also, as some sections may not be wholly within the 1-mile radius, some of the wells listed on the inventory may be outside of the AOR.

Records from the South Florida Water Management District, the U. S. Geological Survey, the Florida Geological Survey in Tallahassee, the Florida Geological Survey Oil and Gas section in Fort Myers, Collier County well construction permitting, and our in-house data base were searched to inventory wells. A tabulation of wells that lie within the area of review is included in Table 2.1.

2.2 Wells within the Area of Review That Penetrate the Injection, Confining or Monitoring Zones

Over 390 wells were identified during the new inventory. Other than wells drilled as part of the Marco Lakes ASR project; only three wells were identified that penetrate deeper than 210 feet. The Marco Lake wells include three ASR wells, a dual-zone monitor well, an ASR zone monitor well, and an upper zone ASR monitor well. The borings that are deeper than 210 feet not associated with the Marco Lakes project are a test core and two oil test wells. The oil test wells were abandoned shortly after completion in 1952. The abandonment records are on file in the Florida Geological Survey, Oil and Gas Section's Fort Myers office. The abandoned oil test wells are the only identified wells that penetrate the injection, confining, or monitoring zones.

2.3 Base of the USDW, Hydrogeology, and Geology

The base of the underground source of drinking water (USDW), defined in applicable state of federal regulations as 10,000 mg/l total dissolved solids (TDS), was not penetrated at the project site. Native groundwater in the storage interval and overlying aquifers is most appropriately classified as G-II, which is groundwater with a TDS content between 3,000 and 10,000 mg/l (F.A.C. 62-520.410).

Detailed geological information for the ASR pilot project, including geophysical logs, water quality encountered during drilling, and a geologist's log, was previously submitted with the original engineering construction report (ViroGroup, 1998).

Additional geological information for the subsequent ASR wellfield expansion, including geophysical logs, water quality encountered during drilling, and a geologist's log, was previously submitted with the engineering construction report (Water Resource Solutions, 2000).

2.4 Corrective Action Plan for Improperly Plugged Wells

Currently there are no improperly completed or plugged wells that penetrate the injection, confining or monitoring zones within the Area of Review.

3.0 WELL OPERATIONS

3.1 Wellfield Operating History

ASR activity at this site was initiated in July 1997 when water was first injected into the ASR1 well. Between July 1997 and August 2001, six ASR cycles were performed using ASR1. The volumes injected into ASR1 during the first six cycles were 19.6 MG, 86 MG, 21 MG, 110 MG, 132 MG, and 125 MG. The volumes of water recovered from the large cycle tests including Cycles 2, 4, 5, and 6 were 20 MG, 50 MG, 67 MG, and 80 MG respectively. In August of 2001, the first phase of the ASR site expansion was completed for ASR wells ASR2 and ASR3, and injection into these wells was initiated. Since operation was initiated, 7 major cycles have now been completed.

The last cycle, identified as Cycle 1E, was conducted using the three ASR wells, ASR1, ASR2, and ASR3. The total volume injected during Cycle 1E was 325 MG with 100 MG injected into ASR1, 130 MG injected into ASR2, and 95 MG injected into ASR3. Water was recovered from these wells beginning April 2, 2002. The total volume recovered during this cycle was 142.5 MG. The water quality limit of 350 mg/l chlorides was reached in ASR2 after recovery of 49 MG and in ASR3 after recovery of 38.5 MG. After recovering 55 MG from ASR1, the water quality was only approaching 250 mg/l chlorides when this well was shut-in to begin the next ASR cycle. Injection rates for individual wells ranged up to 1864 gpm and the maximum injection pressure was 64 psi recorded for injection into ASR3.

Details for injection and recovery during Cycle 1E are provided for review in the remainder of this document. Data for ASR1 are included for comparison purposes since this well has the longest operational history at this site. The data recorded during Cycle 1E show that the behavior of ASR2 and ASR3 is very similar to the behavior of ASR1 and therefore similar long-term results are expected.

3.2 Cycle 1E Injection

3.2.1 Flow Rates, Pressures, and Injectivity

ASR Wells

Daily flow rates to the ASR expansion system during injection cycle 1E were highly variable. Generally, daily flows ranged from under 0.5 to 2.25 million gallons a day (MGD) to individual wells. Injection rates ranged between 214 and 1861 gpm for ASR1. The average injection rate into ASR1 was 1072 gpm during Cycle 1E. Injection rates ranged between 113 and 1864 gpm for ASR2. The average injection rate into ASR2 was 1030 gpm during Cycle 1E. Injection rates ranged between 231 and 1401 gpm for ASR3. The average injection rate into ASR3 was 755 gpm during Cycle 1E. Total cumulative volumes injected into each ASR well are plotted in Figure 3.1. Injection rates are tabulated in Table 3.1 for each ASR well.

Injection pressures were correspondingly variable, with maximum daily values generally ranging between 30 and 50 psi above static (40 to 60 psi wellhead-pressure). The maximum pressure that was recorded during this cycle was 64 psi. Average injection pressures are plotted in Figure 3.2. Injection pressures are also tabulated in Table 3.1.

The specific injectivity of the two new ASR wells was generally maintained within the acceptable target range between 10 to 20 gpm/ft during Cycle 1E.

As indicated in previous submissions, a small reduction in the pH of the injected water is required to prevent plugging of the formation and loss of injectivity. Addition of hydrochloric acid was used during the majority of the injection cycle to lower the pH of the raw water by approximately 1.0 pH unit (assuming a drop from 8.0 to 7.0). This reduction in pH is recommended initially to prevent plugging and maintain good injectivity. Once target injectivity is reached, the pH adjustment may be scaled back to

a lower maintenance level. The acid injection system was switched from hydrochloric acid to CO_2 in mid-November 2001. The injection of CO_2 was maintained with good results until injection ceased and the wells were shut-in on December 11, 2002.

Monitoring Wells

For the purposes of this report, nomenclature for the monitor wells in the ASR expansion system will follow Florida Water Services' use in their prepared Monthly Operations Reports. The following monitor well terminology is used throughout the remainder of this report: Shallow Zone #1 (SZ#1), Deep Zone #1 (DZ#1), Shallow Zone #2 (SZ#2) and Deep Zone #2 (DZ#2). The corresponding well names for the above monitor wells that are listed in the FDEP operating permit are indicated with parenthesis: SZ#1 (DMW-1), DZ#1 (ASR1MW), SZ#2 (MHZ2MW) and DZ#2 (ASR2MW). The data provided in this section summarizes data included in the monthly operating reports submitted by Florida Water Services to the Florida Department of Environmental Protection.

SZ#1 and DZ#1 were completed with the pilot project as a dual zone monitoring well with the shallow monitoring well (SZ#1) completed between 293 and 350 feet below land surface (bls). The deep monitoring well (DZ#1) is completed in the ASR storage unit between the depths of 745 to 800 feet bls. The dual zone monitoring well is located approximately 375 feet southeast of ASR1 (Figure 1.2).

SZ#2 and DZ#2 were completed as part of the expansion project including wells ASR2 and ASR3. SZ#2 is completed in the mid-Hawthorn Zone II from 440 to 470 feet bls, and is located approximately 250 feet northwest of ASR2 and 250 feet southwest ASR3. DZ#2 is completed in the ASR storage unit from 725 to 774 feet bls, and is located approximately 1250 feet north-northwest of ASR3.

Surface pressure data at SZ#1 and DZ#1 are recorded in psi on a circular seven-day chart. Pressures were consistently reported as 8 psi at SZ#1 and 18 psi at DZ#1 during

the injection cycle. These data indicate no discernable pressure increase in SZ#1 and a 9 to 10 psi increase at DZ#1 due to injection.

Monitor well pressures, recorded during injection and recovery, are displayed graphically for SZ#2 and DZ#2 in Figure 3.3. With the exception of data collected during the month of December, water levels in SZ#2 remained near 35 feet NGVD during recharge. Water levels in SZ#2 ranged near 33 feet NGVD during recovery. Thus, there does not appear to be a strong impact in aquifer pressure in this zone that can be attributed to ASR activity. A large drop in pressure in SZ#2 beginning in early December from 35 feet to 14 feet is not readily explained based on ASR activity since injection into the ASR wells did not end until mid-December as indicated by the response in DZ#2 (Figure 3.3). The water levels observed in SZ#2 during recovery remained near 33 to 34 feet NGVD. The minimum change in water levels between recovery and recharge indicates little impact due to ASR activity on water levels in SZ#2.

The data provided for DZ#2 (Figure 3.3), which is completed in the ASR storage zone, clearly indicate responses to ASR activity. The background water level for this well is approximately 34 feet NGVD. The water level during recharge increased to near 48 feet NGVD and dropped to approximately 28 feet during recovery.

Data from the monitoring system indicates large, simultaneous water level fluctuations in excess of 100 feet occurred for both SZ#2 and DZ#2 during late June and July of this year. The source of these large fluctuations are not known, but the magnitude would indicate that these spikes are most likely due to electrical signal corruption rather than actual water level changes in the aquifers. Similar fluctuations were not noted on the SZ#1 or DZ#1 charts where surface pressures remained at 8 psi for SZ#1 and 6 psi for DZ#1. The absence of fluctuations on these charts provide further evidence that the fluctuations are not likely due to actual aquifer water level changes. Finally, it should be noted that all four monitoring wells operate under artesian pressure. There are no pumps in these wells.

3.2.2 Water Quality

Water quality monitoring of injection parameters designated in the FDEP permit (See Table 3.2) is discussed in this section. The majority of the parameters identified in Table 3.2 are required to be monitored in the current FDEP permit on a weekly basis and reported on a monthly basis for the ASR wells (ASR1, ASR2 and ASR3) and the monitoring wells SZ#1 and SZ#2 (shallow-zone monitoring wells) and DZ#1 and DZ#2 (ASR-zone monitoring wells). The exceptions to these parameters are gross alpha (monthly) and Cryptosporidium, Giardia Lamblia, and Primary/Secondary Drinking Water Standards (annually). Total alkalinity was not recorded during Cycle 1E but will be monitored on a weekly basis during future cycles as required by the FDEP permit. Primary/Secondary drinking water standard analyses for the injected water and two monitoring wells are provided in Appendix 3.1.

ASR Wells

A summary of the water quality data collected during recharge for the ASR wells is discussed in the following paragraphs. Table 3.3 provides the data upon which this discussion is based.

Chloride ion, sulfate ion, total dissolved solids (TDS) and conductance are graphically displayed for water injected into the ASR wells in Figure 3.4. The data provided in Figure 3.4 show that the chloride concentration remained fairly constant during the 2001 injection period at approximately 100 mg/l. Sulfate and TDS concentrations are seen to increase slightly during injection. Sulfate concentrations ranged between 49 and 80 mg/l and TDS values increased from 480 mg/l near the middle of recharge to 600 mg/l at the end of recharge. Initial TDS values ranged between 310 mg/l and 620 mg/l.

Dissolved oxygen (DO), pH, total organic carbon (TOC), and color data are graphically displayed for water injected into the ASR wells in Figure 3.5. Color ranged between a low of 22 and a high of 38 c.u. during recharge. Although the color measurements of the

injected water exceed secondary drinking water standards, a water quality exemption was granted for ASR1 that allows color to reach 100 color units (c.u.) and an exemption for ASR2 and ASR3 allows the color to reach 60 c.u. All measured color values were under the exempted levels. None of the other constituents were found to be outside the limits established for injection.

The results of the analytical analyses for THM's and iron are provided in Figure 3.6. These values show that during injection, iron concentrations were below regulated levels. THM values were observed to exceed the drinking water standard on two separate occasions. The largest THM concentration was a measured value of 0.13 mg/l that occurred on October 10, 2002. The second largest excursion was 0.11 mg/l that occurred on September 5, 2002. Over this injection period THM concentrations ranged between undetected to 0.13 mg/l with a median value of 0.061 mg/l.

A review of the coliform data (Table 3.3 and Figure 3.7) indicates that the injected water met the standards for coliforms over the injection period with the exception of a high reading for total coliforms (700 colonies per 100 ml of sample) sampled on October 17, 2002 and a 100 colonies/ 100ml concentration measured on October 23, 2002. In addition, two readings that indicated 100U and one reading of too numerous to count (TNTC) were also recorded. Samples that are analyzed with results of 100U indicate that the original 100-ml sample had various growth components (undifferentiated bacteria, algae, coliform, etc.) that were too numerous to count, making the count of coliform colonies impossible. In these cases, one ml of the sample in question was diluted 100 fold and the sample was re-inspected for the presence of coliform, at which point no coliforms were detected. Data provided from the monitor well sampling indicates that the high measurements of coliform activity are due to contamination associated with sampling or laboratory technique rather than well contamination.

Gross alpha data are graphically displayed for water injected into the ASR wells in Figure 3.8.

Yearly cryptosporidium and giardia lamblia sampling was performed prior to the injection cycle on 3/2/01. As indicated in Appendix 3.2, no giardia or cryptosporidium were detected.

Monitoring Wells

The results of the monitoring well analyses are provided in Table 3.4 (Monitoring well SZ#1), Table 3.5 (Monitoring well DZ#1), Table 3.6 (Monitoring well SZ#2), and Table 3.7 (Monitoring well DZ#2). Figures 3.9 through 3.12 provide graphical representations for the chloride, sulfate, TDS, and conductance data recorded for these four monitoring wells. The data presented for wells SZ#1, SZ#2, and DZ#2 are similar in that these bulk water quality parameters, as shown in Figures 3.9, 3.11, and 3.12, remain fairly stable over the injection period. However, the analyses from DZ#1 (Figure 3.10), as noted in earlier reports, shows that the concentration of these constituents decline after injection is initiated into ASR1. It is clear from reviewing Figure 3.10 that low chloride. injected water has reached and moved beyond the DZ#1 monitoring well.

Figures 3.13 through 3.16 provide graphical representations for the remaining chemical parameters that are included in the monitoring plan for wells SZ#1, SZ#2, DZ#1, and DZ#2. The data in these graphs, and presented in Tables 3.4, 3.5, 3.6, and 3.7, do not indicate that arsenic is found in the ground water at measurable concentrations. The data from DZ#1 (Figure 3.14) do not indicate that arsenic is being generated to any measurable extent within the recharge bubble since only one measurement of 0.0008 mg/l was measured at a concentration above the detection limit of 0.0005 mg/l.

Iron concentrations in SZ#1 and DZ#1 appear to have increased above background levels. However, since both of these wells are constructed using black steel, it is likely that the source of this iron is the steel casing. This conclusion is based on the fact that the SZ#1 has not been exposed to injected water while the DZ#1 has. Yet, both wells indicate slightly elevated iron concentrations ranging from 0.28 to 1.1 mg/l iron.

Gross alpha levels measured in the water recovered from the monitoring wells typically fluctuates between 20 and 60 piC/l (Figure 3.17), which is fairly normal for this type ground water in Florida. The gross alpha values from the DZ#1 well fluctuated between 5.4 and 68 Pci/l. The majority of measurements were values below 10 Pci/l.

Since the coliform data do not indicate the presence of coliforms, graphs are not provided for the monitoring wells. However, it is of some interest to note that fecal coliforms were found in the samples collected from SZ#2 on October 23, 2002. Problems with coliform analyses also occurred in the DZ#2 well (Table 3.7), while no problems with coliform monitoring were encountered in SZ#1 and DZ#1. Since it is highly unlikely that fecal coliform contamination would have occurred within the formation, it is suspected that samples from SZ#2, DZ#2, and by similarity of data, the injected water samples, were contaminated during sampling or testing.

A comparison of the data provided in Figures 3.4 and 3.14 indicates that if color is moving through the storage interval, it is moving at a much slower rate than the freshwater front. This observation is based on the fact that the color reading in DZ#1 remains near background levels while the chloride content is approaching injected water quality levels. If color was moving with the freshwater front, then color readings approaching 20 c.u. or higher would be expected in DZ#1.

A single THM reading near the detection limit was measured in DZ#1 near the end of the cycle. The THM data provided in Figures 3.4 and 3.8 also indicate that THM movement, like color, is retarded in this aquifer when compared with the movement of the injected freshwater front. No THMs were measured in the SZ#1, SZ#2, or DZ#2 monitoring wells.

Sampling of the shallow zone monitor wells (SZ#1 and SZ#2) indicates that the water quality in these wells fluctuates around the original background levels. Thus, there is no indication of vertical migration of injected fluids at these monitoring points.

It is noted here for reference that the historic discharge of monitoring well purge water (approximately 10,000 gallons of water/week) to Henderson Creek downstream of the weir during recharge and recovery is no longer authorized by the FDEP. Based on FDEP advice, the monitoring well purge water is now discharged into the Marco Lakes. At this time monitoring well water is and will continue to be discharged into the north end of the northern Marco Lake.

3.3 Cycle 1E Recovery

3.3.1 Recovery Volumes

Approximately 49 and 38.5 MG of water that met the minimum target criteria of 350 mg/l chlorides were recovered from ASR2 and ASR3, respectively (Figure 1.2). At the time of recovery cycle shut-in, approximately 55 MG were recovered from ASR1 with chloride levels below 250 mg/l. This corresponds to approximately 38% recovery for ASR2 and ASR3 at the 350 mg/l chloride cut-off and over 58% at a 250 mg/l cut-off level for ASR1. Based on a comparison with data from previous years, recovery efficiency for ASR1 at 350 mg/l would likely have exceeded 70% recovery.

Figure 3.18 provides a comparison of the chloride concentrations from ASR1 during the first major pilot test (87 MG) and chloride concentrations measured during recovery from ASR2 and ASR3 during Cycle 1E versus volume recovered. Initial cycle recovery volumes with chloride levels under 350 mg/l, noted at ASR2 and ASR3, are significantly higher than those realized during the first large cycle (Cycle 2) in ASR1 for a similar volume. These data indicate that the use of multiple wells with overlapping freshwater bubbles can increase recovery efficiency over wells acting independently. Further expansion of the wellfield, using overlapping bubbles, will likely continue to enhance recovery efficiency of the ASR system.

Average flow rates measured for individual ASR wells and total flow rates for all three wells are summarized in Table 3.8 and have been previously submitted to the FDEP with the monthly monitoring reports.

3.3.2 Water Quality

ASR Wells

The required monitoring parameters were previously presented in Table 3.2. Total alkalinity was not monitored during Cycle 1E recovery, but will be monitored during future cycles on a weekly basis as required. Table 3.9 provides a complete summary of the chemical analyses performed on the water samples collected from each of the three ASR wells during recovery.

Chlorides, Sulfate, TDS, and Conductance

Chloride ion, sulfate ion, total dissolved solids (TDS) and conductance for each of the ASR wells are graphically displayed for water recovered from the ASR wells in Figures 3.19, 3.20, and 3.21. These parameters represent the bulk properties of the recovered water. The recovery curves for each well indicate a slow increase of the listed parameters in the recovered water. The curve shapes for each of these parameters for each well indicate good ASR performance since their progression to higher concentrations is slow and concave up.

Arsenic

Figure 3.22 provides a graphical representation of the arsenic measured in the recovered water. As indicated in Figure 3.21 and Table 3.9, measured arsenic concentrations in the recovered waters did not exceed the current regulatory limit for this constituent. The maximum arsenic level measured in the recovered water from ASR1 was 0.0064 mg/l. The measured concentration of arsenic in the water recovered from ASR2 ranged between 0.03 and 0.014 mg/l. The median value was 0.0175 mg/l. Approximately eighty percent of measured arsenic concentrations in ASR2 fell within +/-

0.003 mg/l of the median value. Arsenic levels in ASR3 ranged between 0.049 and 0.018 mg/l. The median value was 0.023 mg/l. The spread in the arsenic values from the median was slightly larger than observed for ASR2 (Table 3.9). The low levels of arsenic in the samples from ASR1, which has experienced significantly more use, indicate that arsenic is progressively removed from the aquifer system by flushing. It is anticipated that the arsenic concentration in the recovered water will gradually diminish to levels similar to those measured for ASR1 during future cycles.

Dissolved Oxygen, pH, and Color

Dissolved oxygen, pH, and color data are graphically displayed for water recovered from the three ASR wells in Figures 3.23, 3.24, and 3.25. Color levels in the recovered water ranged between an initial high of 50 c.u. and a low of 5. Most values for color ranged in the mid-teens.

A comparison between the color of the injected water and the color of the recovered water (Figures 3.23, 3.24 and 3.25) indicates that the color of the water is reduced during storage in the ASR well.

THM

A similar result is noted for THM concentrations (Table 3.9) as indicated for color. In this case, no THM's are observed during recovery in any of the ASR wells. Since no THM's were noted in the recovered water, no graph is provided. These data continue to indicate that both color and THMs, as previously reported, are removed during storage and movement of water through this subsurface unit. Based on these observations, movement of THMs or colored water off-site is unlikely.

Iron

Iron concentrations in the water recovered from the ASR wells are summarized in Figure 3.26. The data provided in Figure 3.26 and Table 3.9 indicate initially elevated iron concentrations of a few mg/l. The iron concentrations fall to levels ranging between 0.4 and 0.25 mg/l a few weeks after recovery is initiated.

Coliforms

No total or fecal coliforms were detected in the recovered water except one reporting of too numerous to count for ASR1 on April 17, 2002 (Table 3.9). This sample appears to have been contaminated since there are no other incidences of coliform being detected before or after this incident.

Gross Alpha

Gross alpha data collected at the start of recovery are provided in Table 3.9. The limited data show readings of less than 15 PCi/l.

Monitoring Wells

Chlorides, Sulfate, TDS, and Conductance

The chloride, sulfate, TDS, and conductance data, are presented in Table 3.10 and Figures 3.27, 3.28, 3.29, and 3.30. Data for the shallow monitoring zones SZ#1, SZ#2, and DZ#2 do not indicate that any vertical migration of injected water is occurring since the measured values fluctuate around the original background levels and do not reflect cyclical concentration fluctuations that would be representative of an ASR cycle.

The chloride, sulfate, TDS, and conductance data for the deep monitoring zone well DZ#1 (Figure 3.28), clearly show that injected water is being cycled through the subsurface region surrounding DZ#1 in response to recharge and recovery activities. This is indicated by TDS and chloride concentration fluctuations in the DZ#1 that correspond to injection and recovery activities.

Arsenic

With the exception of one reading in the SZ#1 well and one reading in the DZ#2 well, all measurements for arsenic in the four monitoring wells were below detection limits (BDL).

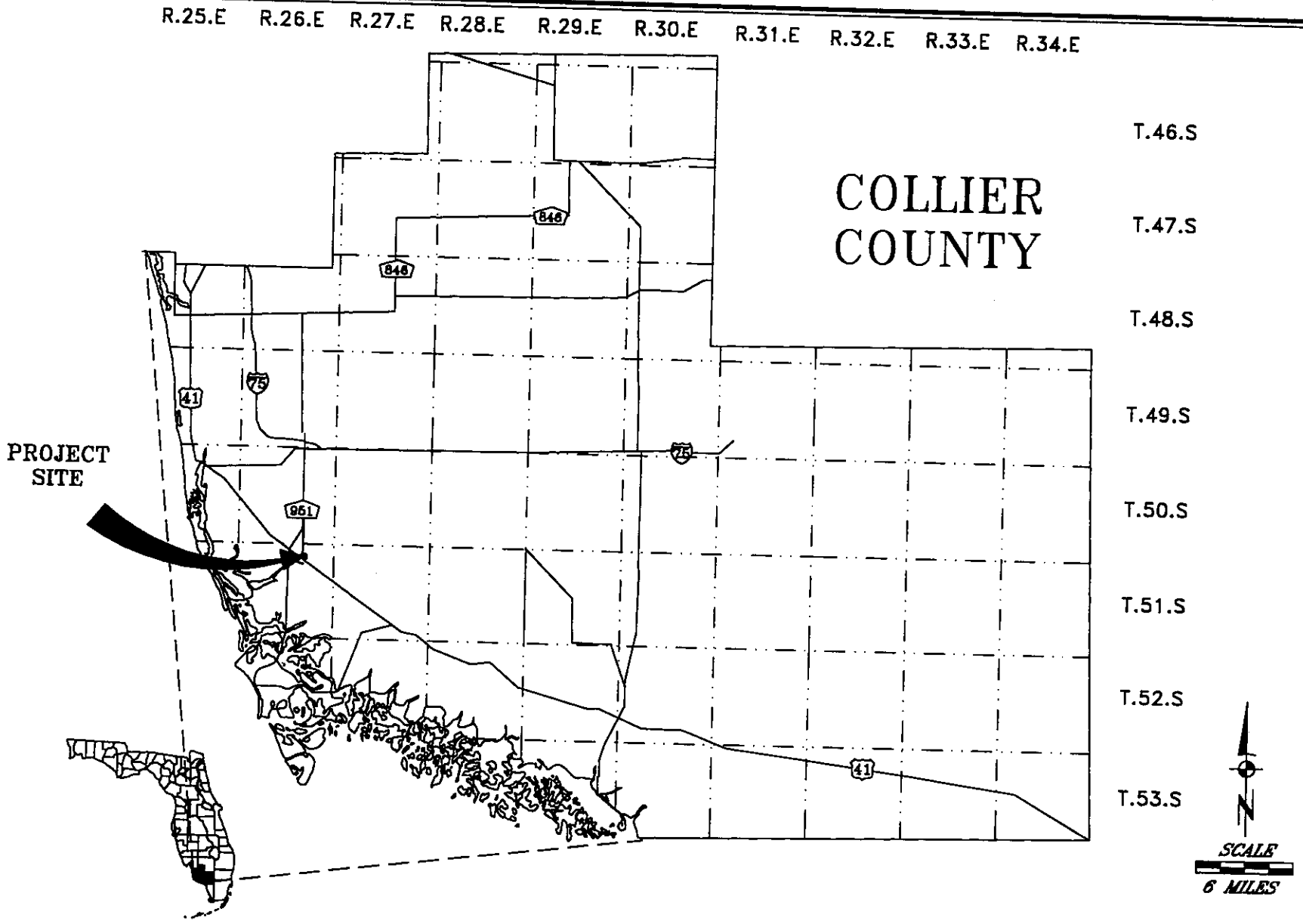
Iron, THM, Dissolved Oxygen, pH and Color

The data provided in Table 3.10 and Figures 3.31, 3.32, 3.33 and 3.34 show iron, color and pH measurements routinely being reported at background levels with no apparent data trends. The 5/22/02 readings for dissolved oxygen appeared to be high in all wells.

4.0 FLUID COMPATIBILITY

Florida Water has been injecting treated raw water from Marco Lakes since 1997 into the current ASR interval without incident. The formation matrix materials (limestone), is essentially non-reactive with the typical 7.0-8.0 pH range of treated raw water and therefore, little dissolution of the formation is anticipated. No dissolution of the confining materials are anticipated since the injected fluid will be saturated with respect to calcium carbonate by the time the injected fluids come in contact with the first confining beds near 740 feet below land surface.

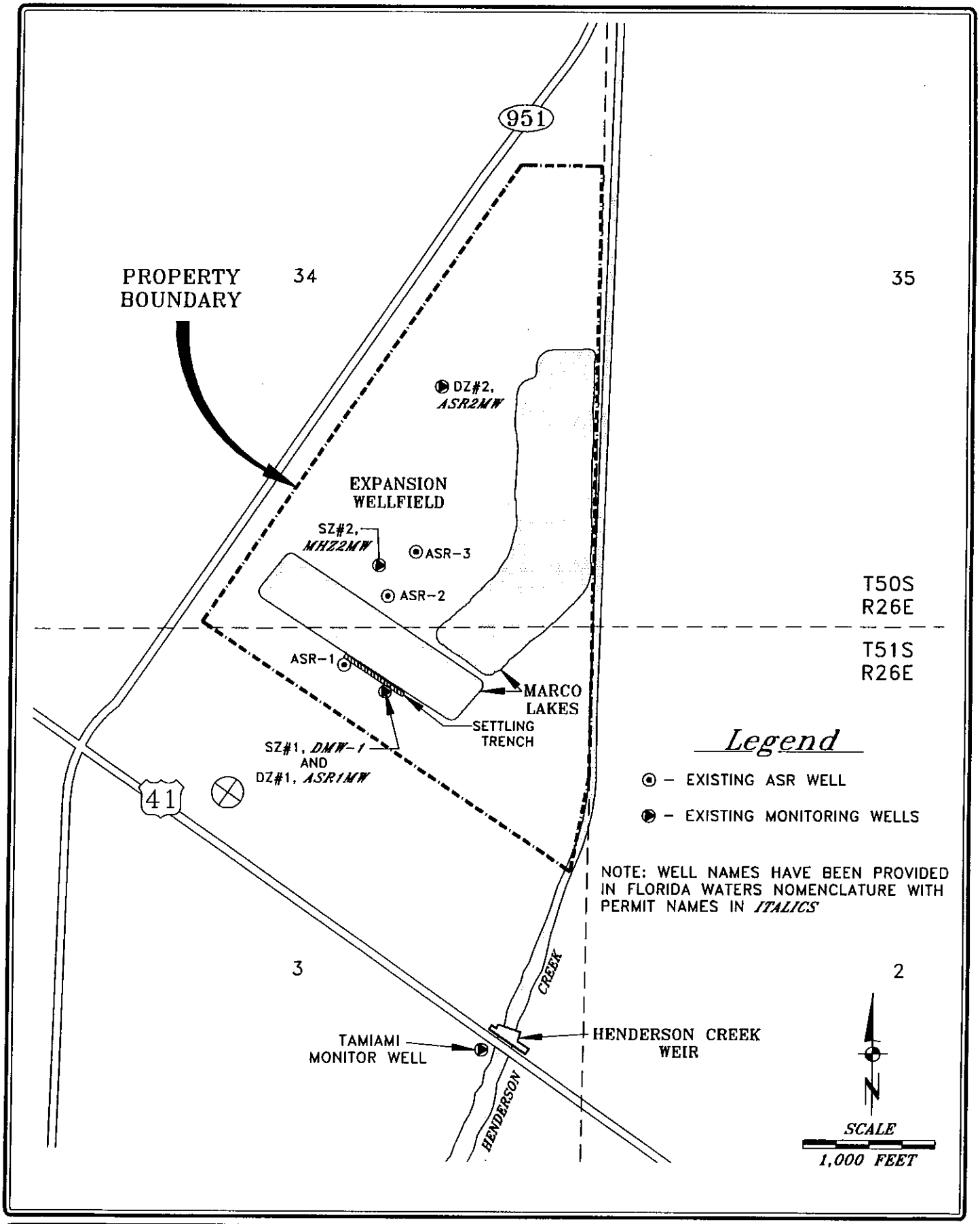
FIGURES



Water Resource Solutions

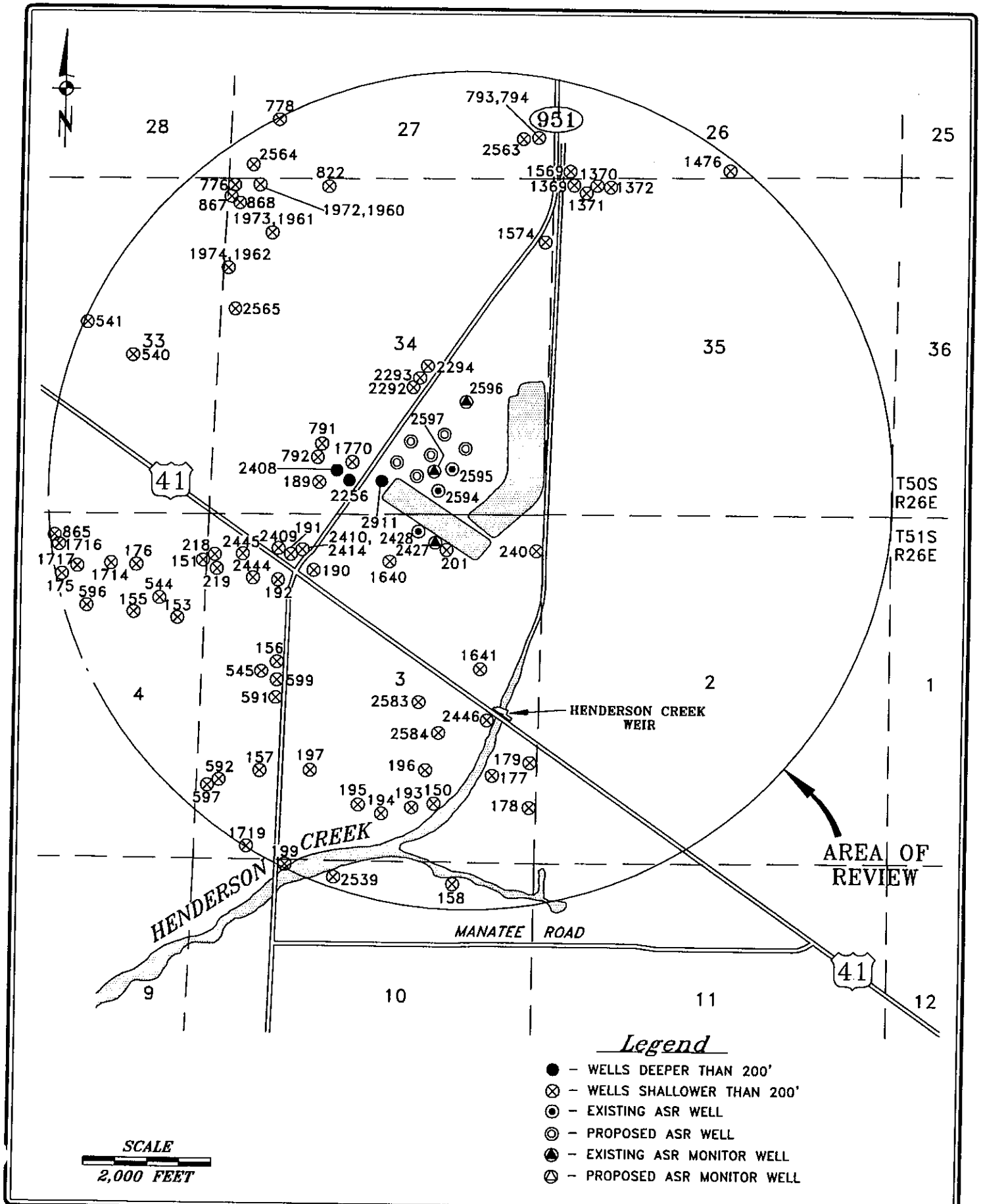
PROJECT NAME: COLLIER CITY ASR	DWG. NUMBER: A-COLLI-CO-1
PROJECT NUMBER: 01-03946.A3	DATE: 11/12/02

GURE 1.1 MAP SHOWING PROJECT AREA.



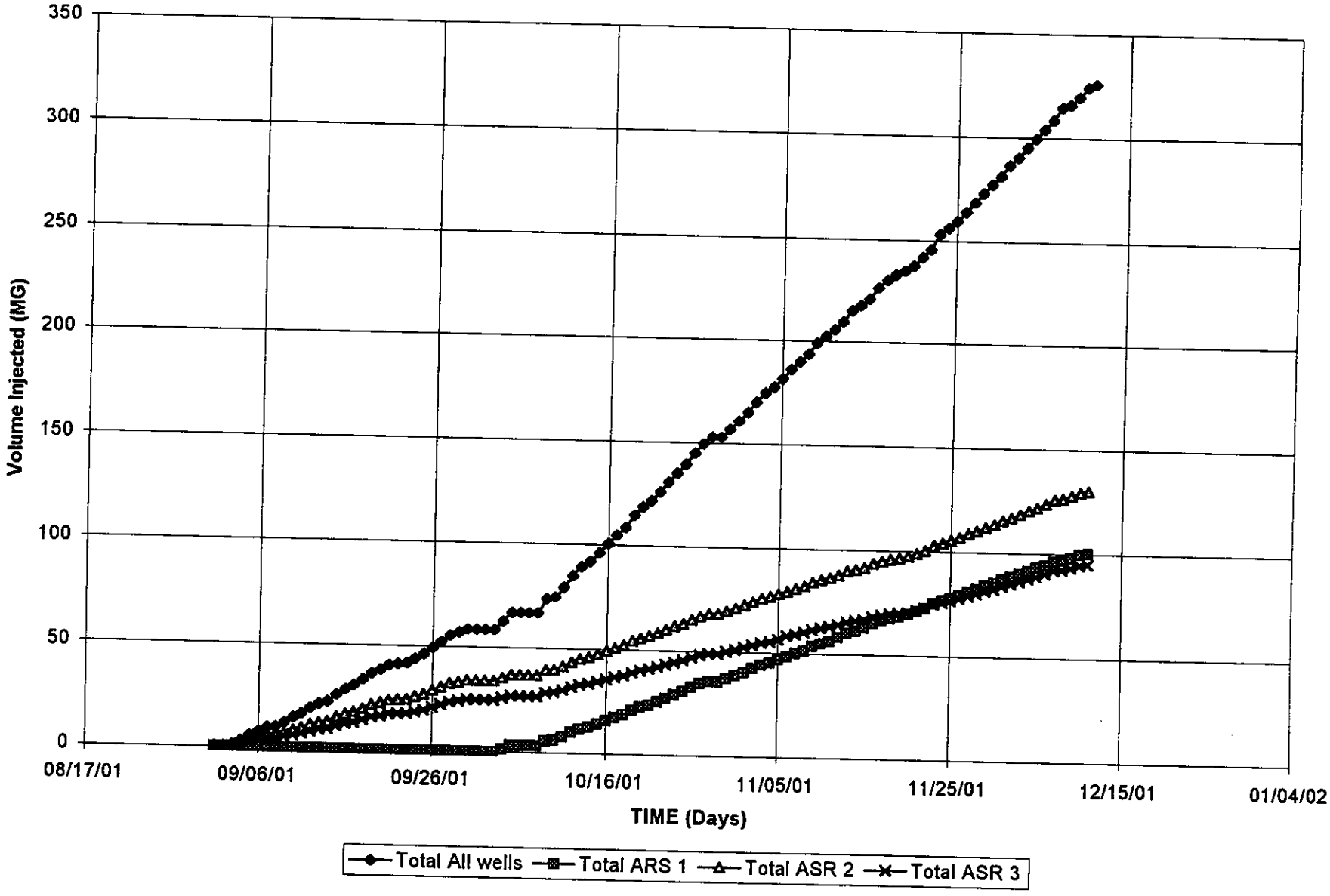
Water Resource Solutions	PROJECT NAME: COLLIER CTY ASR	DWG. NUMBER: A-013946XP-8
	PROJECT NUMBER: 01-03946.A3	DATE: 03/31/03

FIGURE 1.2 CONFIGURATION OF THE ASR EXPANSION WELLFIELD AT THE MARCO LAKES SITE.



Water Resource Solutions	PROJECT NAME: MARCO ASR EXPANSION	DWG. NUMBER: A-013733KA-3
	PROJECT NUMBER: 01-03733.HO	DATE: 03/31/03

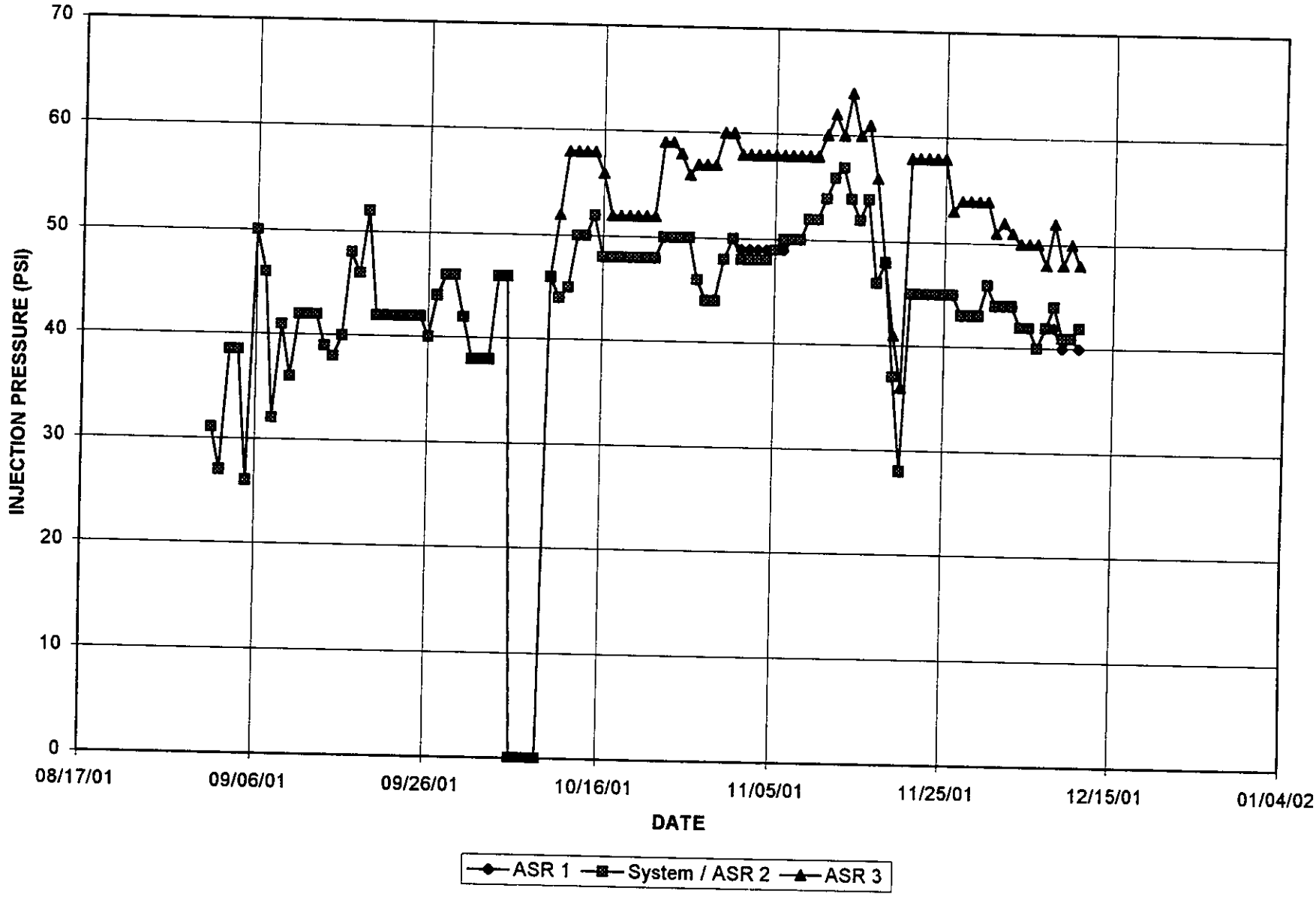
FIGURE 2.1 LOCATION OF WELLS (WRS CO NUMBERS) INVENTORIED WITHIN THE AREA OF REVIEW.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 8-2 -02

FIGURE 3.1 Total cumulative volume injected into each ASR well and the total volume injected for the system during Cycle 1E



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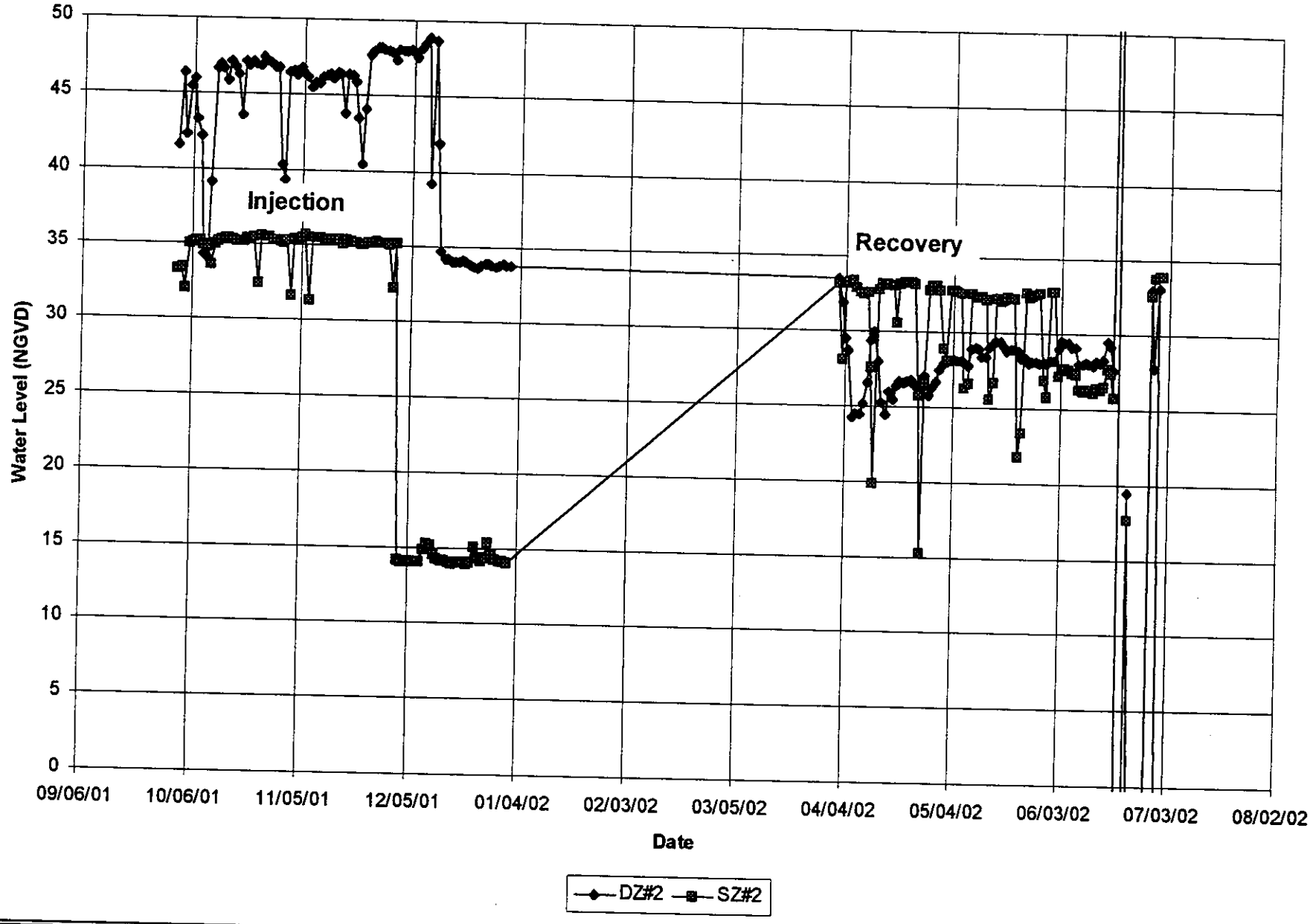
Project : Florida Water Services
Project Number: 01-03733
Date: 3-2 -01

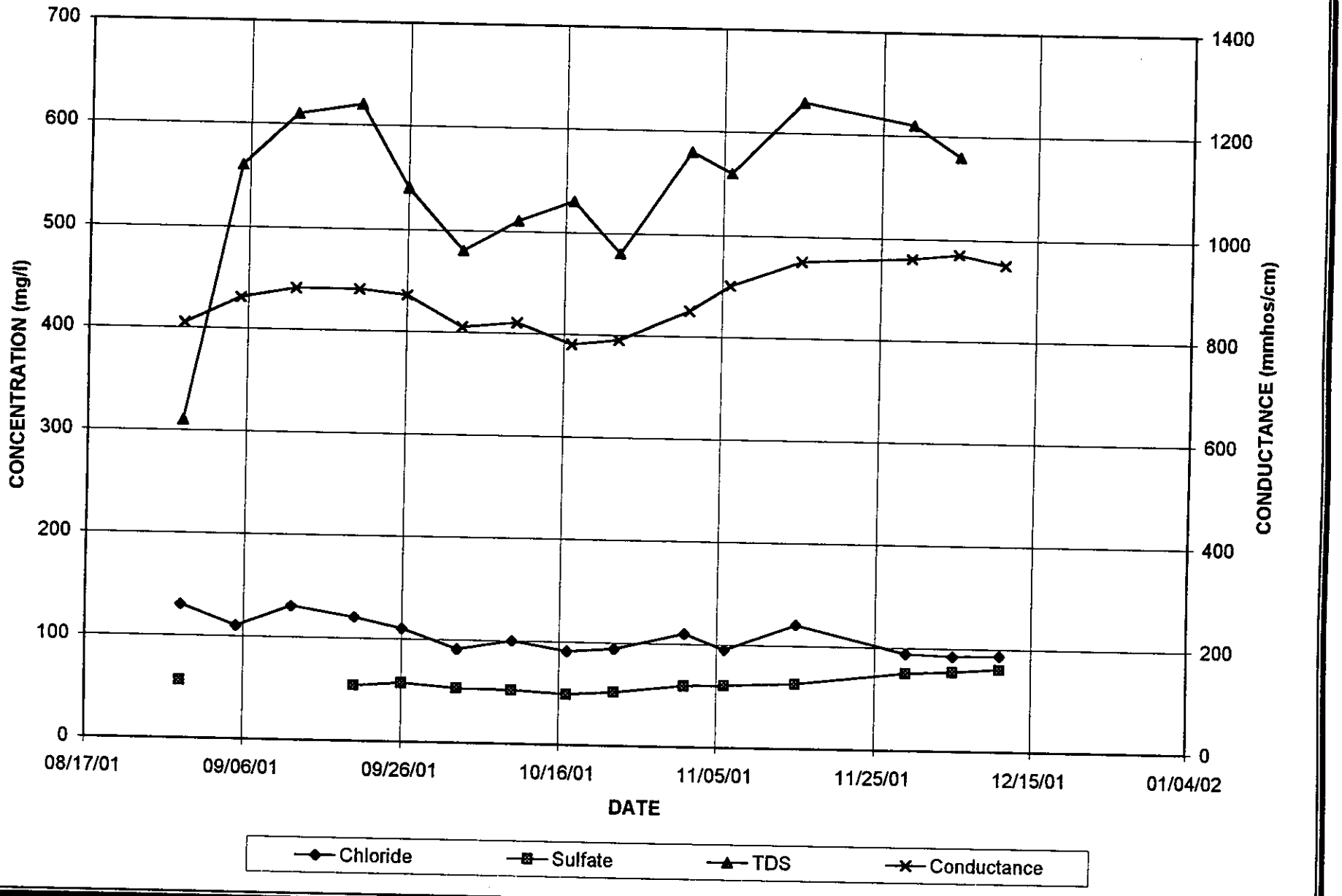
FIGURE 3.2 Daily injection pressures for each ASR well during Cycle 1E.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.3 Water level fluctuations in SZ#2 and DZ#2 measured during Cycle 1E



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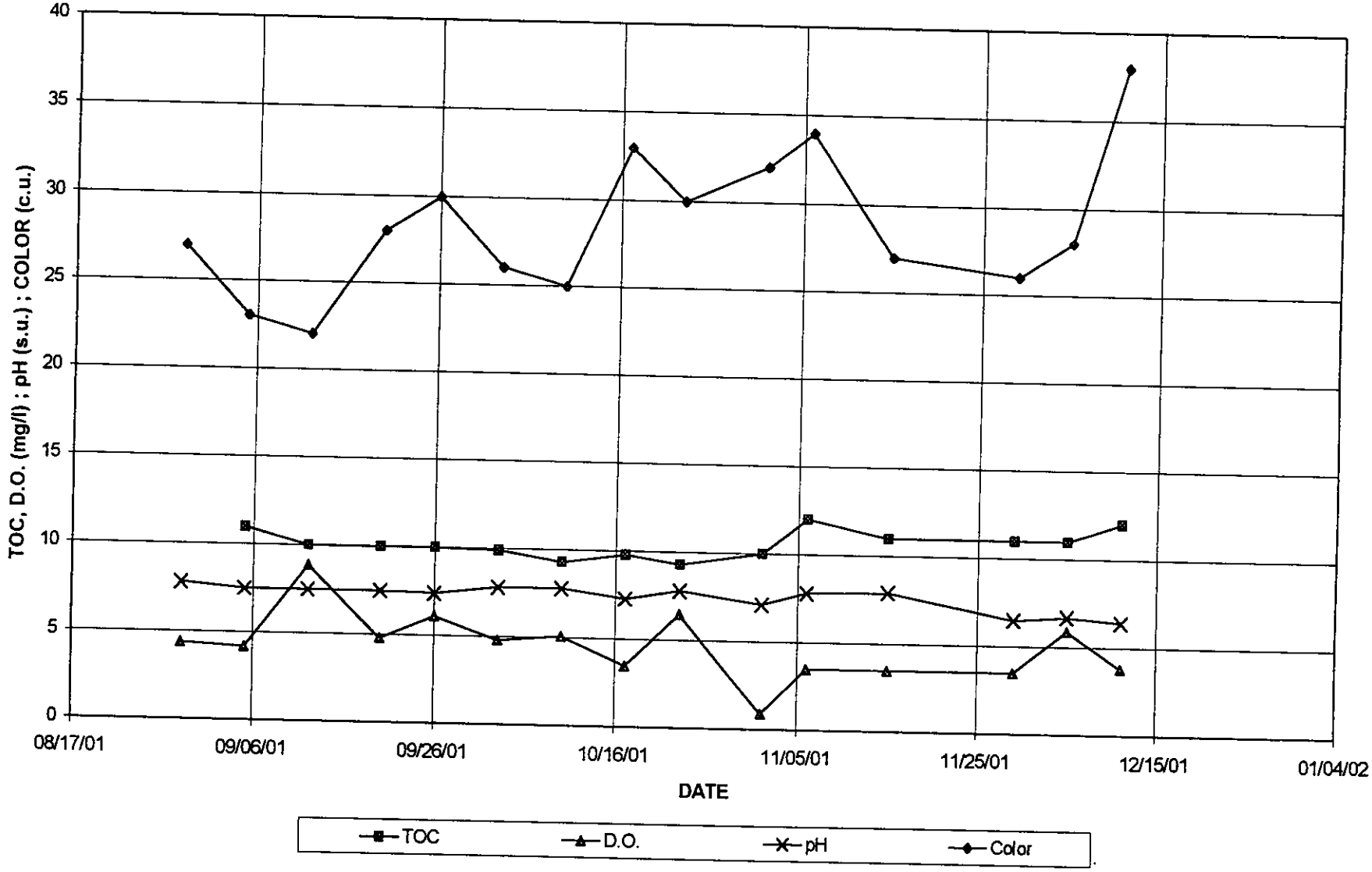
Date: 3-2 -01

FIGURE 3.4 Chloride, sulfate, TDS, and conductance measured for all ASR wells during Cycle1E injection.



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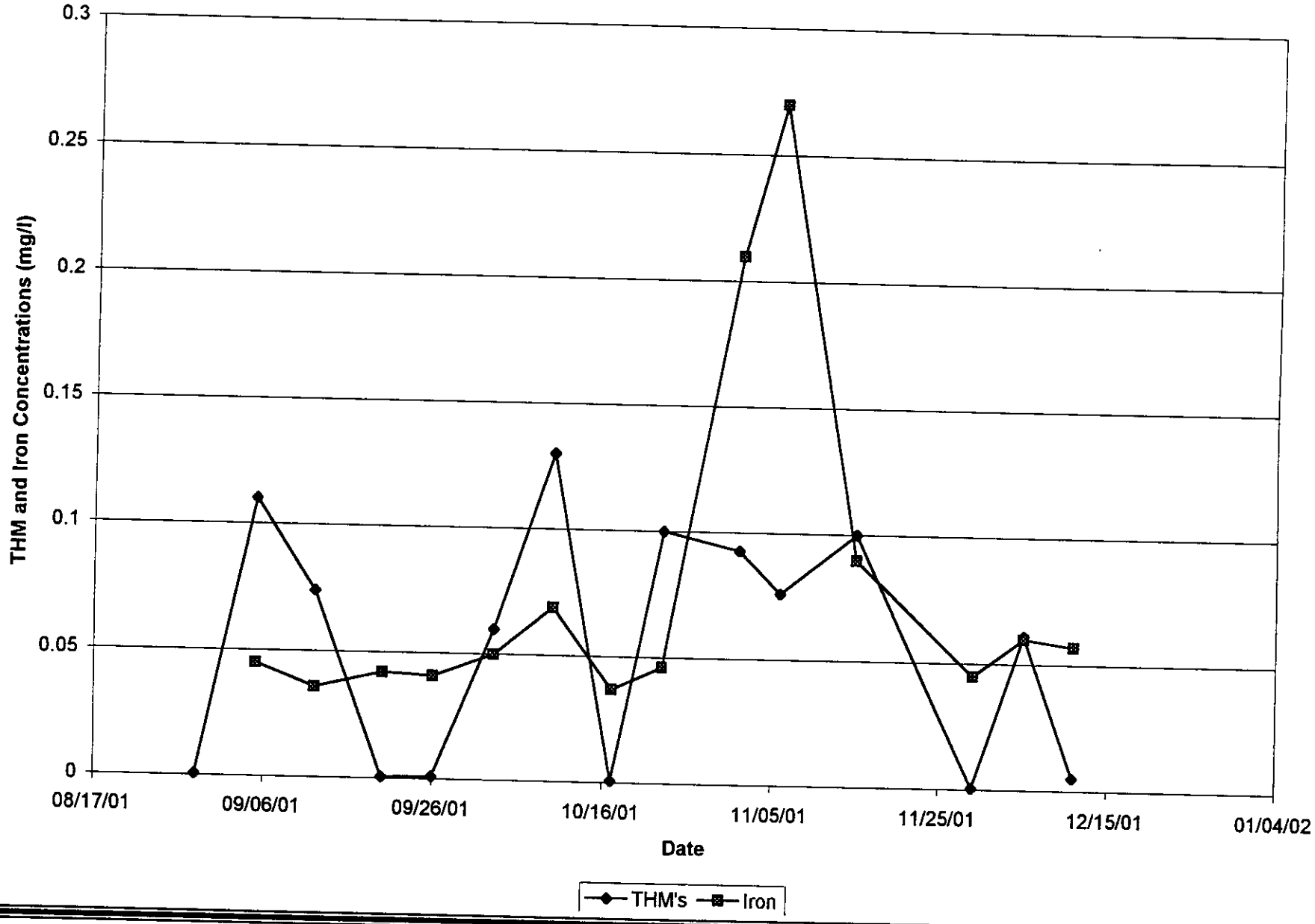
Project Number: 01-03733
Date: 3-2-01

FIGURE 3.5 Total organic carbon, dissolved oxygen, pH, and color measured for ASR wells during Cycle 1E injection.



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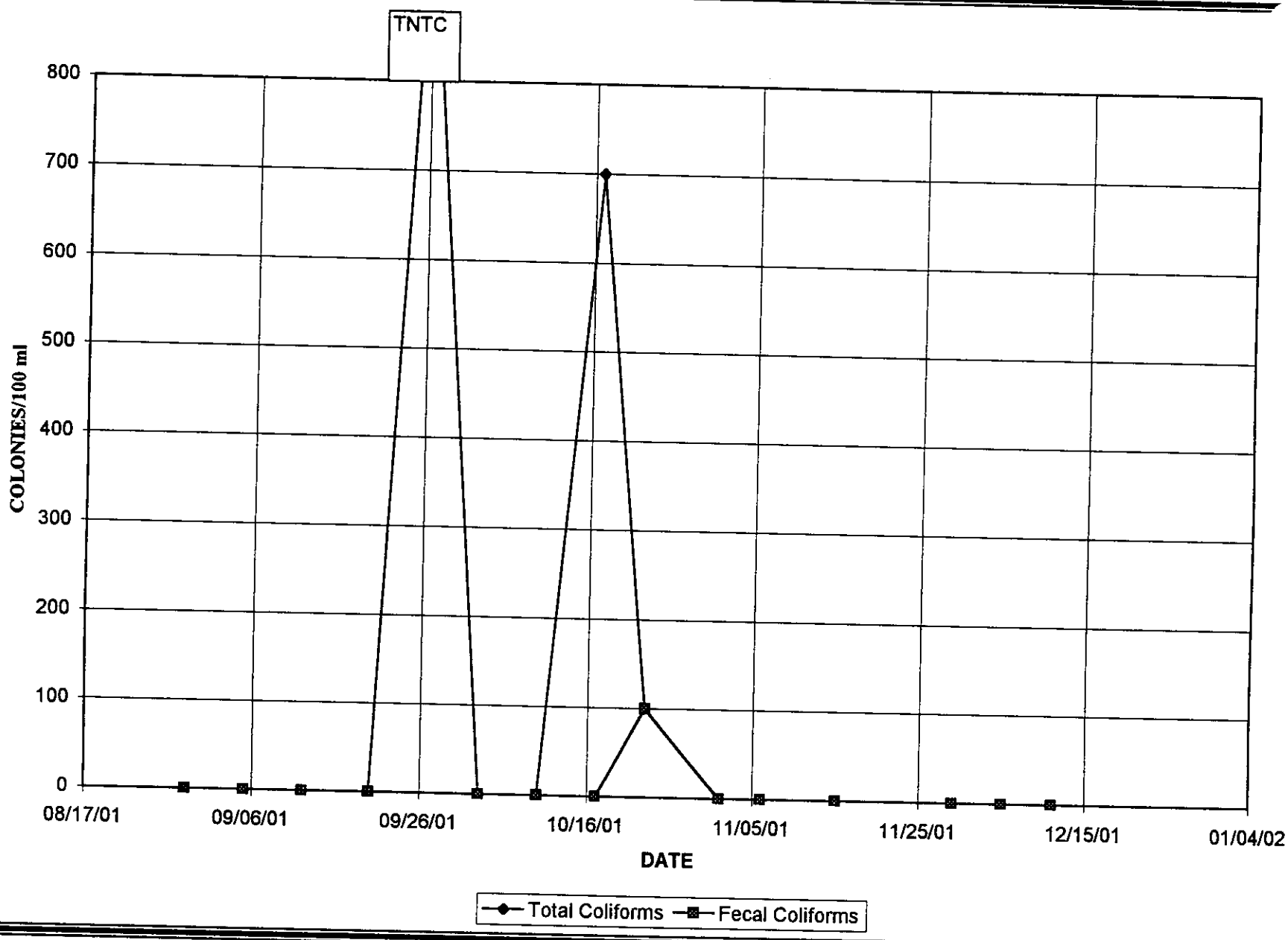
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.6 THM and iron concentrations measured for ASR wells during Cycle 1E injection.



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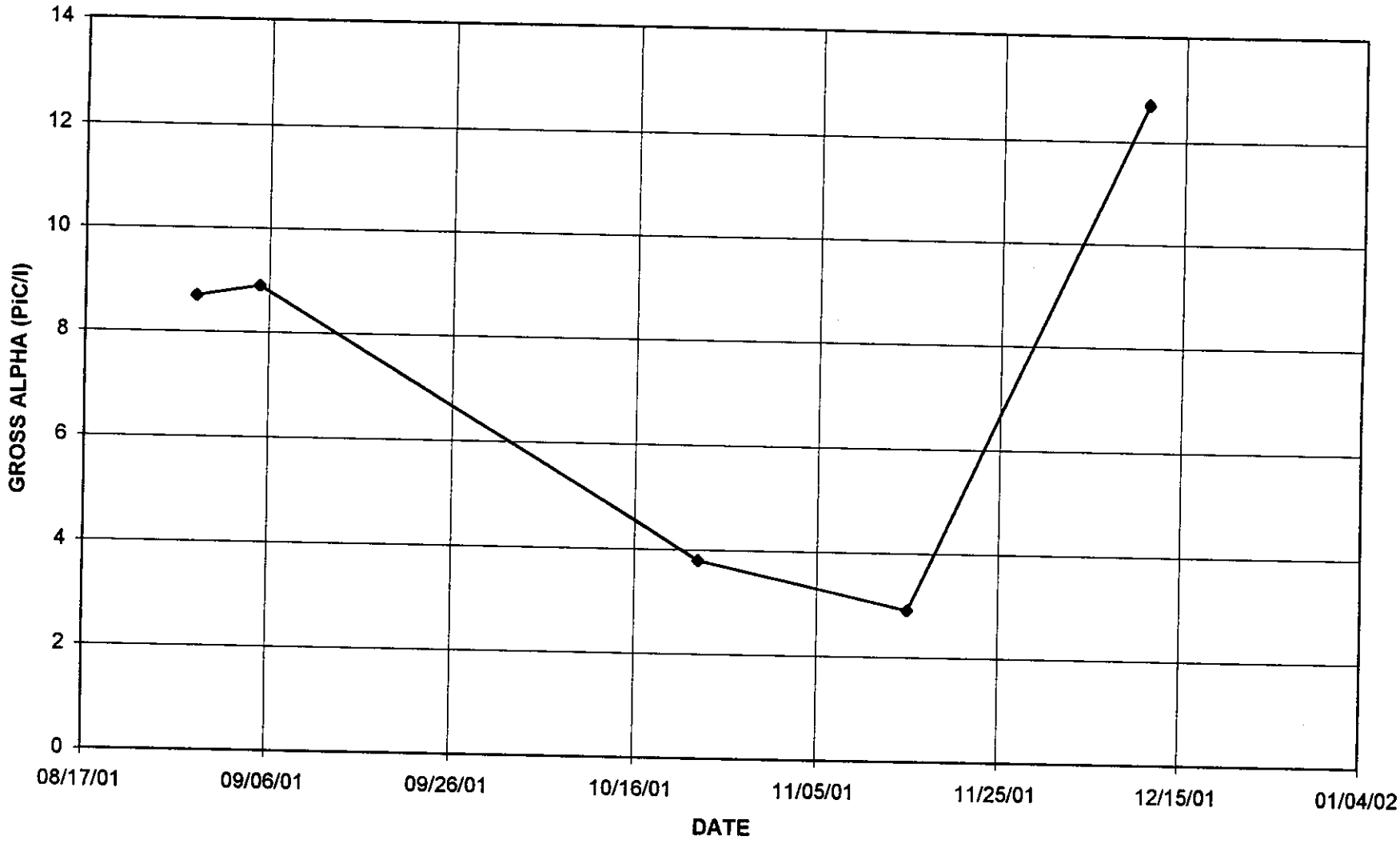
Date: 3-2 -01

FIGURE 3.7 Total and fecal coliforms measured for ASR wells during Cycle 1E injection.



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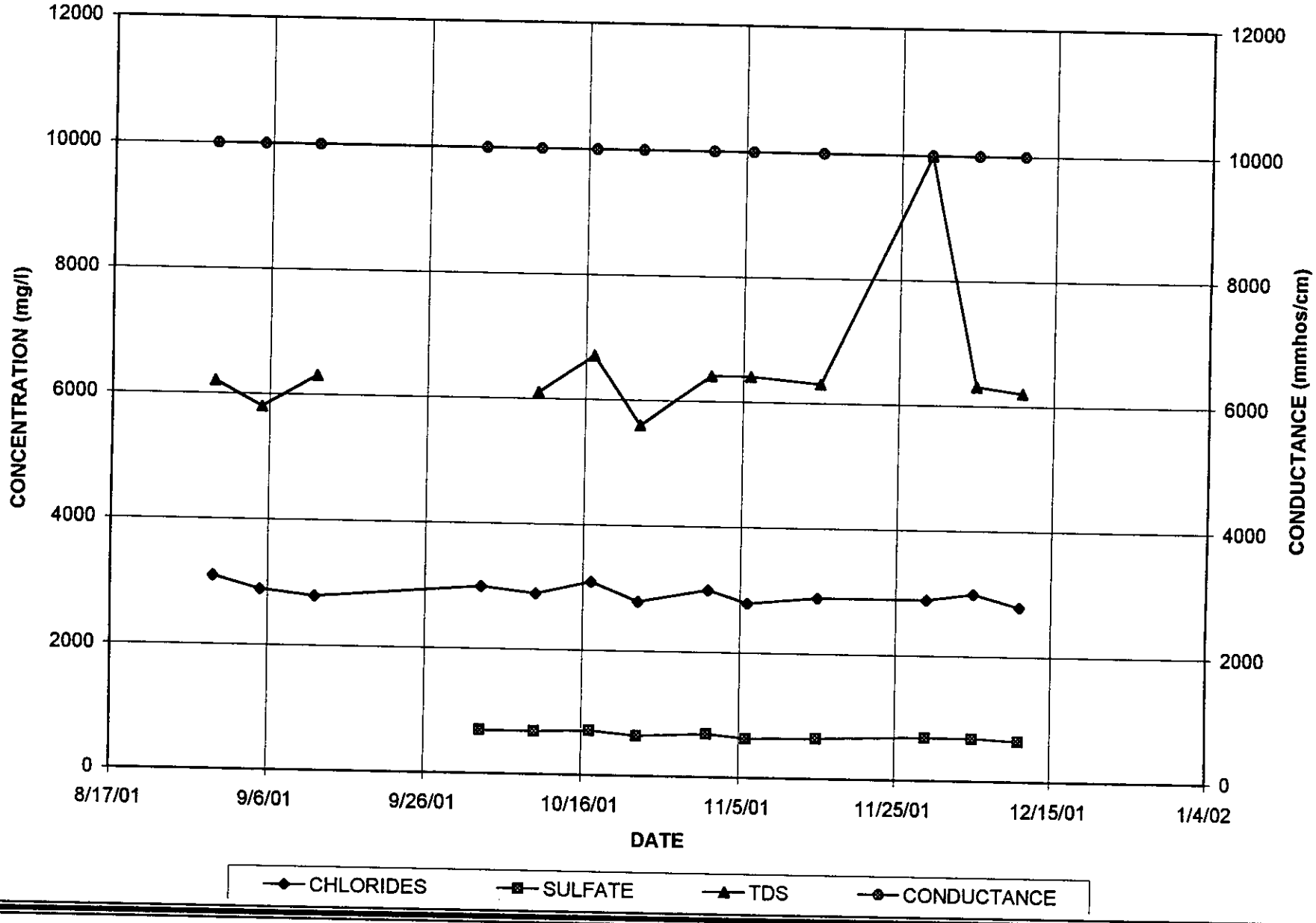
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.8 Gross alpha measured for ASR wells during Cycle 1E injection.



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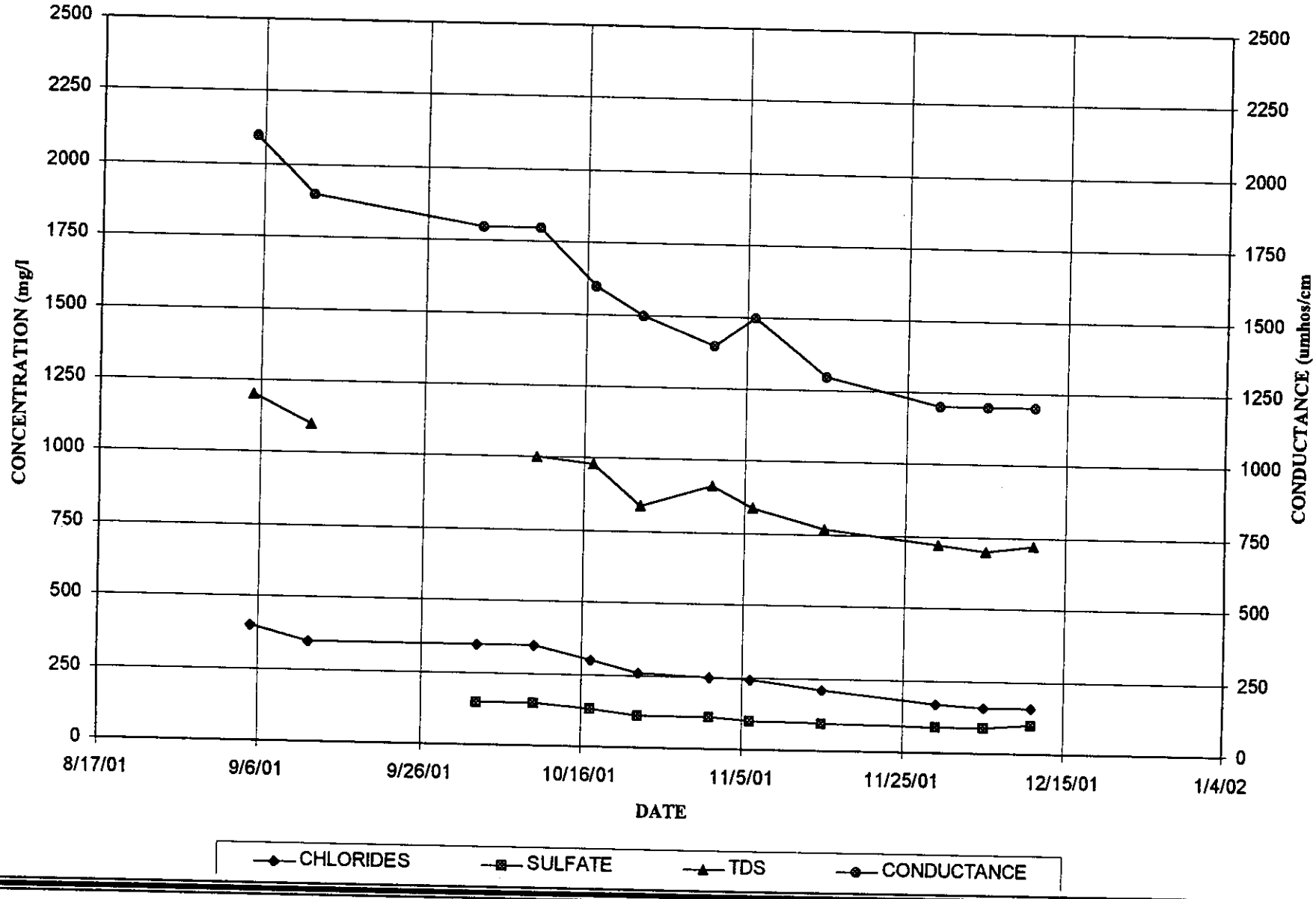
Date: 3-2 -01

FIGURE 3.9 Chlorides, sulfate, TDS, and conductance measured for SZ#1 during Cycle 1E injection.



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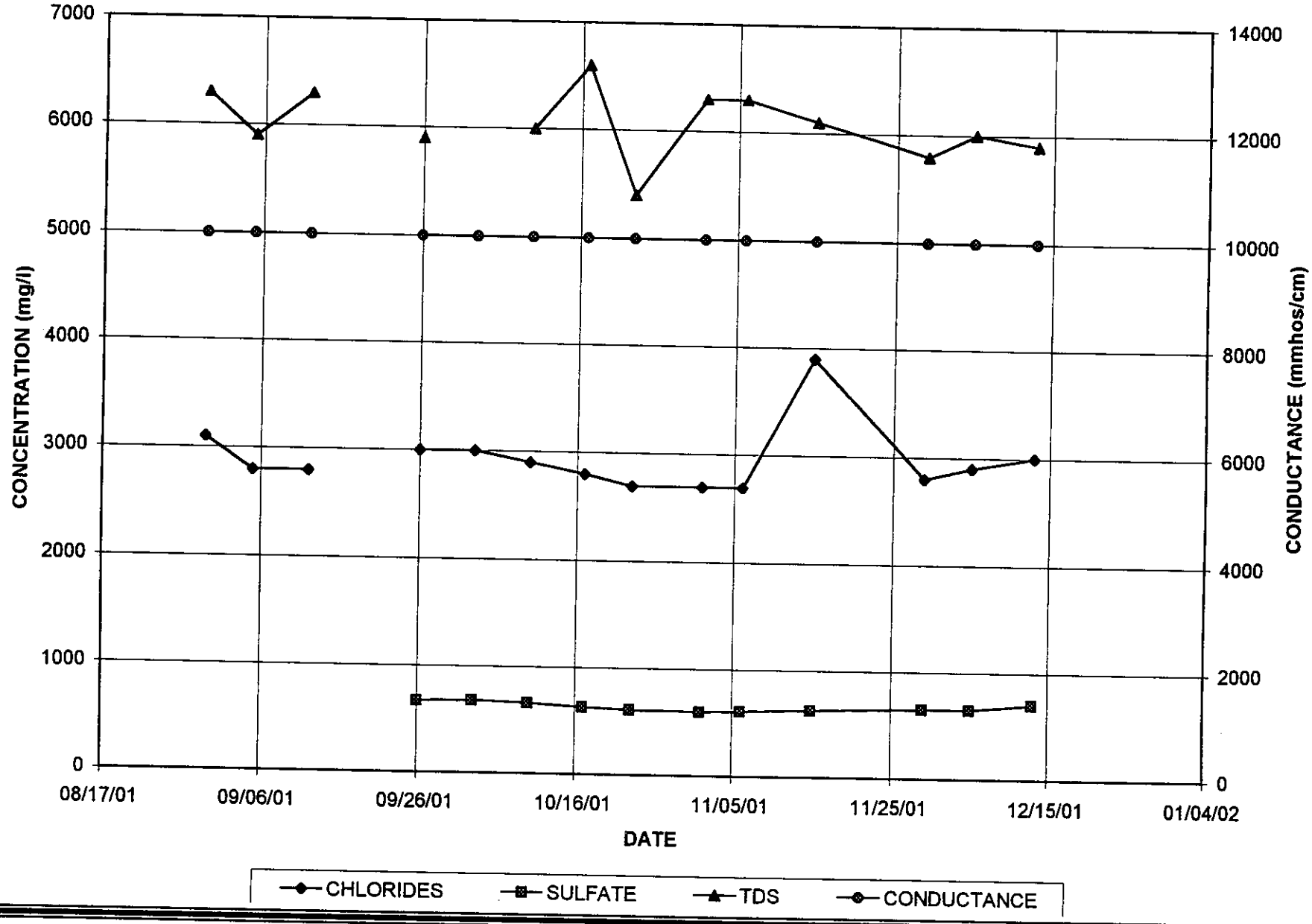
Date: 3-2 -01

FIGURE 3.10 Chlorides, sulfate, TDS, and conductance measured at DZ#1 during Cycle 1E injection.



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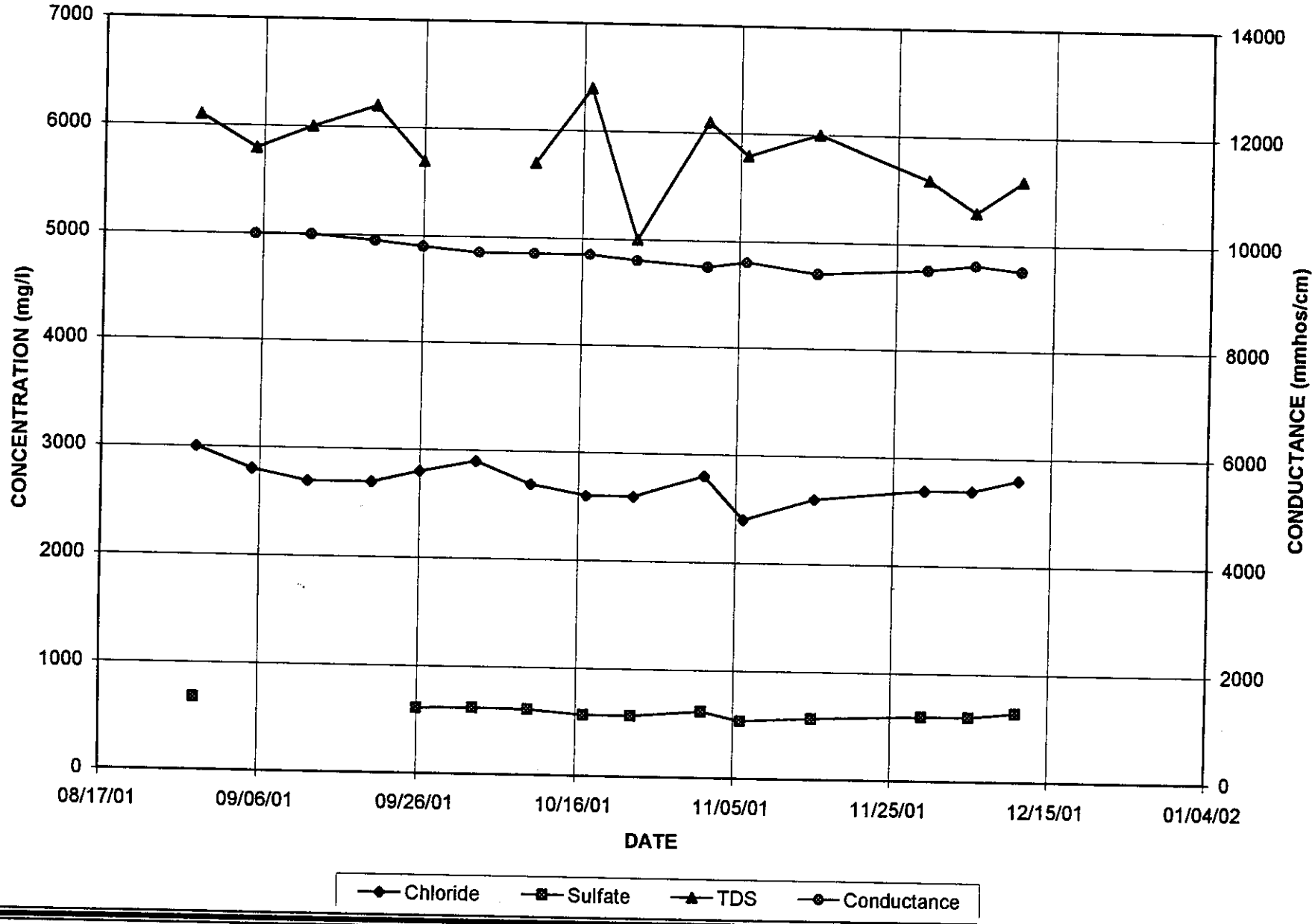
Date: 3-2 -01

FIGURE 3.11 Chloride, sulfate, TDS, and conductance measured at SZ#2 during Cycle 1E injection.



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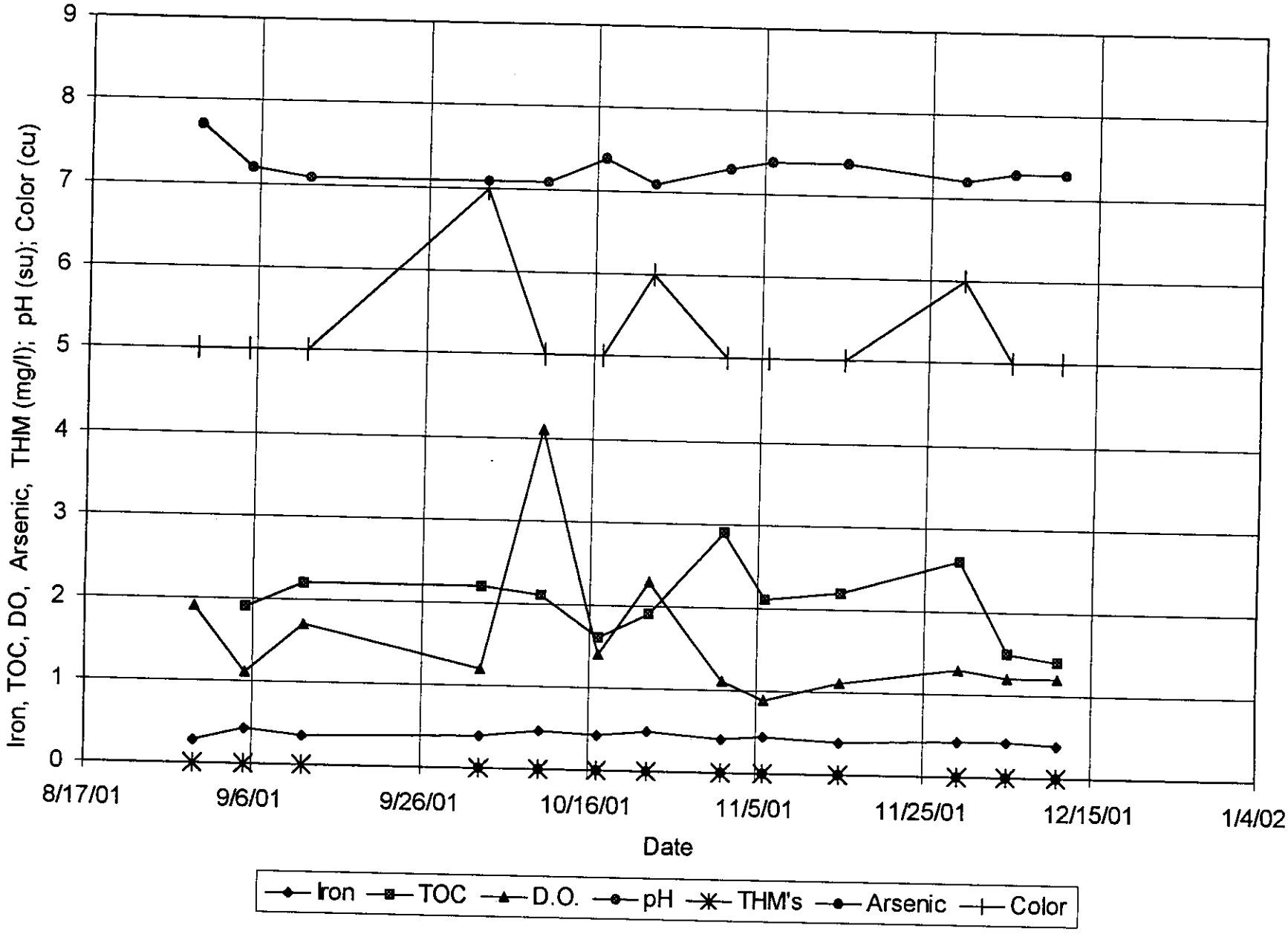
Date: 3-2 -01

FIGURE 3.12 Chloride, sulfate, TDS, and conductance measured at DZ#2 during Cycle 1E injection.



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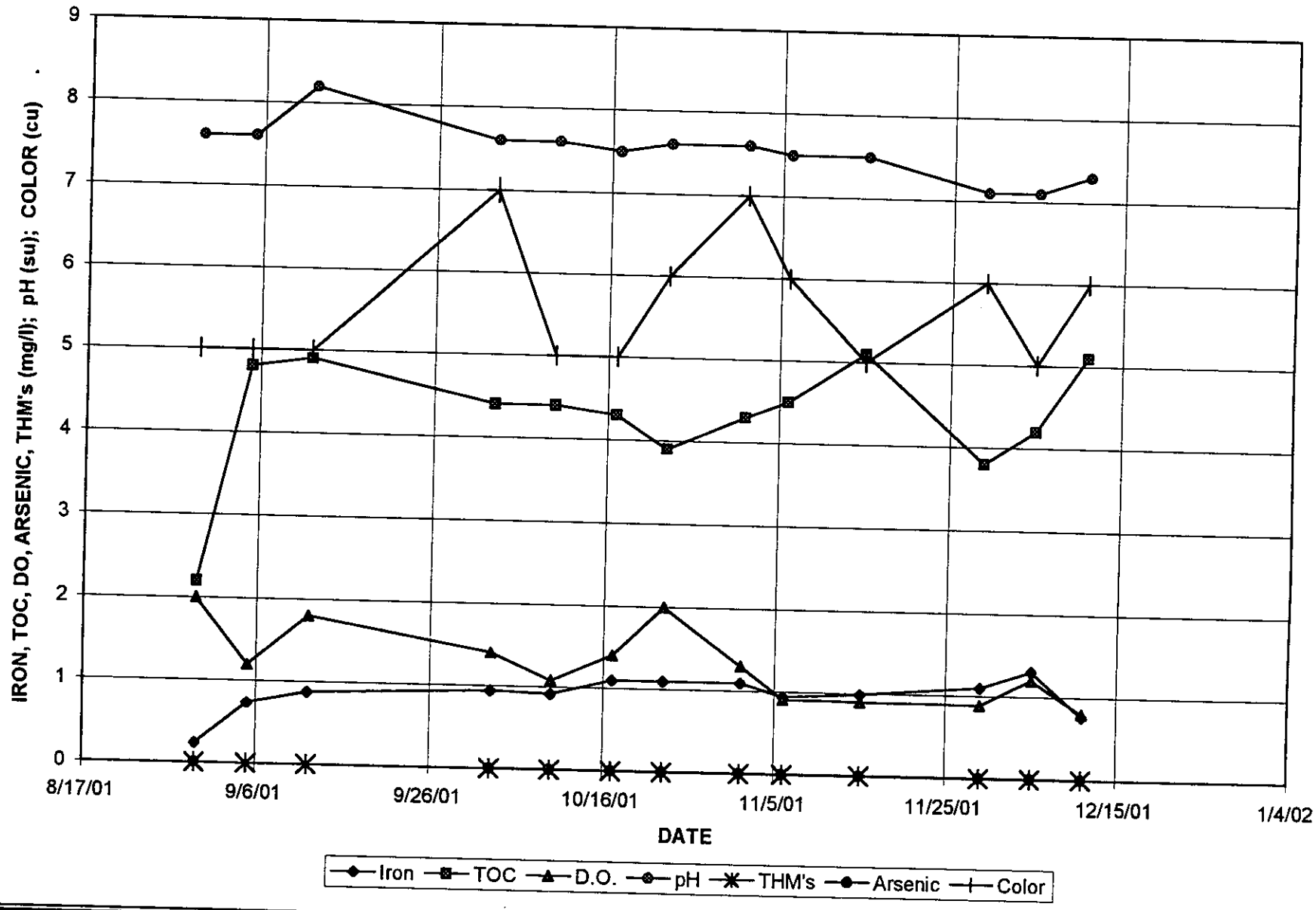
Date: 3-2 -01

FIGURE 3.13 Iron, dissolved oxygen, T.O.C., arsenic, THM's, pH, and color measured at SZ#1 during Cycle 1E injection.



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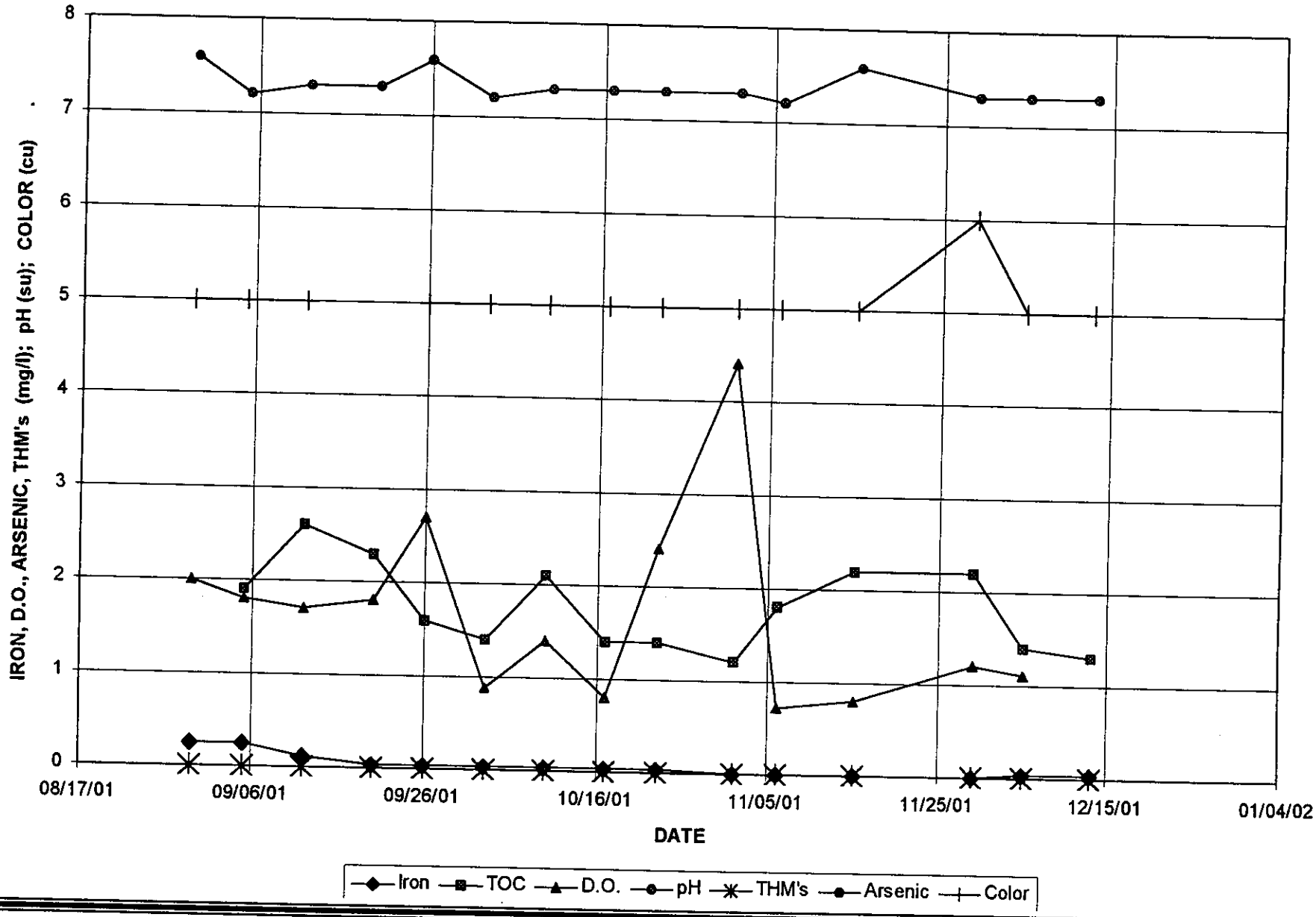
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.14 Iron, dissolved oxygen, T.O.C., arsenic, THM's, pH, and color levels measured at DZ#1 during Cycle 1E injection.



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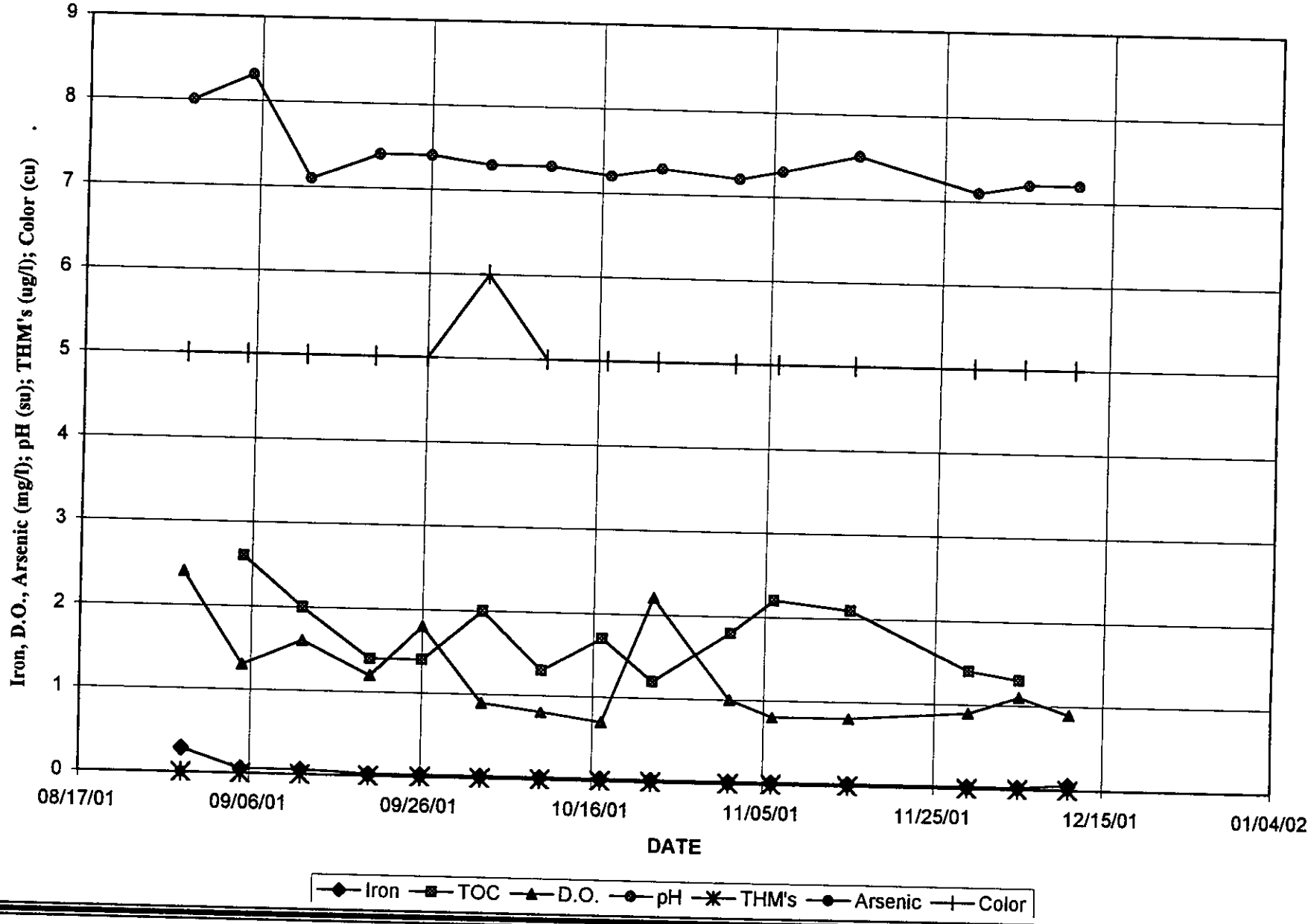
Date: 3-2 -01

FIGURE 3.15 Iron, dissolved oxygen, T.O.C., arsenic, THM's, pH and color levels measured at SZ#2 during Cycle 1E injection.

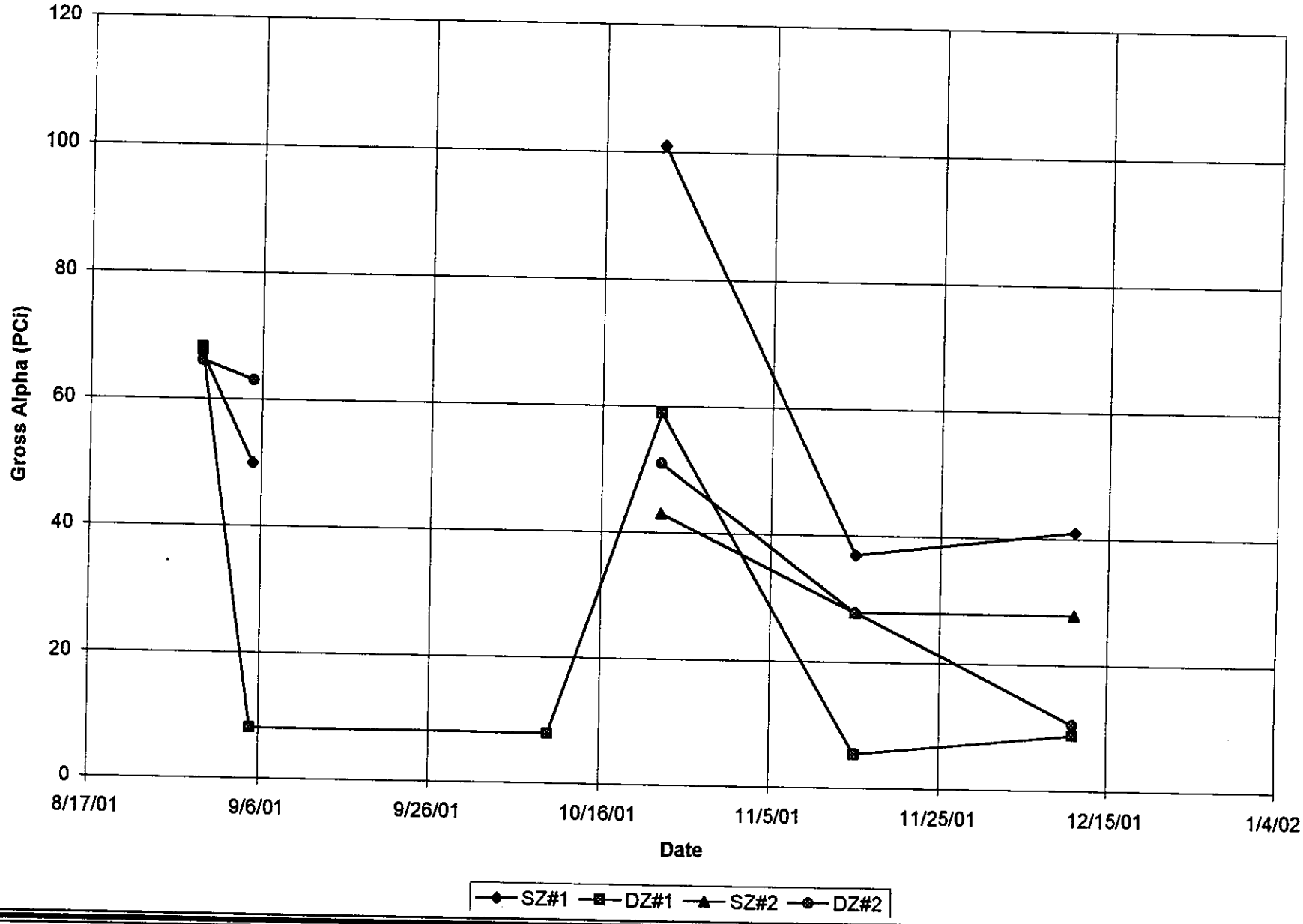


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

FIGURE 3.16 Iron, dissolved oxygen, T.O.C., arsenic, THM's, pH, and color levels measured at DZ#2 during Cycle 1E injection.

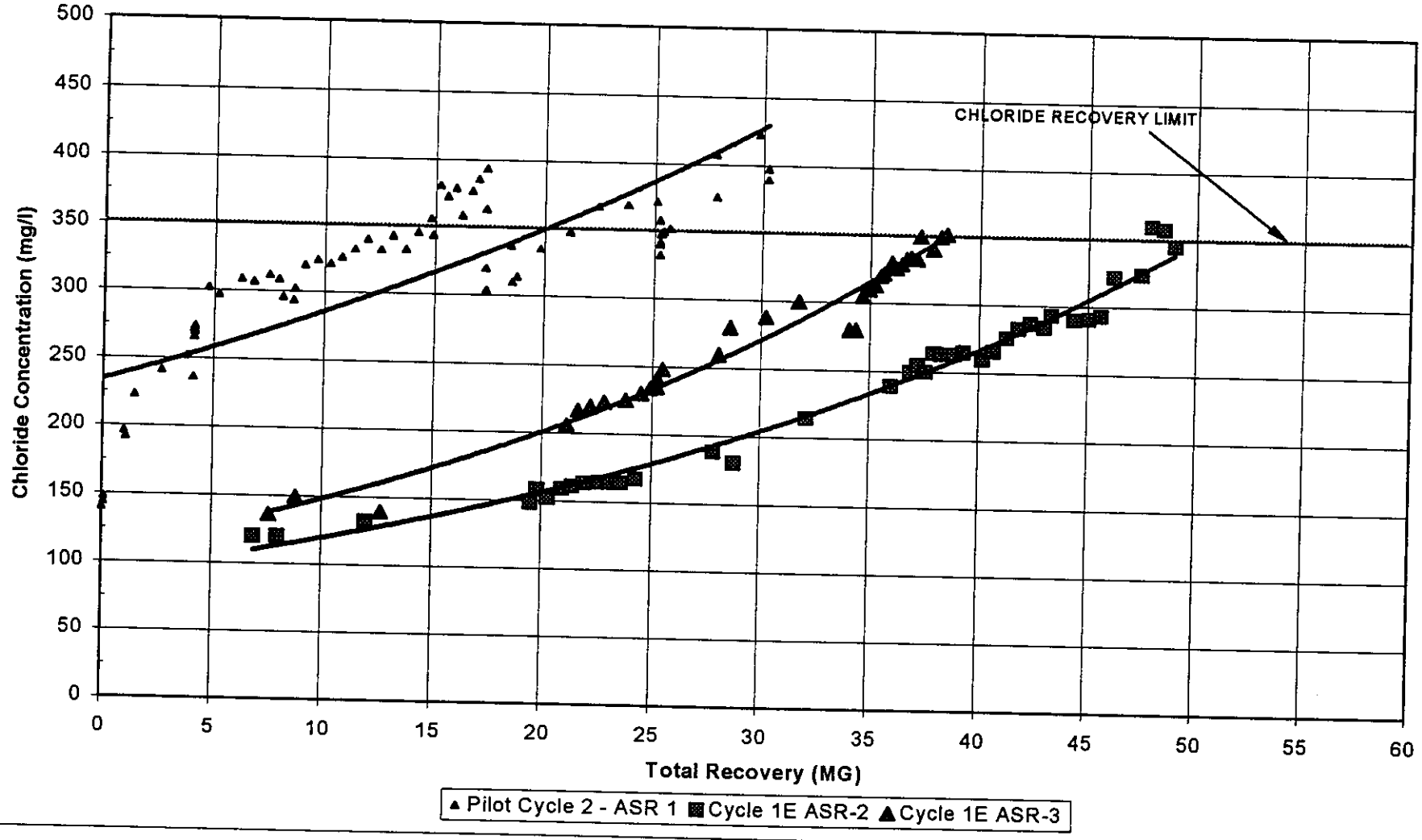


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

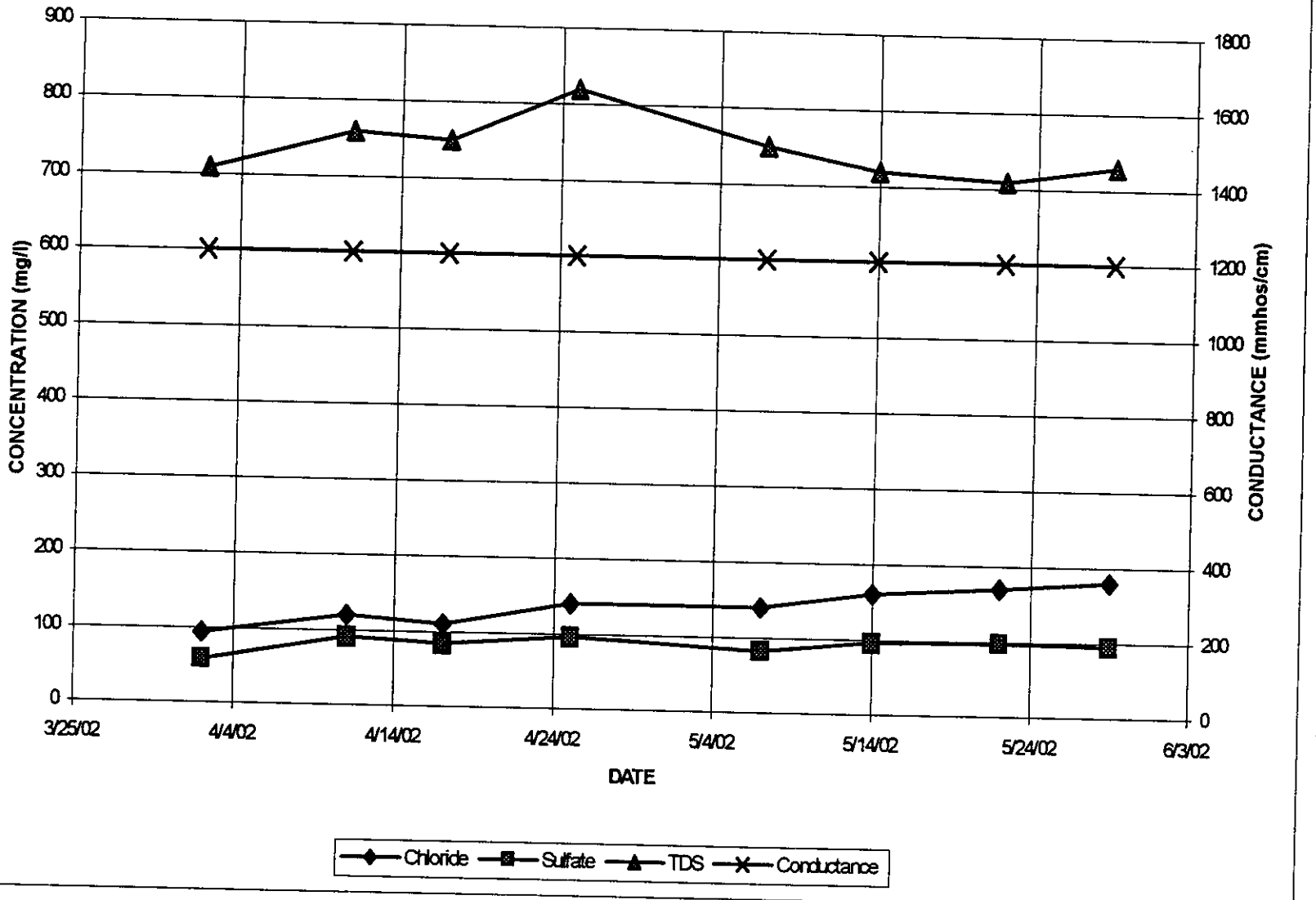
FIGURE 3.17 Gross alpha concentrations measured at individual monitoring wells during Cycle 1E injection.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 8-2 -02

FIGURE 3.18 Recovery performance of the first large cycle for each of the ASR wells.

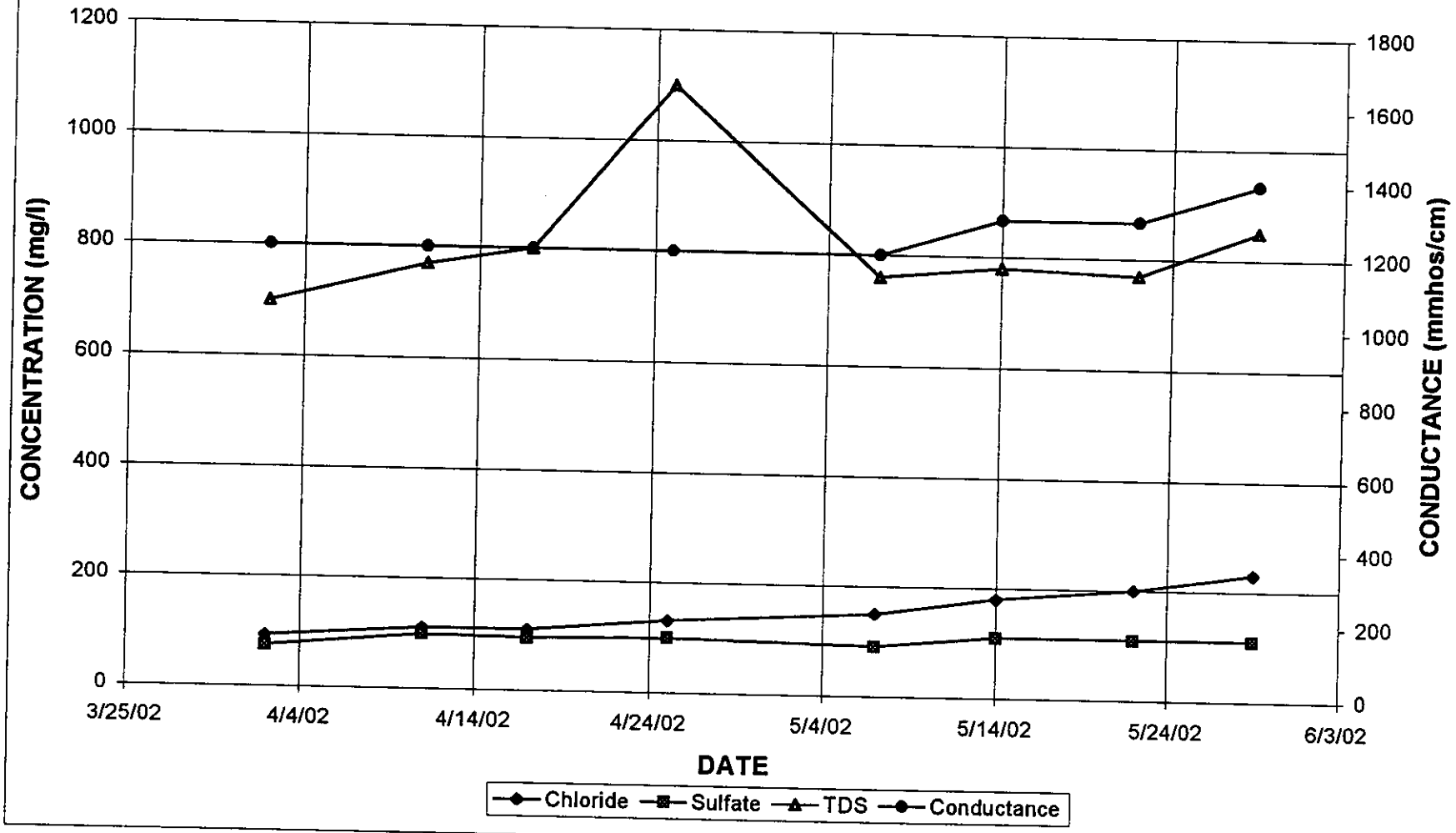


Water Resource Solutions

Project : Marco Lakes ASR
Project Number: 01-03373

Date: 8/03/02

FIGURE 3.19 Chloride, Sulfate, TDS, and Conductance values measured at ASR1 during Cycle 1E recovery.



Water Resource Solutions

Project : Marco Lakes ASR
Project Number: 01-03373

Date: 8/03/02

FIGURE 3.20 Chloride, sulfate, TDS, and conductance values measured at ASR2 during Cycle 1E recovery.

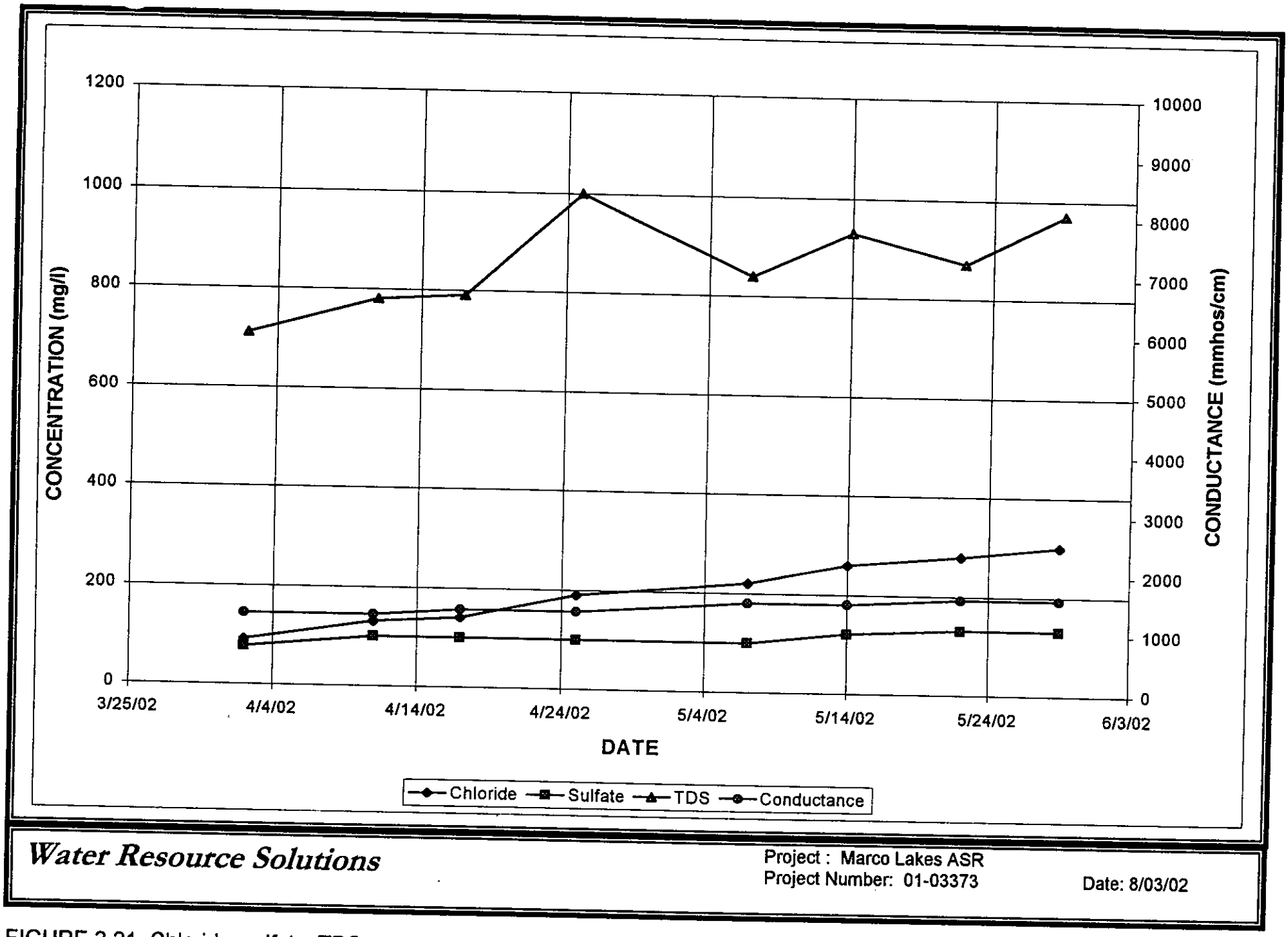
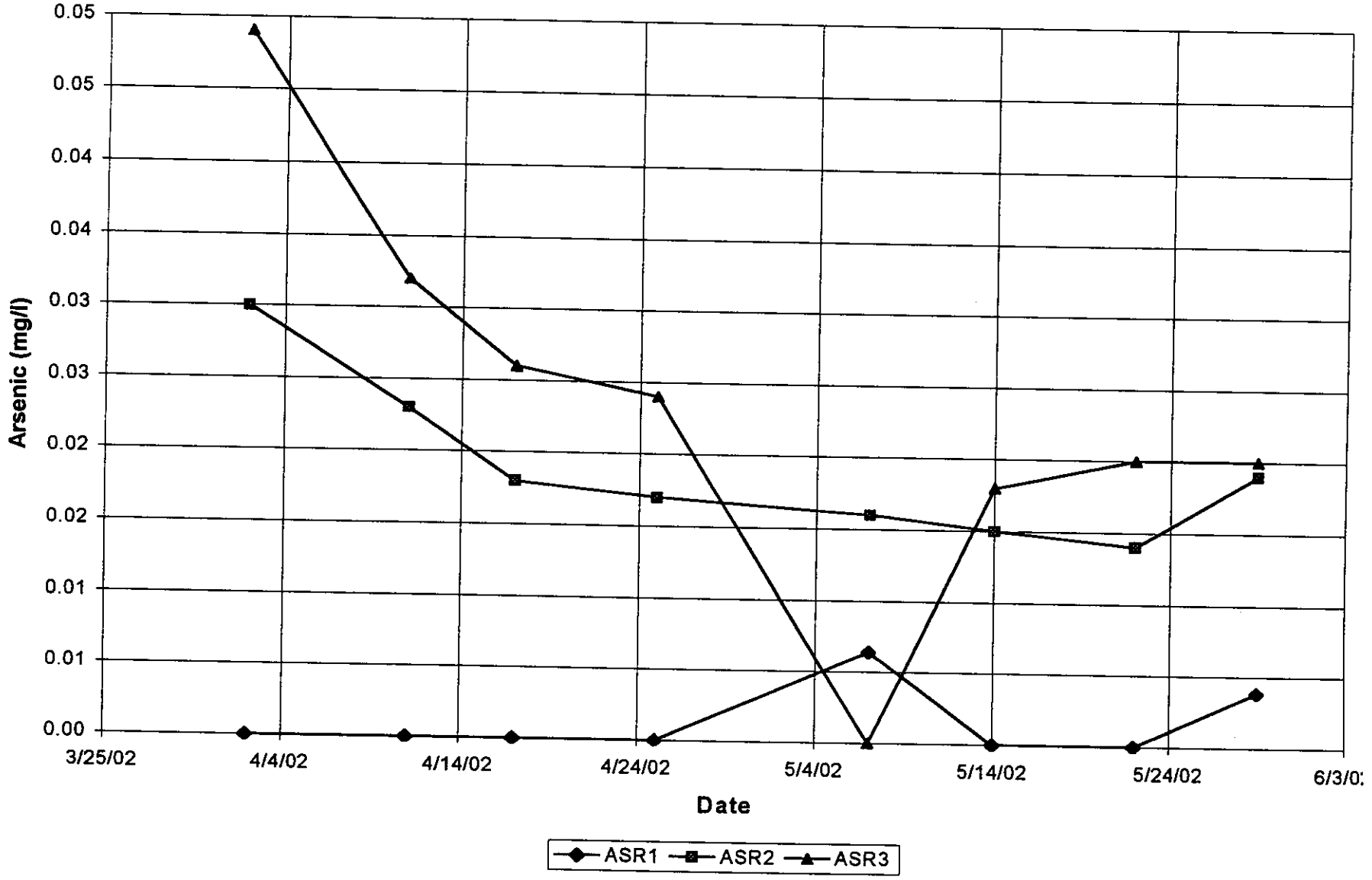


FIGURE 3.21 Chloride, sulfate, TDS, and conductance measured ASR3 during Cycle 1E recovery.

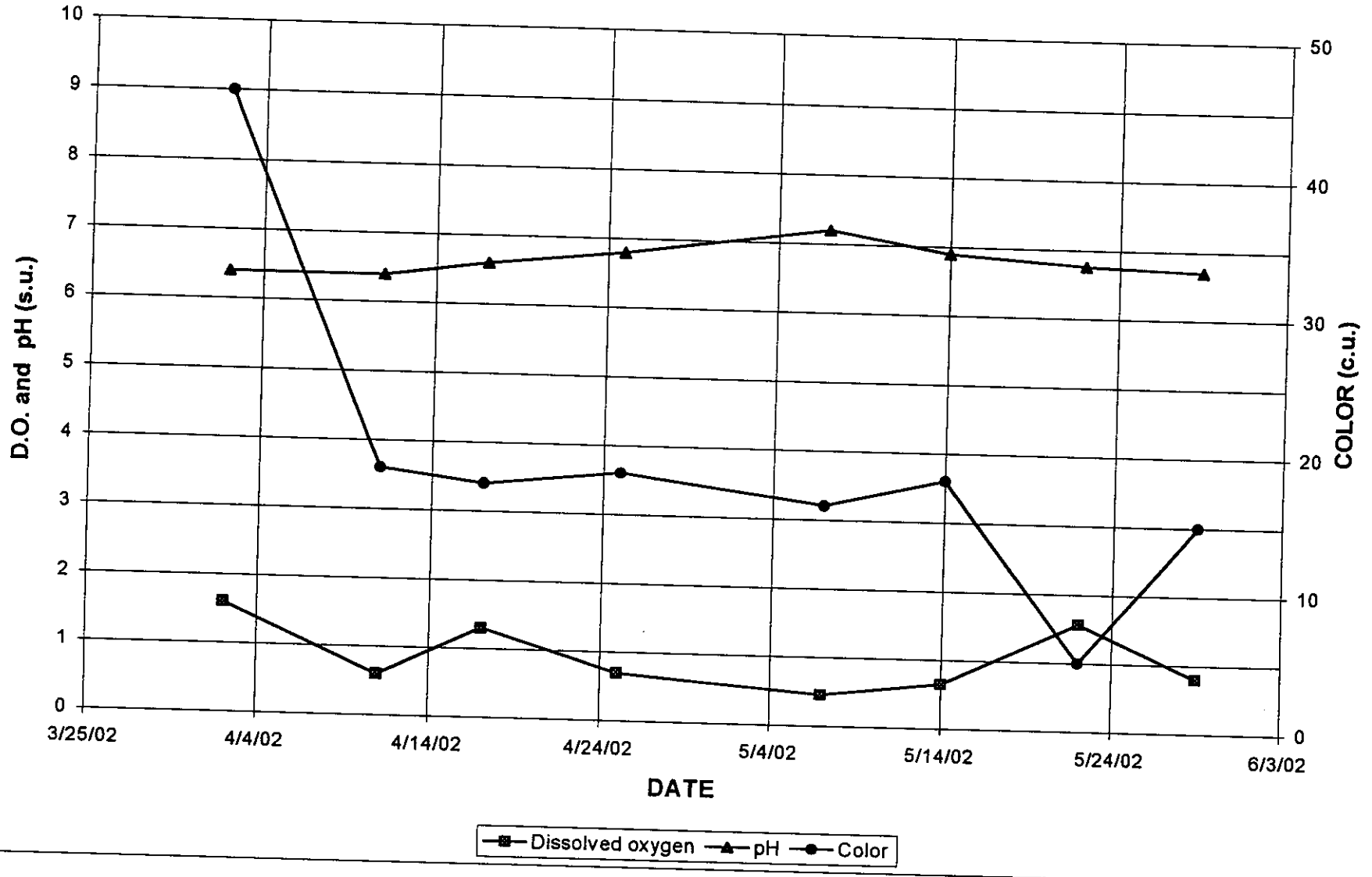


Water Resource Solutions

Project : Marco Lakes ASR
Project Number: 01-03373

Date: 8/03/02

FIGURE 3.22 Arsenic concentration in recovered water from all ASR wells.



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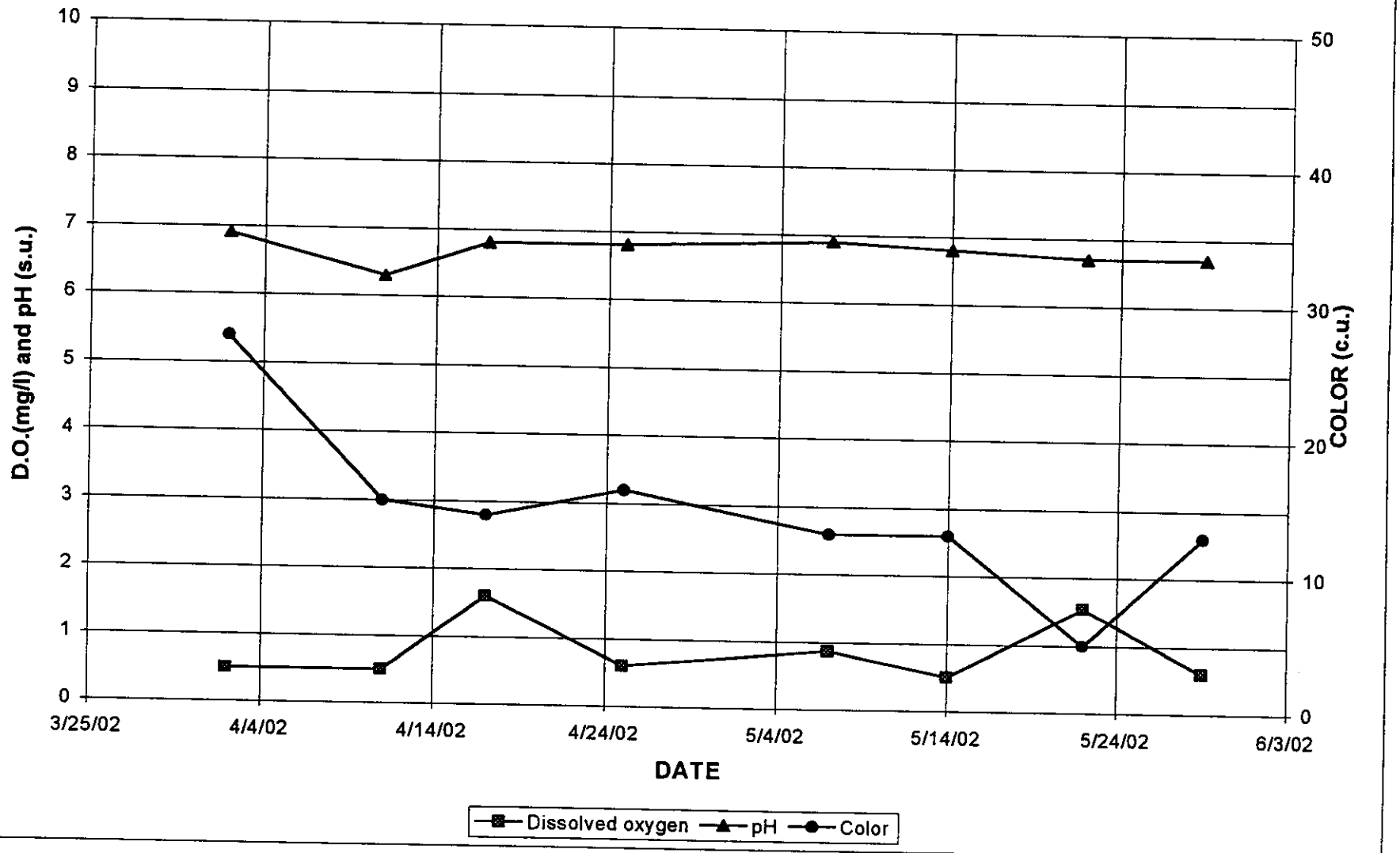
Project : Marco Lakes ASR
Project Number: 01-03373

Date: 8/03/02

FIGURE 3.23 Dissolved oxygen, pH, and color of water recovered from ASR 1 during Cycle 1E



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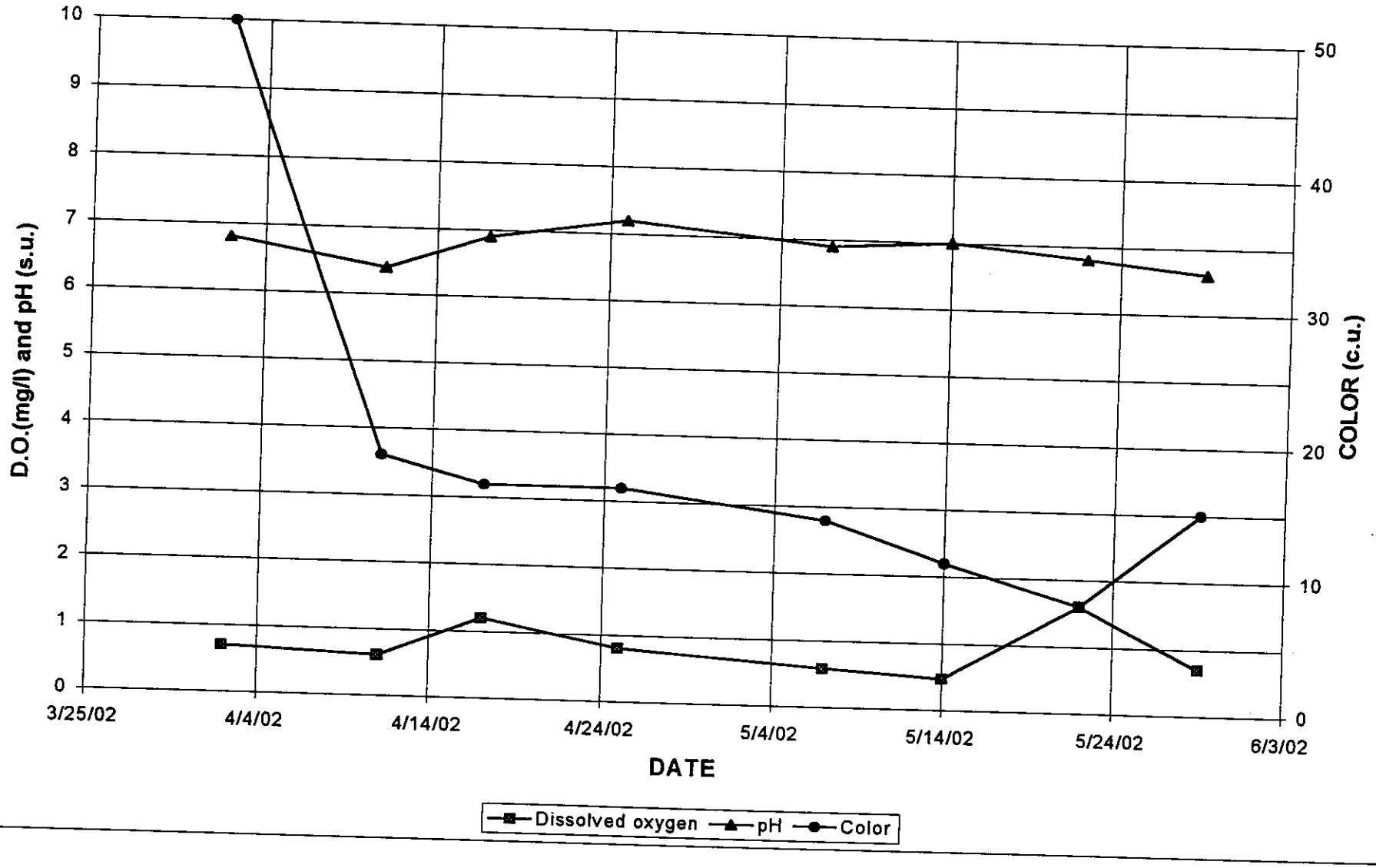
Project : Florida Water Services
Project Number: 01-03733

Date: 8-11 -02

FIGURE 3.24 Dissolved oxygen, pH, and color concentrations measured at ASR2 during Cycle 1E recovery

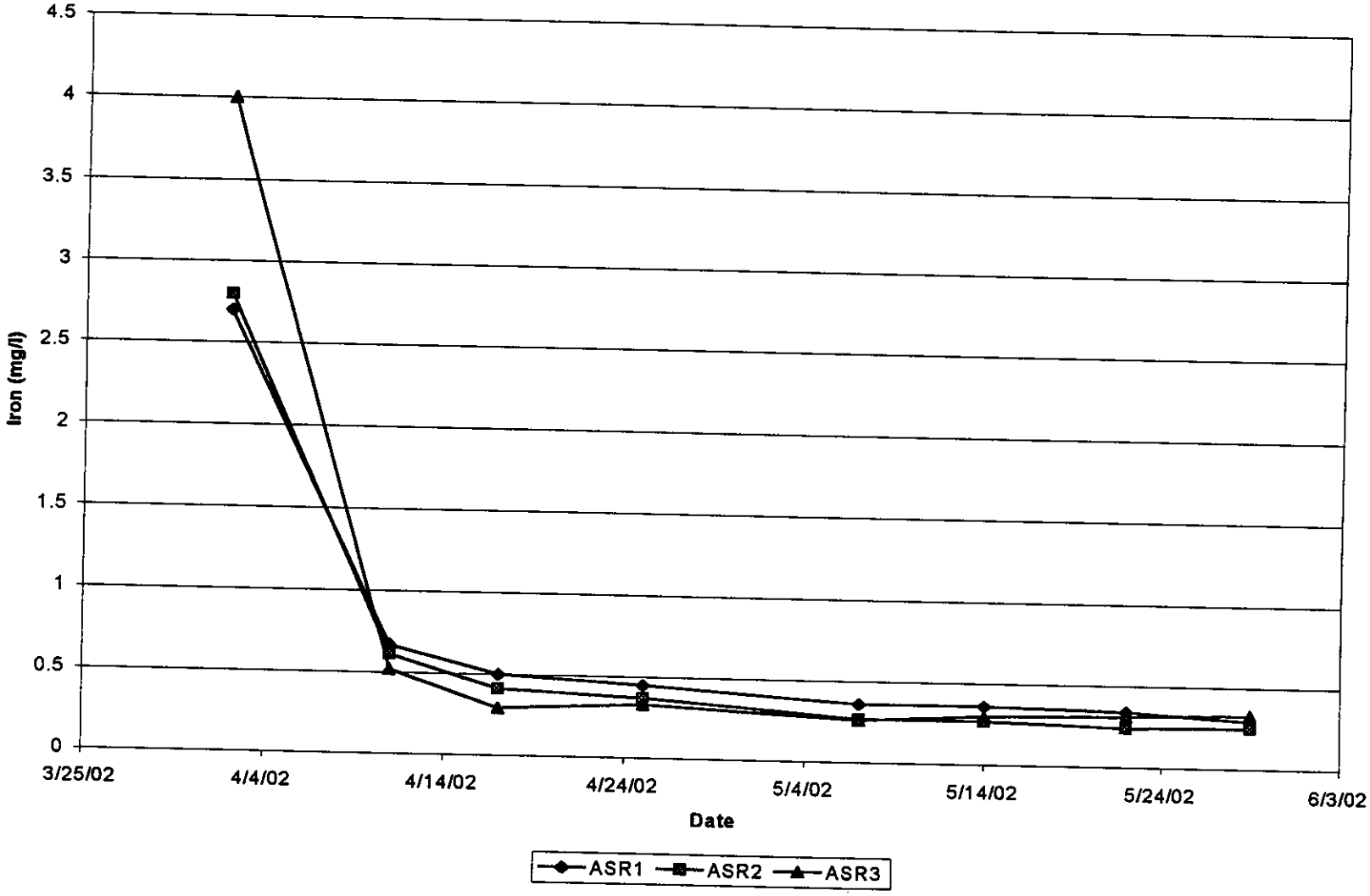


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

FIGURE 3.25 Dissolved oxygen, pH and color concentrations measured at ASR3 during Cycle 1E recovery.

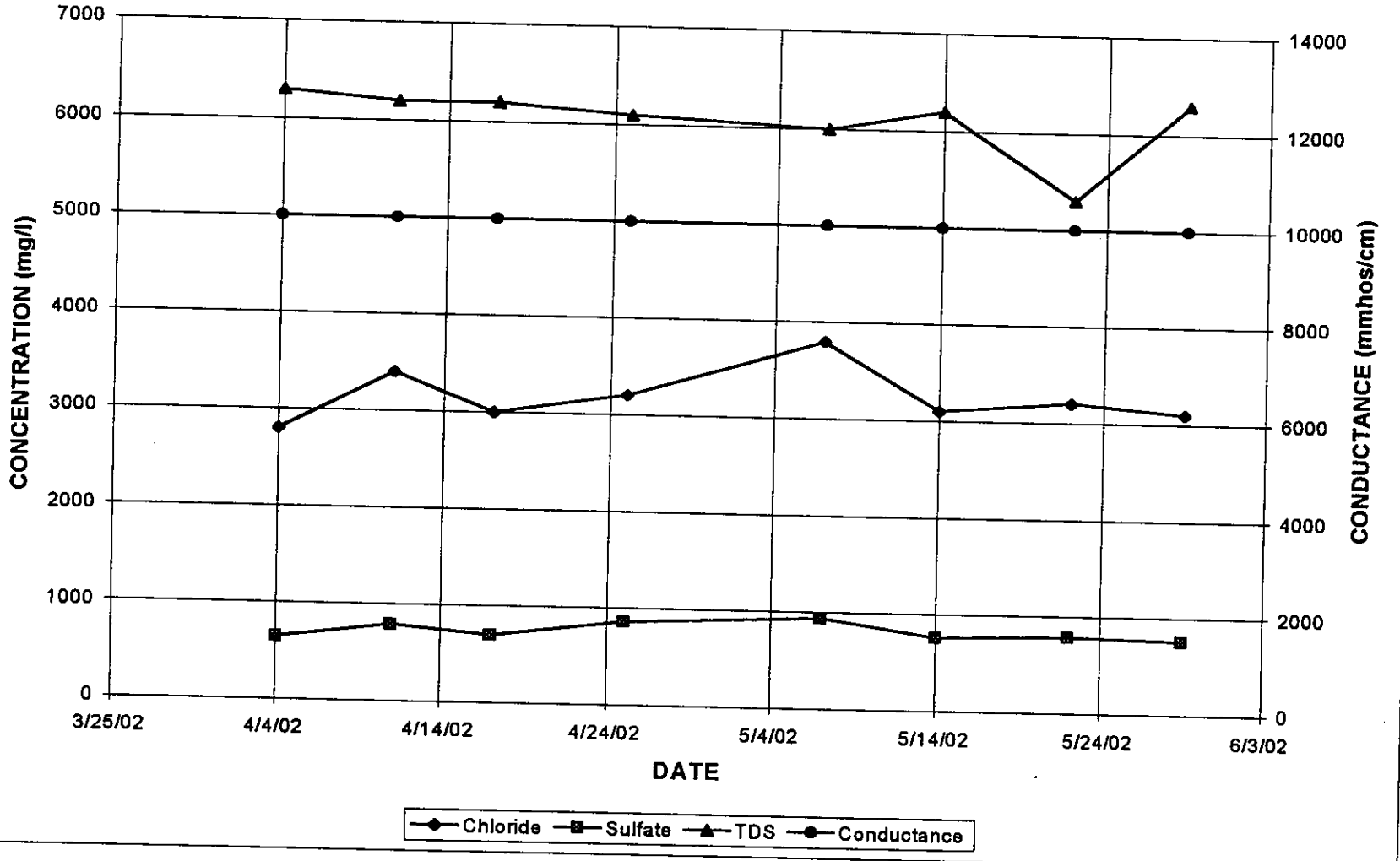


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-0733

Date: 3-2 -01

FIGURE 3.26 Iron in water recovered from all ASR wells during Cycle 1E

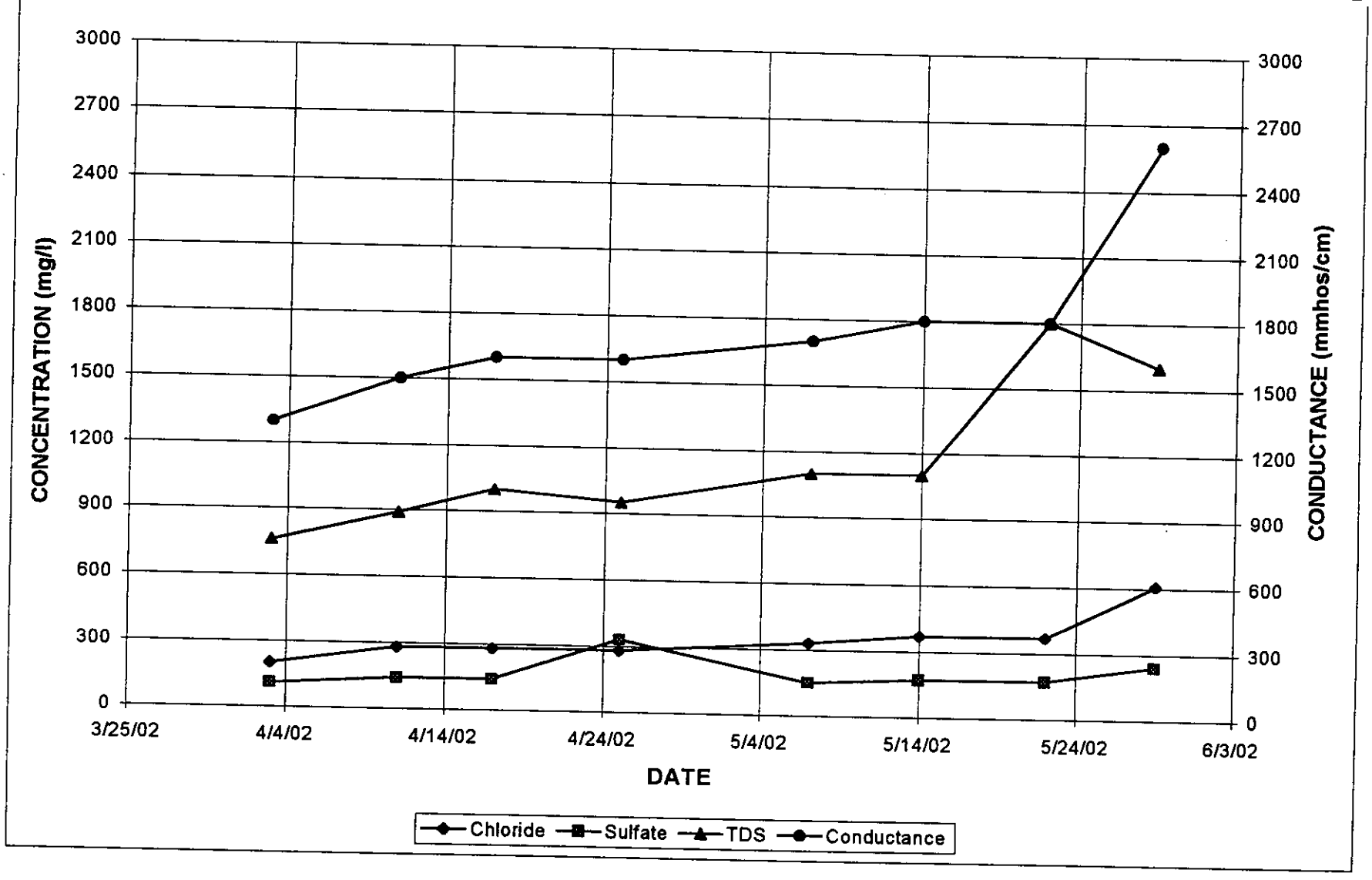


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

FIGURE 3.27 Chloride, sulfate, TDS, and conductance measured levels in SZ#1 during Cycle 1E recovery



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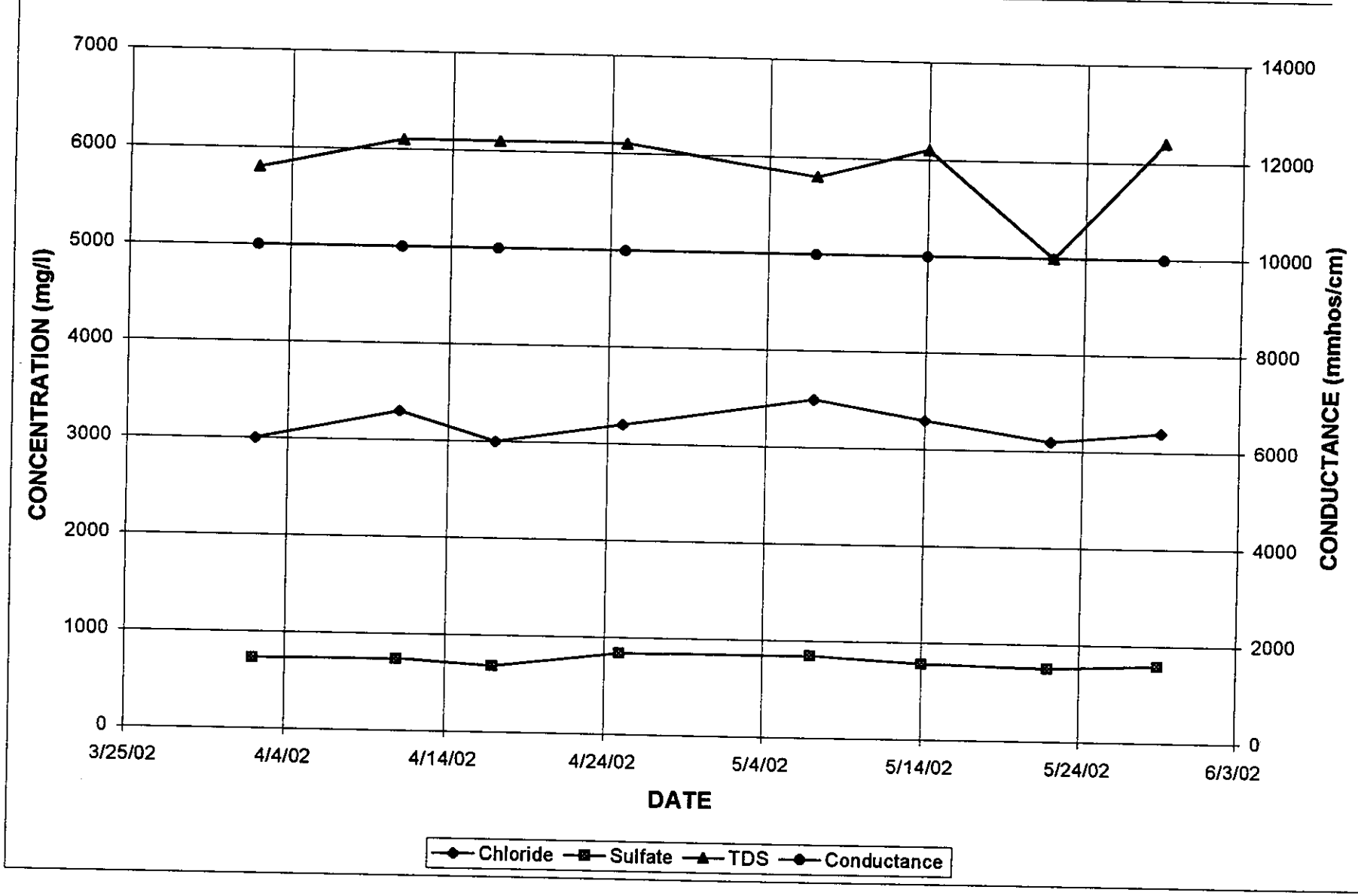
Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

FIGURE 3.28 Chloride, sulfate, TDS, and conductance levels measured at DZ#1 during Cycle 1E recovery.



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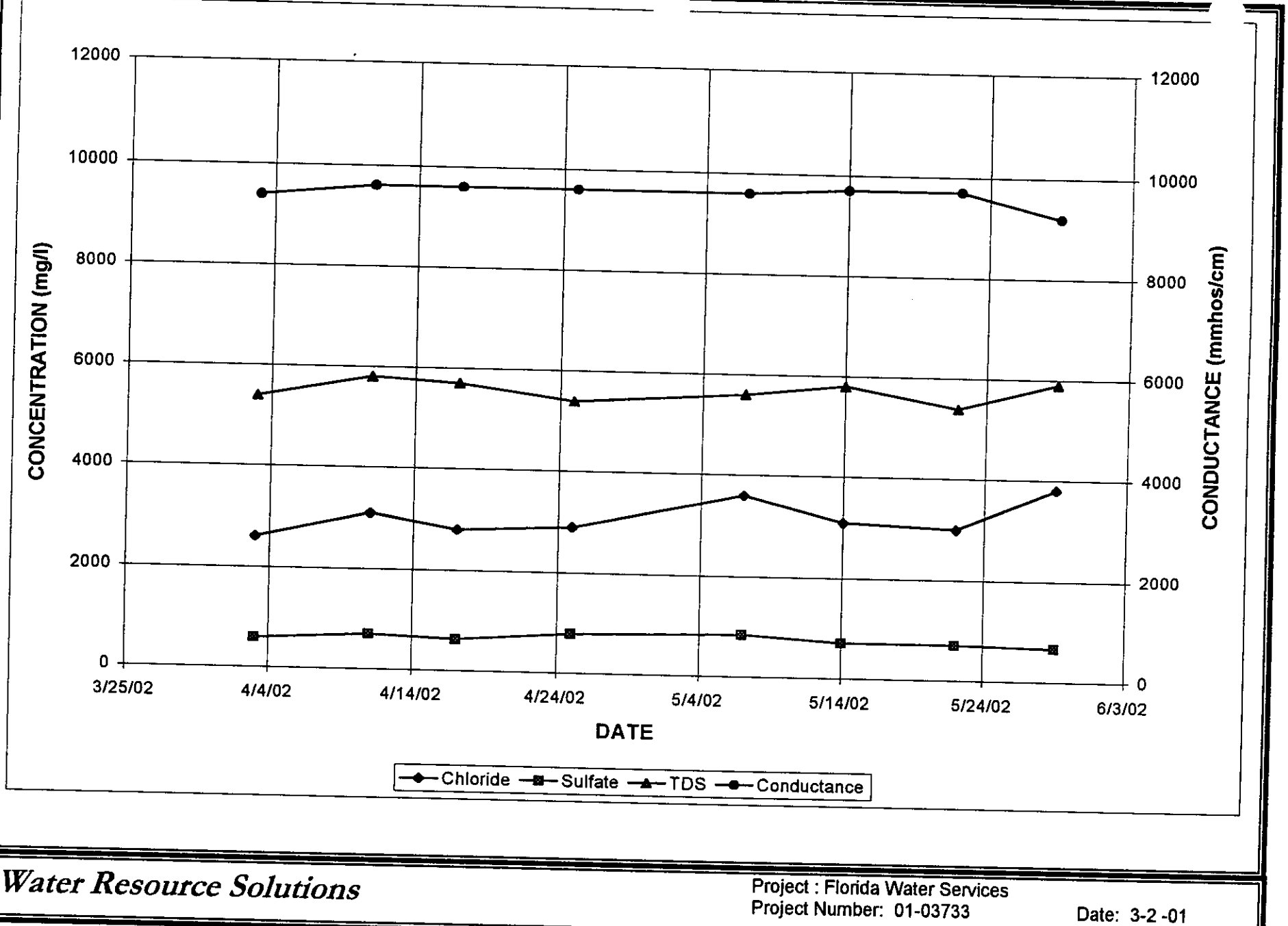
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.29 Chloride, sulfate, TDS and conductance levels measured at SZ#2 during Cycle 1E recovery.



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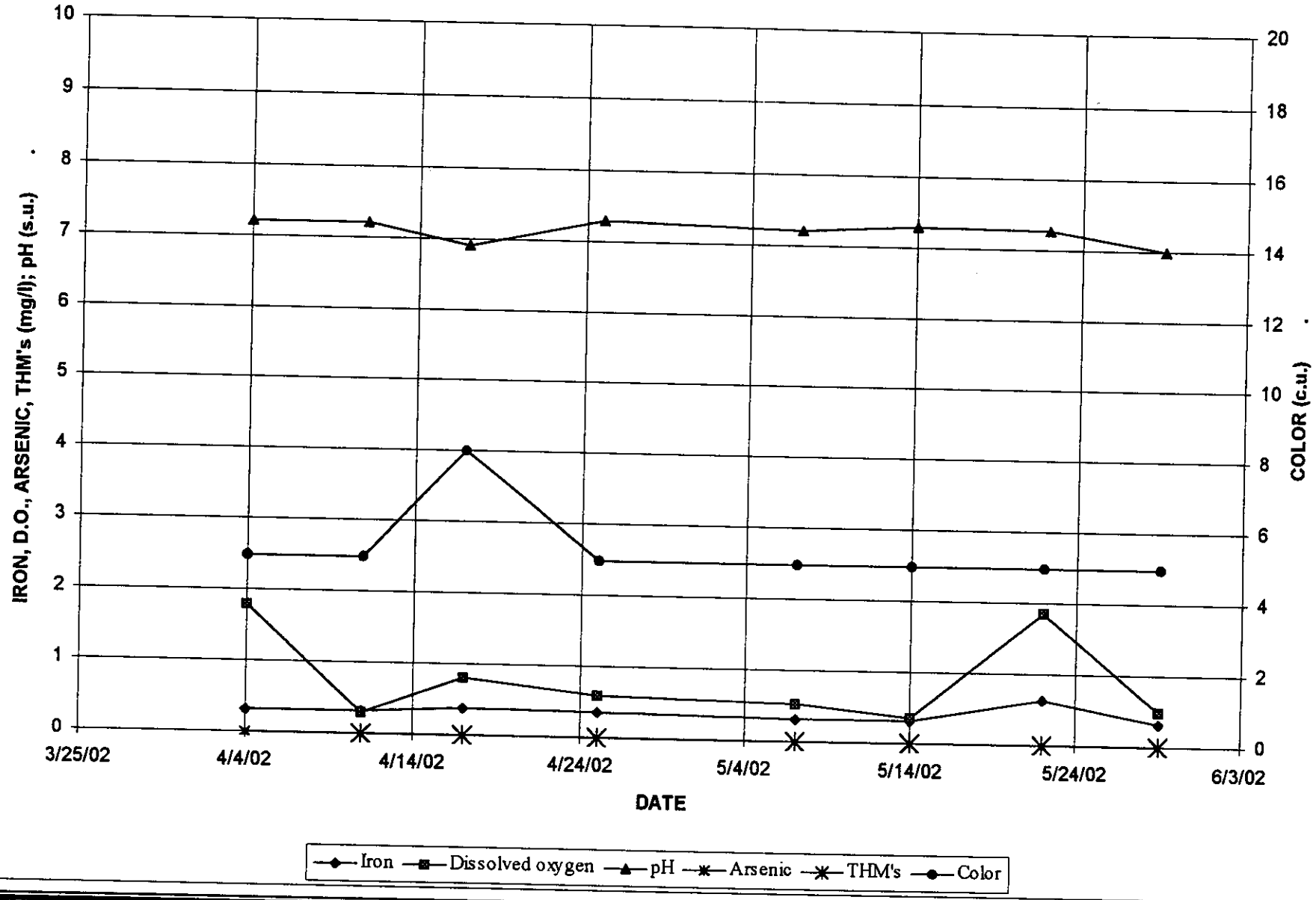
Project Number: 01-03733
Date: 3-2 -01

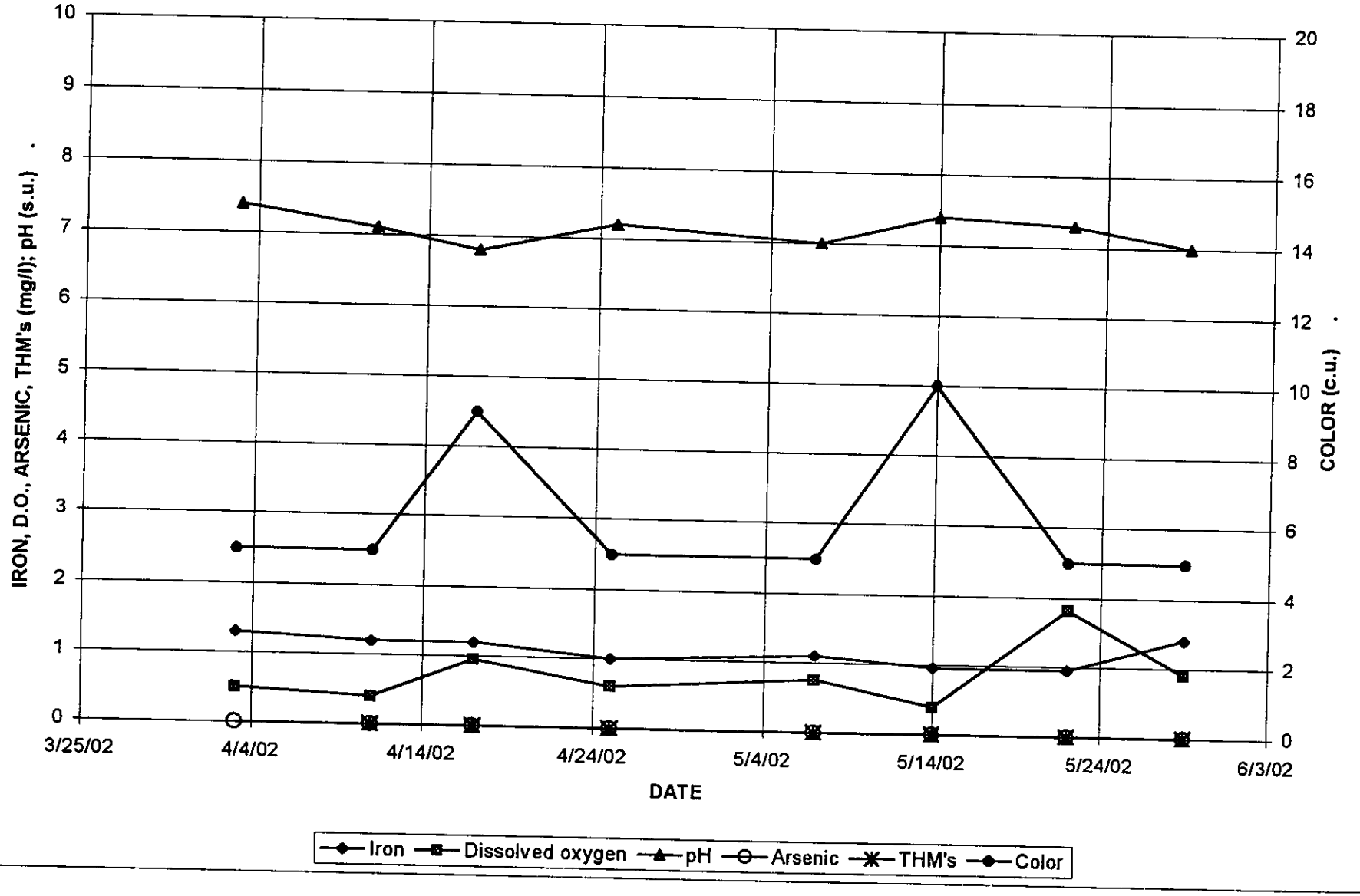
FIGURE 3.30 Chloride, sulfate, TDS, and conductance levels measured at DZ#2 during Cycle 1E recovery.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.31 Iron, DO, arsenic, THM's, pH, and color levels measured at SZ#1 during Cycle 1E recovery.

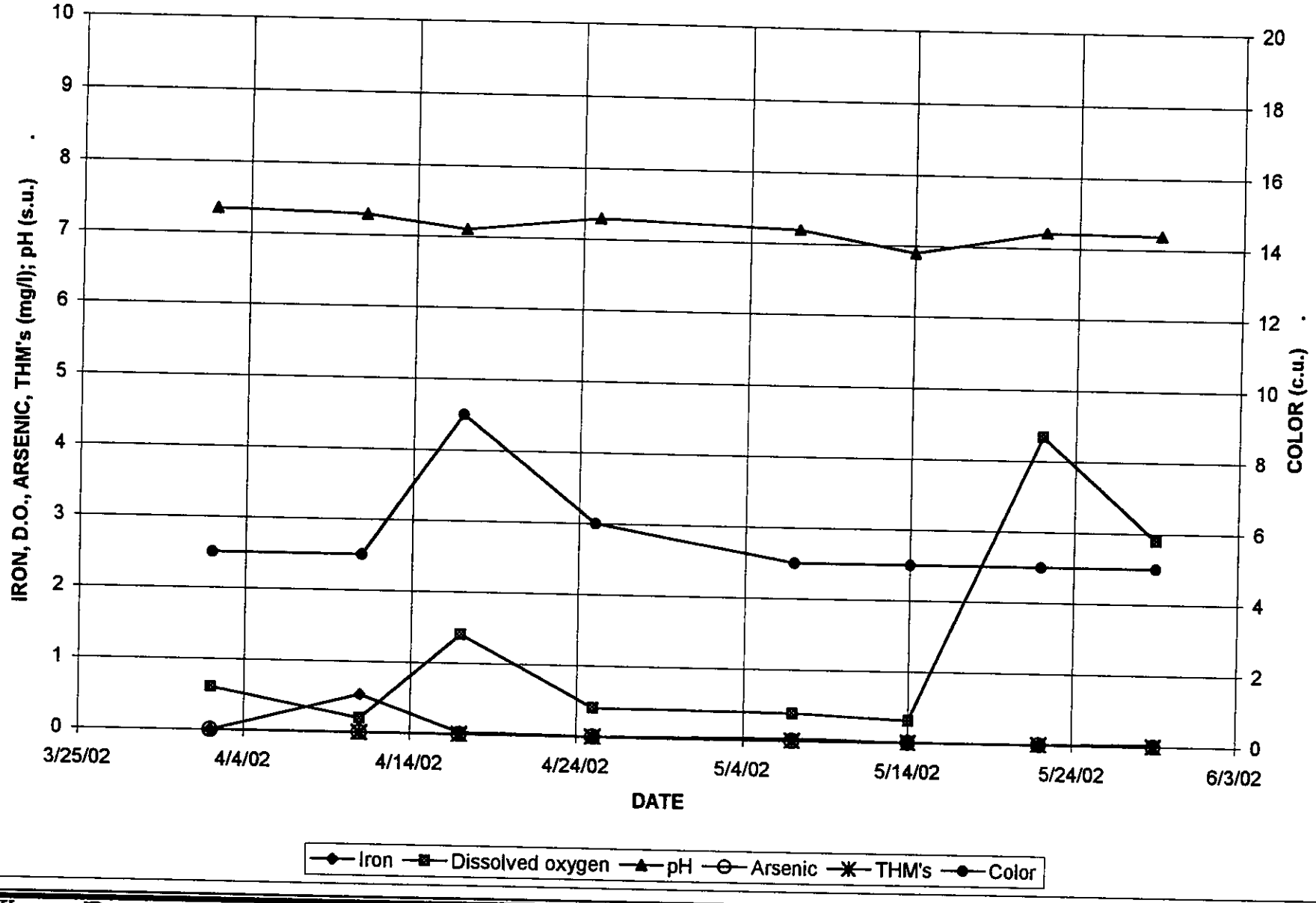


Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733

Date: 3-2 -01

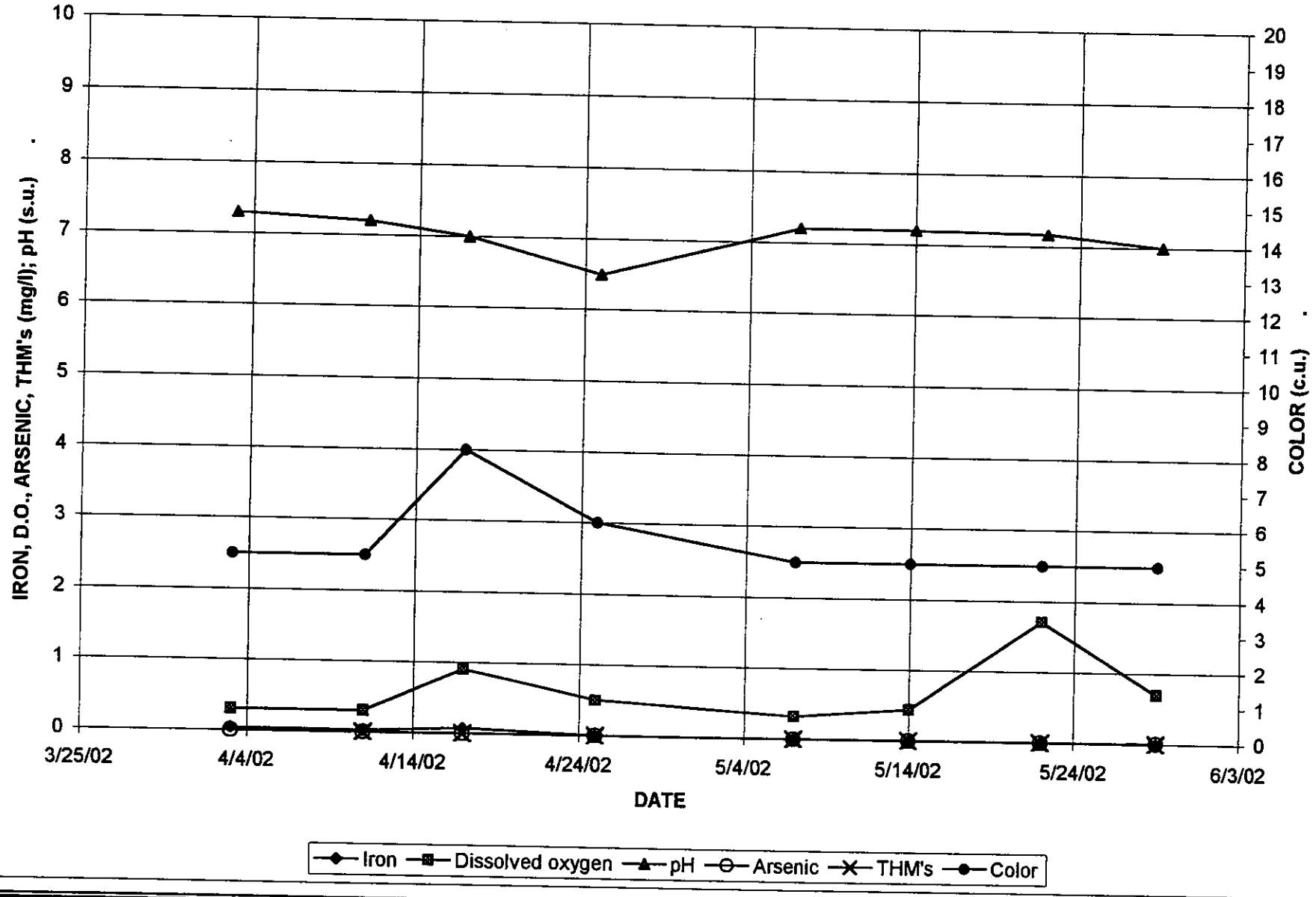
FIGURE 3.32 Iron, DO, arsenic, THM's, pH, and color levels measured at DZ#1 during Cycle 1E recovery.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.33 Iron, DO, arsenic, THM's, pH, and color levels measured at SZ#2 during Cycle 1E recovery.



Water Resource Solutions

Project : Florida Water Services
Project Number: 01-03733
Date: 3-2 -01

FIGURE 3.34 Iron, DO, arsenic, THM's, pH, and color levels measured at DZ#2 during Cycle 1E recovery.

TABLES

Tab. 2.1
MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
CO-1476				26	50	26	20	2		MON	
CO-1569				26	50	26	95	4	11	MON	
	CC06188-D			26	50	26	120			SOIL	
	CC04230-D			26	50	26	44	2	44	DOM	
	CC08188-G			26	50	26				MON	
	CC08188-H			26	50	26				MON	
	CC08188-I			26	50	26	15	8	8	MON	
	CC06303-C			26	50	26	50	4	38	DOM	
	CC07303-C			26	50	26				SOIL	
	CC06176-A			26	50	26				SOIL	
	CC02257-E			26	50	26	60	4	50	IRR	
CO-778				27	50	26		8		IRR	
CO-793				27	50	26	60	2	45	MON	
CO-794				27	50	26	15	2	10	MON	
CO-2560		11-00044-W		27	50	26	30	10	20	IRR	
CO-2561		11-00044-W		27	50	26	30	10	20	IRR	
CO-2562		11-00044-W		27	50	26	30	10	20	IRR	
CO-2563		11-00044-W		27	50	26	30	10	20	IRR	
CO-2564		11-00044-W		27	50	26	30	10	20	IRR	
	CC070502H			27	50	26	15	2	5	MON	
	CC10144-D			27	50	26				SOIL	
	CC06190-M			27	50	26	60				
	CC04219-A			27	50	26	65	2	60	MON	
	CC04219-B			27	50	26	65	2	60	MON	
	CC04168-A			27	50	26				SOIL	
	CC04288-G			27	50	26	60	4	40		
	CC04288-H			27	50	26	60	4	40		
	CC05309-C			27	50	26	75	2	60	MON	
	CC06261-E			27	50	26	28	10	18	IRR	
	CC05309C			27	50	26	75			MON	
	CC03293-I			27	50	26	73	4	70	DOM	
	CC03230-F			27	50	26	50			FIRE	
	CC03230-E			27	50	26	60			FIRE	
	CC03066-D			27	50	26	15	4	5	MON	
	CC03066-E			27	50	26				SOIL	
	CC05246-B			27	50	26				SOIL	
	CC091499G			27	50	26	20			TEST	
	CC071400A			27	50	26				TEST	

Table
MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC07250-B			28	50	26				SOIL	
	CC08200-A			28	50	26	47	10	35	IRR	
	CC08200-B			28	50	26	47	10	35	IRR	
	CC08200-C			28	50	26	50	10	35	IRR	
	CC05021-A			28	50	26				SOIL	
	CC07139-F			28	50	26	50	10	35	IRR	
	CC07139-H			28	50	26	50	10	35	IRR	
	CC10232-A			28	50	26	25			SOIL	
	CC05173-G			28	50	26	140		110	MON	
	CC06136-B			28	50	26	70	4	58	MON	
	CC07256-E			28	50	26	39	6	29	IRR	
	CC02187-K			28	50	26	60	4	50	DOM	
	CC01144-A			28	50	26	22			ELEV	
	CC01256-F			28	50	26				IRR	
	CC03286-B			28	50	26				SOIL	
	CC010899L			28	50	26		4	60	IRR	
	CC120899A			28	50	26	8			TEST	
	CC070502I			28	50	26	15	2	5	MON	
	CC070502O			28	50	26	8	2	3	MON	
	CC070502V			28	50	26	8	2	3	MON	
	CC080502B			28	50	26	16			SOIL	
	CC120899A			28	50	26					
	CC1212201H			28	50	26	82	4	60		
	CC121101I			28	50	26	82	4	60		
CO-540				33	50	26		8		IRR	
CO-541				33	50	26	63	8		IRR	
	CC07265-A			33	50	26				SOIL	
	CC02104-A			33	50	26				SOIL	
	CC03190-I			33	50	26	35	6	23	TEST	
	CC04154-D			33	50	26	45	2	42	MON	
	CC10244-B			33	50	26	70	4	60	TEST	
	CC07120-E			33	50	26				SOIL	
	CC12074-A			33	50	26				SOIL	
	CC06198-R			33	50	26	20			SOIL	
	CC09050-EE			33	50	26	15	2	15	MON	
	CC10300-K			33	50	26	5			TEST/SOIL	
	CC10300-J			33	50	26	12	2	12	MON	
	CC07011-E			33	50	26				SOIL	

Table 2.1
MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC08192-A			33	50	26	13	2	3	MON	
	CC10082-J			33	50	26	12	4	2	MON	
	CC12022-B			33	50	26	20			SOIL	
	CC11077-C			33	50	26				MON	
	CC02023-A			33	50	26	12	4	25	MON	
	CC04116-AA			33	50	26				SOIL	
	CC061499B			33	50	26	40	8	30	IRR	
	CC102899D			33	50	26		8		FIRE	
	CC010300A			33	50	26				TEST	
	CC123099A			33	50	26					
	CC021202B			33	50	26	15	4	5	MON	
	CC021202C			33	50	26	15	4	5	MON	
	CC021202D			33	50	26	15	4	5	MON	
	CC070502K			33	50	26	8	2	3	MON	
	CC070502L			33	50	26	8	2	3	MON	
	CC070502M			33	50	26	8	2	3	MON	
	CC073002C			33	50	26	90	4	80	DOM	
CO-189				34	50	26		4		IRR	
CO-776				34	50	26	52	8		IRR	
CO-791				34	50	26	60	2	45	OBS	
CO-792				34	50	26	15	2	10	OBS	
CO-822				34	50	26		8		IRR	
CO-867				34	50	26	50	2	35	TEST	
CO-868				34	50	26	50	2	35	TEST	
CO-1574				34	50	26	155			OBS	SFWMD C-2008D
CO-1770				34	50	26	35	4	13	OBS	
CO-1960				34	50	26	74	2	63	OBS	
CO-1961				34	50	26	74	2	60	OBS	
CO-1962				34	50	26	75	2	70	OBS	
CO-1972				34	50	26	40	10	25		
CO-1973				34	50	26	40	10	27.5		
CO-1974				34	50	26	50	10	26.5		
CO-2256				34	50	26	5900			ABND	Oil Test Well #134 - Plugged and Abandoned (Collier Corp. #2)
CO-2292				34	50	26	16	4	10	OBS	
CO-2293				34	50	26	16	4	10	OBS	

Table 2.1
MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
CO-2294				34	50	26	4	4	4	OBS	
CO-2408			W-2628	34	50	26	2515	9 5/8	1022	ABND	Oil Test Well #136 - Plugged and Abandoned (Collier Corp. #3)
CO-2597	CC061899K			34	50	26	540	6.9	460	MON	Upper Zone Monitor Well
CO-2596	CC061899L			34	50	26	790	6.9	745	MON	ASR Zone Monitor Well
CO-2594	CC061899M			34	50	26	790	16	745	ASR	ASR Well 2
CO-2595	CC061899N			34	50	26	790	16	745	ASR	ASR Well 3
CO-2565		11-00044-W		34	50	26	30	10	20	IRR	
CO-2911	CC11196-B		W-17454	34	50	26	210	2		CORE	Southern States Utilities Core
	CC05165-A			34	50	26	22	4	11	MON	
	CC05165-B			34	50	26	20	4	10	MON	
	CC05165-C			34	50	26	20	4	10	MON	
	CC02010-G			34	50	26	10	6	10		
	CC02010-F			34	50	26	15			PWSMON	
	CC07110-B			34	50	26				SOIL	
	CC03128-B			34	50	26	80	8	60		
	CC03128-C			34	50	26	80	8	60		
	CC10170-A			34	50	26				SOIL	
	CC11290-B			34	50	26	50			FIRE	
	CC02151-F			34	50	26	70	2	70	MON	
	CC07291-U			34	50	26	25			MON	
	CC07291-V			34	50	26	25			MON	
	CC11181-A			34	50	26	16			TEST/MON	
	CC11181-B			34	50	26	16			TEST/MON	
	CC11181-C			34	50	26	7			TEST/MON	
	CC07139-E			34	50	26	50	10	35	IRR	
	CC07139-G			34	50	26	50	10	35	IRR	
	CC07139-I			34	50	26	50	10	35	IRR	
	CC05173-C			34	50	26	25		20	MON	
	CC05213-E			34	50	26	25			SOIL	
	CC12297-J			34	50	26	60	4	50	DOM	
	CC03230-A			34	50	26				SOIL	
	CC11293-K			34	50	26	13	4	3	MON	

Tab. 2.1

MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC03109-F			34	50	26	15	4	15	MON	
	CC03109-G			34	50	26	15	4	15	MON	
	CC03109-H			34	50	26	15	4	15	MON	
	CC03109-I			34	50	26	15	4	15	MON	
	CC04167-G			34	50	26				SOIL	
	CC04055-C			34	50	26	50	8	40	IRR	
	CC061899B			34	50	26	20	4	20	MON	
	CC061002G			34	50	26	27	18		ELEV	
	CC070502P			34	50	26	8	2	3	MON	
	CC070502R			34	50	26	8	2	3	MON	
	CC061899B			34	50	26				MON	
	CC061899K			34	50	26				MON	
	CC061899L			34	50	26				MON	
	CC061899M			34	50	26				MON	
	CC061899N			34	50	26				MON	
	CC082500B			34	50	26				TEST	
CO-1369				35	50	26	20	2	15	OBS	
CO-1370				35	50	26	20	2	15	OBS	
CO-1371				35	50	26	45	2	40	OBS	
CO-1372				35	50	26	20	2	15	OBS	
	CC04264-B			35	50	26				SOIL	
	CC06118-B			35	50	26	120			SOIL	
	CC09271-A			35	50	26	40			MON	
	CC09271-B			35	50	26	40			MON	
	CC09271-C			35	50	26	40			MON	
	CC09271-D			35	50	26	100	4	70	TEST	
	CC10231-B			35	50	26	8			MON	
	CC10231-C			35	50	26	8			MON	
	CC06118-C			2	51	26	120			SOIL	
	CC05090-C			2	51	26	46		46		
	CC05090-D			2	51	26	46	2	46		
	CC08188-J			2	51	26	65	4	25	MON	
	CC08188-K			2	51	26	65	4	25	MON	
	CC08188-L			2	51	26	15	8	15	MON	
	CC07119-B			2	51	26	13	2	10	MON	
	CC01113-D			2	51	26				SOIL	
	CC121900A			2	51	26	40	4	30	IRR	
CO-150				3	51	26				IRR	

Tab. 2.1
MARCO LAKES ASR
UPDATED AREA OF REVIEW
November 2002

WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
CO-151				3	51	26	103	2	98	OBS	
CO-156				3	51	26	63	2	58	OBS	
				3	51	26					
CO-177				3	51	26				IRR	
CO-178				3	51	26				IRR	
CO-179				3	51	26				ABND	
CO-190				3	51	26				IRR	
CO-191				3	51	26				IRR	
CO-192				3	51	26				IRR	
CO-193				3	51	26	40			IRR	
CO-194				3	51	26	40	2		IRR	
CO-195				3	51	26	40	2		IRR	
CO-196				3	51	26	34	4		IRR	
CO-197				3	51	26	40	2		IRR	
CO-201				3	51	26	195	2	186		
CO-218				3	51	26	45	2	40	OBS	
CO-219				3	51	26	15	2	10	OBS	
CO-240				3	51	26		2	40	OBS	
CO-545				3	51	26	45	8	26	IRR	
CO-591				3	51	26	11.5	2	6.5	OBS	
CO-592				3	51	26	12.5	2	7.5	OBS	
CO-597				3	51	26	40	2	38	OBS	
CO-599				3	51	26	50	2	43	OBS	
CO-1640				3	51	26	96				
CO-1641				3	51	26	23	2	23	OBS	
CO-2444				3	51	26	45	6		IRR	
CO-2445				3	51	26	45	8	30	IRR	
CO-2583		11-01309-W		3	51	26	45	6		IRR	
CO-2584		11-01309-W		3	51	26	30	6		IRR	
CO-2409				3	51	26	55	2	45	MON	
CO-2410				3	51	26	14	6	2	MON	
CO-2411				3	51	26	14	6	2	MON	
CO-2412				3	51	26	14	6	2	MON	
CO-2413				3	51	26	14	6	2	MON	
CO-2414				3	51	26	14	6	2	MON	
C0-2446	CC10186-A			3	51	26	50	4	30	MON	Henderson Creek MW
CO-2428	CC05146-A			3	51	26	791	12	745	ASR	ASR Well 1
	CC05226-A			3	51	26	25	6	6	MON	ASR Pad Monitor Well

Table 2.1
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WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
CO-2427	CC09135-A			3	51	26	817	6	745	TEST	ASR Dual Zone MW
	CC09135-B			3	51	26	14	4	4	MON	ASR Pad Monitor Well
	CC09135-C			3	51	26	15	4	5	MON	ASR Pad Monitor Well
	CC10189-A			3	51	26	12			MON	
	CC04204-D			3	51	26				SOIL	
	CC10195-B			3	51	26	20	5	15	MON	
	CC11015-A			3	51	26				SOIL	
	CC11295-A			3	51	26	20	4	10	MON	
	CC11295-B			3	51	26	20	4	10	MON	
	CC11305-B			3	51	26	20	4	10	MON	
	CC12075-A			3	51	26	20	4	10	MON	
	CC03074-D			3	51	26				IRR	
	CC03074-E			3	51	26				IRR	
	CC021199-A			3	51	26				SOIL	
	CC01170-C			3	51	26	35	2	30	DOM	
	CC01170-E			3	51	26	30	2	30	DOM	
	CC02220-B			3	51	26	10			MON	
	CC05068-D			3	51	26	12				
	CC07227-M			3	51	26				SOIL	
	CC12294-H			3	51	26	11	4	3	MON	
	CC12294-I			3	51	26	25	4	20	MON	
	CC08130-C			3	51	26	20	10			
	CC10150-G			3	51	26	15	2	15	MON	
	CC10150-F			3	51	26	10			SOIL	
	CC11200-A			3	51	26		2		MON	
	CC12110-E			3	51	26	6			TEST	
	CC12110-D			3	51	26	20	2	30	MON	
	CC12110-C			3	51	26	30	2	30	MON	
	CC03111-F			3	51	26	36	2	36	MON	
	CC03261-E			3	51	26		2	40		
	CC03261-F			3	51	26	55	2	55		
	CC05071-C			3	51	26	37	2	35	MON	
	CC07021-A			3	51	26				MON	
	CC07021-B			3	51	26				SOIL	
	CC10091-A			3	51	26	13	2	13	MON	
	CC11011-A			3	51	26	25			SOIL	
	CC02202-C			3	51	26	12	6		MON	
	CC10067-H			3	51	26	12	2		MON	

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WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC10067-I			3	51	26	20	10		MON	
	CC04032-E			3	51	26	10			IRR	
	CC07202-A			3	51	26	14	6			
	CC07202-B			3	51	26	14	6			
	CC07202-C			3	51	26	14	6			
	CC10237-F			3	51	26				SOIL	
	CC04153-C			3	51	26	10			SOIL	
	CC10058-B			3	51	26				SOIL	
	CC08183-H			3	51	26	50			SOIL	
	CC06286-C			3	51	26	30			SOIL	
	CC07026-A			3	51	26	12	4	2	MON	
	CC09186-O			3	51	26				SOIL	
	CC11196-E			3	51	26		2	200	MON	
	CC12303-F			3	51	26	11	8	6	ELEV	
	CC03187-A			3	51	26	15	4	3	MON	
	CC04117-B			3	51	26	12	4	2	MON	
	CC021199A			3	51	26				TEST	
	CC031599A			3	51	26				TEST	
	CC033699D			3	51	26				MON	
	CC032699E			3	51	26					
	CC033099DT HRU N			3	51	26	10	4	10	MON	
	CC042199G			3	51	26	90	4	80	DOM	
	CC061899J			3	51	26				MON	
	CC090899E			3	51	26				TEST	
	CC110499B			3	51	26	15	4	5	MON	
	CC042400A			3	51	26				TEST	
	CC063000A			3	51	26				TEST	
	CC101601A			3	51	26				SOIL	
	CC121201A			3	51	26	20			TEST	
	CC070502Q			3	51	26	8	2	3	MON	
	CC122100E			3	51	26				MON	
	CC122000M			3	51	26					
	CC031301P			3	51	26				IRR	
	CC042701J			3	51	26				TEST	
	CC103001A			3	51	26	20			TEST	
	CC070302A			3	51	26				SOIL	
	CC071002A			3	51	26	30	4		SOIL	

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WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC052301C			3	51	26	38	18		ELEV	
	CC082802F			3	51	26	80			SOIL	
CO-153				4	51	26	66	2	61	OBS	
CO-155				4	51	26	62	2	57	OBS	
CO-157				4	51	26	65	2	60	OBS	
CO-175				4	51	26		2		DOM	
CO-176				4	51	26	30	2		IRR	
CO-544				4	51	26	45	8	30	IRR	
CO-596				4	51	26	11	2	6	MON	
CO-865				4	51	26	60	8	30	IRR	
CO-1714				4	51	26	27	2		DOM	
CO-1716				4	51	26				DOM	
CO-1717				4	51	26	60	2		DOM/IRR	
	CC02184-B			4	51	26	75	4	60	DOM	
	CC02184-C			4	51	26	75			DOM	
	CC09024-D			4	51	26				PWS	
	CC02208-B			4	51	26	50	4	40	DOM	
	CC08194-F			4	51	26	75	4	60	IRR	
	CC11164-B			4	51	26				ELEV	
	CC03118-I			4	51	26	70	4	60	IRR	
	CC09227-A			4	51	26				SOIL	
	CC11151-E			4	51	26	32		32	DOM	
	CC11151-F			4	51	26	45			DOM	
	CC02242-E			4	51	26					
	CC08252-A			4	51	26	40	2	30		
	CC08252-B			4	51	26	40	2	30		
	CC07189-C			4	51	26	50		50	TEST	
	CC07013-C			4	51	26	15			SOIL	
	CC06106-E			4	51	26	50	4	40	DOM	
	CC10176-L			4	51	26	26	10	21	ELEV	
	CC11066-C			4	51	26	50	4	40	DOM	
	CC12266-I			4	51	26				SOIL	
	CC04176-B			4	51	26	55	4	50	DOM	
	CC110499H			4	51	26				TEST	
	CC022100C			4	51	26				DOM	
	CC022100D			4	51	26	60			DOM	
	CC052402I			4	51	26	50	4	40	DOM	
	CC070502S			4	51	26	8	2	3	MON	

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WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC070502T			4	51	26	8	2	3	MON	
	CC070508U			4	51	26	8	2	3	MON	
	CC090402A			4	51	26	25	4		SOIL	
	CC082300E			4	51	26				DOM	
	CC10168-U			9	51	26				IRR	
	CC10168-V			9	51	26				IRR	
CO-158				10	51	26	20	2		IRR	
CO-199				10	51	26				IRR	
CO-2939				10	51	26	199				SFWMD C-2004D
	CC010599-E			10	51	26				IRR	
	CC01240-A			10	51	26	12	2	2	MON	
	CC05230-A			10	51	26					
	CC09204-E			10	51	26				DOM	
	CC09204-F			10	51	26				DOM	
	CC07020-F			10	51	26	12			SOIL	
	CC12024-B			10	51	26				SOIL	
	CC08060-C			10	51	26				SOIL	
	CC11160-D			10	51	26	35			DOM	
	CC03261-C			10	51	26	12	2	2	MON	
	CC03261-D			10	51	26	12	2	2	MON	
	CC09257-A			10	51	26				SOIL	
	CC08032-H			10	51	26	100	18	40	IRR	
	CC08032-I			10	51	26	100	18	40	IRR	
	CC08032-J			10	51	26		8			
	CC08032-K			10	51	26		8			
	CC09172-F			10	51	26	21	4	11	MON	
	CC11102-A			10	51	26	4			SOIL	
	CC11252-D			10	51	26	27	4	20	DOM	
	CC01043-FF			10	51	26	20	4	2	MON/SOIL	
	CC01043-GG			10	51	26	12	4	2	MON	
	CC01043-H			10	51	26	12	4	2	MON	
	CC01043-I			10	51	26	12	4	2	MON	
	CC01043-J			10	51	26	12	4	2	MON	
	CC01043-K			10	51	26	12	4	2	MON	
	CC02123-G			10	51	26	25	4	20	MON	
	CC04203-OO			10	51	26	12	4	2	MON	
	CC05113-A			10	51	26	52	2	51	TEST	
	CC05173-J			10	51	26	25		20	MON	

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WRS Well No.	Collier Co. Well Permit No.	SFWMD WUP No.	FGS Well No.	Section	Township	Range	Total Depth (feet)	Diameter (inches)	Cased Depth (feet)	Use	Notes
	CC10168-N			10	51	26				IRR	
	CC10168-O			10	51	26				IRR	
	CC10168-P			10	51	26				IRR	
	CC10168-Q			10	51	26				IRR	
	CC10168-R			10	51	26				IRR	
	CC10168-S			10	51	26				IRR	
	CC02035-A			10	51	26					
	CC07316-B			10	51	26	45	4	40	IRR	
	CC11196-F			10	51	26		2	200	MON	
	CC10053-C			10	51	26	30	4	20	IRR	
	CC12303-D			10	51	26	12	4	2	MON	
	CC12303-E			10	51	26	25	4	20	MON	
	CC04296-D			10	51	26	35	4	25	DOM	
	CC03280-B			10	51	26					
	CC05230-A			10	51	26				ABND	
	CC03261-D			10	51	26	12	2	2	MON	
	CC092800A			10	51	26				TEST	
	CC062901F			10	51	26	50			TEST	
	CC10179-C			11	51	26	80			MON	
	CC10179-F			11	51	26	50			MON	
	CC02174-L			11	51	26				IRR	
	CC02174-M			11	51	26				IRR	
	CC05203-A			11	51	26	15			SOIL	
	CC082099B			11	51	26				TEST	

Table 3.1
Average injection Pressures and Injection Rates For ASR1, ASR2, and ASR3

DATE	ASR 1 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR2 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR#3 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)
09/01/01	n/a	0.00	31	0.203	31	0.147
09/02/01	n/a	0.00	27	0.000	27	0.000
09/03/01	n/a	0.00	39	0.475	39	0.344
09/04/01	n/a	0.00	39	1.049	39	0.759
09/05/01	n/a	0.00	26	1.529	26	1.108
09/06/01	n/a	0.00	50	1.199	50	0.868
09/07/01	n/a	0.00	46	1.129	46	0.817
09/08/01	n/a	0.00	32	0.165	32	0.119
09/09/01	n/a	0.00	41	1.243	41	0.900
09/10/01	n/a	0.00	36	1.502	36	1.087
09/11/01	n/a	0.00	42	1.134	42	0.821
09/12/01	n/a	0.00	42	1.590	42	1.152
09/13/01	n/a	0.00	42	1.126	42	0.815
09/14/01	n/a	0.00	39	0.697	39	0.505
09/15/01	n/a	0.00	38	1.913	38	1.385
09/16/01	n/a	0.00	40	1.604	40	1.161
09/17/01	n/a	0.00	48	1.152	48	0.835
09/18/01	n/a	0.00	46	1.633	46	1.183
09/19/01	n/a	0.00	52	1.865	52	1.351
09/20/01	n/a	0.00	42	0.972	42	0.704
09/21/01	n/a	0.00	42	1.383	42	1.001
09/22/01	n/a	0.00	42	0.314	42	0.228
09/23/01	n/a	0.00	42	0.315	42	0.228
09/24/01	n/a	0.00	42	1.279	42	0.926
09/25/01	n/a	0.00	42	1.279	42	0.926
09/26/01	n/a	0.00	40	1.832	40	1.326
09/27/01	n/a	0.00	44	1.706	44	1.236
09/28/01	n/a	0.00	46	1.872	46	1.355
09/29/01	n/a	0.00	46	0.878	46	0.636
09/30/01	n/a	0.00	42	0.879	42	0.636
10/01/01	38	-	38	-	38	-
10/02/01	38	-	38	-	38	-
10/03/01	38	-	38	-	38	-
10/04/01	46	1.41	46	1.508	46	1.099
10/05/01	46	1.63	46	1.589	46	1.105
10/06/01	0	0.00	0	0.000	0	0.000
10/07/01	0	0.00	0	0.000	0	0.000
10/08/01	0	0.00	0	0.000	0	0.000
10/09/01	0	2.60	0	2.687	0	1.731
10/10/01	46	0.32	46	0.163	46	0.346
10/11/01	44	1.73	44	1.674	52	1.210
10/12/01	45	2.15	45	2.060	58	1.482
10/13/01	50	1.71	50	1.613	58	1.147
10/14/01	50	1.06	50	1.008	58	0.728
10/15/01	52	1.62	52	1.548	58	1.103
10/16/01	48	1.70	48	1.592	56	1.126
10/17/01	48	1.50	48	1.436	52	1.014

Table 3.1
Average injection Pressures and Injection Rates For ASR1, ASR2, and ASR3

DATE	ASR 1 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR2 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR#3 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)
10/18/01	48	1.50	48	1.436	52	1.014
10/19/01	48	2.22	48	2.184	52	1.570
10/20/01	48	1.52	48	1.492	52	1.095
10/21/01	48	1.19	48	1.134	52	0.835
10/22/01	48	1.53	48	1.473	52	1.074
10/23/01	50	1.85	50	1.741	59	1.287
10/24/01	50	1.72	50	1.592	59	1.162
10/25/01	50	1.59	50	1.460	58	1.057
10/26/01	50	2.11	50	1.947	56	1.409
10/27/01	46	1.79	46	1.627	57	1.176
10/28/01	44	1.31	44	1.207	57	0.873
10/29/01	44	0.00	44	0.000	57	0.000
10/30/01	48	1.49	48	1.424	60	1.038
10/31/01	50	1.50	50	1.453	60	1.031
11/01/01	49	1.66	48	1.561	58	1.088
11/02/01	49	1.88	48	1.733	58	1.234
11/03/01	49	1.80	48	1.636	58	1.143
11/04/01	49	1.13	48	1.010	58	0.694
11/05/01	49	1.58	49	1.400	58	1.001
11/06/01	49	1.57	50	1.373	58	1.937
11/07/01	50	1.54	50	1.343	58	0.922
11/08/01	50	1.54	50	1.343	58	0.922
11/09/01	52	2.17	52	1.884	58	1.308
11/10/01	52	1.32	52	1.147	58	0.815
11/11/01	54	1.41	54	1.229	60	0.832
11/12/01	56	1.67	56	1.321	62	1.008
11/13/01	57	2.10	57	1.907	60	1.301
11/14/01	54	1.04	54	0.936	64	0.643
11/15/01	52	1.59	52	0.967	60	0.671
11/16/01	54	2.26	54	1.951	61	1.338
11/17/01	46	1.57	46	1.329	56	0.902
11/18/01	48	1.12	48	0.942	48	0.632
11/19/01	37	0.88	37	0.693	41	0.419
11/20/01	28	1.13	28	0.887	36	0.561
11/21/01	45	1.61	45	1.464	58	1.070
11/22/01	45	1.44	45	1.395	58	1.048
11/23/01	45	2.68	45	2.685	58	2.019
11/24/01	45	1.16	45	1.198	58	0.897
11/25/01	45	1.18	45	1.226	58	0.920
11/26/01	45	1.60	45	1.677	53	1.256
11/27/01	43	1.60	43	1.671	54	1.251
11/28/01	43	1.61	43	1.683	54	1.262
11/29/01	43	1.48	43	1.550	54	1.168
11/30/01	46	1.43	46	1.535	54	1.153
12/01/01	44	1.88	44	2.043	51	1.536
12/02/01	44	1.33	44	1.438	52	1.070
12/03/01	44	1.55	44	1.726	51	1.293
12/04/01	42	1.48	42	1.657	50	1.233

Table 3.1
Average injection Pressures and Injection Rates For ASR1, ASR2, and ASR3

DATE	ASR 1 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR2 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)	ASR#3 Average Injection Pressure (psi)	Average Daily Flow Rate (MGD)
12/05/01	42	1.49	42	1.680	50	1.258
12/06/01	40	1.48	40	1.680	50	1.258
12/07/01	42	1.81	42	2.438	48	1.834
12/08/01	42	0.66	44	0.440	52	0.333
12/09/01	40	1.18	41	1.325	48	1.001
12/10/01	41	1.55	41	1.796	50	1.361
12/11/01	40	0.52	42	0.551	48	0.414

TABLE 3.2
ASR SYSTEM MONITORING PROGRAM

ASR WELL PARAMETERS

Parameters	Recording Frequency	Reporting Frequency
Injection Pressure (p.s.i.)		
Monthly Maximum Injection Pressure	Monthly during recharge	Monthly during recharge
Monthly Minimum Injection Pressure	Monthly during recharge	Monthly during recharge
Monthly Average Injection Pressure	Monthly during recharge	Monthly during recharge
Daily Maximum Injection Pressure	Daily during recharge	Monthly during recharge
Daily Minimum Injection Pressure	Daily during recharge	Monthly during recharge
Daily Average Injection Pressure	Daily during recharge	Monthly during recharge
Flow Rate (g.p.m.)		
Monthly Maximum Flow Rate	Monthly during recharge/recovery	Monthly during recharge/recovery
Monthly Minimum Flow Rate	Monthly during recharge/recovery	Monthly during recharge/recovery
Monthly Average Flow Rate	Monthly during recharge/recovery	Monthly during recharge/recovery
Daily Maximum Flow Rate	Daily during recharge/recovery	Monthly during recharge/recovery
Daily Average Flow Rate	Daily during recharge/recovery	Monthly during recharge/recovery
Total Volume Injected (gallons)	Daily/Monthly during recharge/ recovery	Monthly during recharge
Total Volume Recovered (gallons)	Daily/Monthly during recharge/ recovery	Monthly during recharge

Parameters	Recording Frequency	Reporting Frequency
Injection Fluid Parameters		
Specific Conductance (umhos/cm)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Alkalinity (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
pH (std units)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Dissolved Solids (TDS) (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Chloride (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Sodium (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Sulfate (mg/l	Weekly during recharge/recovery	Monthly during recharge/recovery
Field Temperature (°C)	Weekly during recharge/recovery	Monthly during recharge/recovery
Color (color units)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Coliform (colonies/100 ml)	Weekly during recharge/recovery	Monthly during recharge/recovery
Fecal Coliform (colonies/100 ml)	Weekly during recharge/recovery	Monthly during recharge/recovery
Arsenic (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Dissolved Oxygen (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Trihalomethanes (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Iron (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Gross Alpha (pCi/l)	Monthly during recharge/recovery	
Primary and Secondary Water Standards	Annually during recharge	Annually during recharge
Cryptosporidium	Annually during recharge	Annually during recharge
Giardia Lamblia	Annually during recharge	Annually during recharge

TABLE 3.2
ASR SYSTEM MONITORING PROGRAM
- CONTINUED -

MONITORING WELL PARAMETERS

Parameters	Measuring Frequency	Reporting Frequency
Maximum Water Level/Pressure	Daily/.Monthly during recharge/recovery	Monthly during recharge/recovery
Minimum Water Level/Pressure	Daily/Monthly during recharge/recovery	Monthly during recharge/recovery
Average Water Level/Pressure	Daily/Monthly during recharge/recovery	Monthly during recharge/recovery
Water Quality		
Specific Conductance (umhos/cm)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Alkalinity (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
pH (std units)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Dissolved Solids (TDS) (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Chloride (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Sodium (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Sulfate (mg/l	Weekly during recharge/recovery	Monthly during recharge/recovery
Field Temperature (°C)	Weekly during recharge/recovery	Monthly during recharge/recovery
Color (color units)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Coliform (colonies/100 ml)	Weekly during recharge/recovery	Monthly during recharge/recovery
Fecal Coliform (colonies/100 ml)	Weekly during recharge/recovery	Monthly during recharge/recovery
Arsenic (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Dissolved Oxygen (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Trihalomethanes (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Total Iron (mg/l)	Weekly during recharge/recovery	Monthly during recharge/recovery
Gross Alpha (pCi/l)	Monthly during recharge/recovery	Monthly during recharge/recovery
Cryptosporidium	Annually	Annually
Giardia Lamblia	Annually	Annually

Table 3.3
Analytical Results From Analysis Of Injected Water

DATE	CHLORIDES (mg/l)	SULFATE (mg/l)	TDS (mg/l)	DISSOLVED OXYGEN (mg/l)	IRON (mg/l)	THM'S (mg/l)	pH (s.u.)	Arsenic (mg/l)	TOC (mg/L)	SPECIFIC CONDUCT. umhos/cm
08/29/01	130	56	310	4.4	0.025u	0.0005u	7.8	0.0032u		810
09/05/01	110		560	4.2	0.045	0.11	7.5		11	860
09/12/01	130		610	8.9	0.036	0.074	7.5		10	880
09/20/01	120	54	620	4.8	0.042	0.0005u	7.5	0.0032u	10	880
09/26/01	110	57	540	6.1	0.041	0.001	7.4	0.0032u	10	870
10/03/01	91	53	480	4.8	0.05	0.06	7.8	<0.0032U	9.9	810
10/10/01	100	52	510	5.1	0.069	0.13	7.8	<0.0032U	9.3	820
10/17/01	91	49	530	3.5	0.037	0.0007	7.3	<0.0032U	9.8	780
10/23/01	94	52	480	6.5	0.046	0.1	7.8	<0.0032U	9.3	790
11/01/01	110	59	580	0.9	0.21	0.093	7.1	<0.0032U	10	850
11/06/01	95	60	560	3.5	0.27	0.076	7.8	<0.0032U	12	900
11/15/01	120	63	630	3.5	0.09	0.1	7.9	<0.0032U	11	950
11/29/01	94	75	610	3.5	0.045	0.0005U	6.5	<0.0032U	11	960
12/05/01	92	77	580	5.9	0.06	0.061	6.7	0.0032u	11	970
12/11/01	93	80	60	3.8	0.057	0.0005u	6.4	0.0032u	12	950

DATE	COLOR c.u.	FIELD. TEMP. (°C)	TOTAL COLIFORMS (COL/100ml)	FECAL COLIFORMS (COL/100ml)	GROSS ALPHA (Pci/l) 1,2
08/29/01	27	30.2	1.0u	1.0u	8.7
09/05/01	23	32.3	10u	10u	8.9
09/12/01	22	27.5	1.0u	1.0u	
09/20/01	28	28.8	100u	100u	
09/26/01	30	29.4	TNTC	TNTC	
10/03/01	26	27.5	1.0u	1u	
10/10/01	25	28	1.0u	1u	
10/17/01	33	29.1	700	100u	
10/23/01	30	28	100	100	3.8
11/01/01	32	27.1	1.0U	1.0U	
11/06/01	34	22.8	1.0U	1.0U	
11/15/01	27	23.5	1.0U	1.0U	2.9
11/29/01	26	23.1	1.0U	1.0U	
12/05/01	28	23.1	1.0U	1.0U	
12/11/01	38	23.1	1.0U	1.0U	12.7

Table 3.4
Analytical Results From Analyses of Water Recovered From SZ#1 During Recharge

DATE	CHLORIDES (mg/l)	SULFATE (mg/l)	TDS (mg/l)	DISSOLVED OXYGEN (mg/l)	IRON (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	TOC (mg/l)	SPECIFIC CONDUCT. umhos/cm
8/30/01	3100		6200	1.9	0.28	0.0005u	7.7		1.9	10000
9/5/01	2900		5800	1.1	0.43	0.0005u	7.2		2.2	10000
9/12/01	2800		6300	1.7	0.35	0.0005u	7.1		2.2	10000
10/3/01	3000	700		1.2	0.38	0.0005u	7.1	0.0077	2.1	10000
10/10/01	2900	690	6100	4.1	0.47	0.0005u	7.1	0.0032u	1.6	10000
10/17/01	3100	710	6700	1.4	0.42	0.0005u	7.4	0.0032u	1.9	10000
10/23/01	2800	640	5600	2.3	0.48	0.0005u	7.1	0.0032u	2.9	10000
11/1/01	3000	690	6400	1.1	0.41	0.0005u	7.3	0.0032u	2.1	10000
11/6/01	2800	630	6400	0.89	0.44	0.0005u	7.4	0.0032u	2.2	10000
11/15/01	2900	640	6300	1.1	0.39	0.0005u	7.4	0.0032u	2.6	10000
11/29/01	2900	690	10000	1.3	0.42	0.0005u	7.2	0.0032u	1.5	10000
12/5/01	3000	680	6300	1.2	0.42	0.0005u	7.3	0.0032u	1.4	10000
12/11/01	2800	640	6200	1.2	0.39	0.0005u	7.3	0.004		10000

DATE	COLOR c.u.	FIELD TEMP. (°C)	TOTAL COLIFORMS (COL/100ml)	FECAL COLIFORMS (COL/100ml)	GROSS ALPHA (Pci/l) 1,2
8/30/01	5u	27.8	1.0u	1.0u	67
9/5/01	5u	28.3	1.0u	1.0u	50
9/12/01	5u	28.4	1.0u	1.0u	
10/3/01	7	28.9	1.0u	1.0u	
10/10/01	5u	28.1	1.0u	1.0u	
10/17/01	5u	29	1.0u	1.0u	
10/23/01	6	28.1	1.0u	1.0u	101
11/1/01	32	27.8	1.0u	1.0u	
11/6/01	5.0U	24.6	1.0u	1.0u	
11/15/01	5.0U	24.3	1.0u	1.0u	37
11/29/01	6	26.9	1.0u	1.0u	
12/5/01	5u	25.6	1.0u	1.0u	
12/11/01	5u	24.8	1.0u	1.0u	41

Table 3.5
Analytical Results From Analyses of Water Recovered From DZ#1 During Recovery

DATE	CHLORIDES (mg/l)	SULFATE (mg/l)	TDS (mg/l)	DISSOLVED OXYGEN (mg/l)	IRON (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	TOC (mg/L)	SPECIFIC CONDUCT. umhos/cm
8/29/01	3100		6300	2	0.24	0.0005u	7.6	0.0032u	2.2	10000
9/5/01	400		1200	1.2	0.74	0.0005u	7.6		4.8	2100
9/12/01	350		1100	1.8	0.88	0.0005u	8.2		4.9	1900
10/3/01	350	150		1.4	0.94	0.0005u	7.6	0.0042	4.4	1800
10/10/01	350	150	1000	1.08	0.92	0.0005u	7.6	0.0032U	4.4	1800
10/17/01	300	130	980	1.4	1.1	0.0005u	7.5	0.0032U	4.3	1600
10/23/01	260	110	840	2	1.1	0.0005u	7.6	0.0032U	3.9	1500
11/1/01	250	110	910	1.3	1.1	0.0005u	7.6	0.0032U	4.3	1400
11/6/01	240	100	840	0.91	0.94	0.0005u	7.5	0.0032U	4.5	1500
11/15/01	210	96	770	0.9	0.99	0.0005u	7.5	0.0032U	5.1	1300
11/29/01	170	92	720	0.89	1.1	0.0005u	7.1	0.0032U	3.8	1200
12/5/01	160	91	700	1.2	1.3	0.0008	7.1	0.0032u	4.2	1200
12/11/01	160	100	720	0.8	0.77	0.0005u	7.3	0.0032u	5.1	1200

DATE	COLOR c.u.	FIELD TEMP. (°C)	TOTAL COLIFORMS (COL/100ml)	FECAL COLIFORMS (COL/100ml)	GROSS ALPHA (Pci/l) 1,2
8/29/01	5.0u	29.1	1.0U	1.0U	68
9/5/01	5.0u	30.5	1.0U	1.0U	8.1
9/12/01	5.0u	28.1	1.0U	1.0U	
10/3/01	7	28.9	1.0U	1.0U	
10/10/01	5u	28.1	1.0U	1.0U	7.9
10/17/01	5u	29	1.0U	1.0U	
10/23/01	6	28.1	1.0U	1.0U	59
11/1/01	7	28	1.0U	1.0U	
11/6/01	6	26.1	1.0U	1.0U	
11/15/01	5.0u	25.7	1.0U	1.0U	5.4
11/29/01	6	26	1.0U	1.0U	
12/5/01	5u	24	1.0U	1.0U	
12/11/01	6	25.2	1.0U	1.0U	8.8

Table 3.6
Analyses of Water Recovered From SZ#2 During Recharge
(MHZ2MW)

DATE	CHLORIDES (mg/l)	SULFATE (mg/l)	TDS (mg/l)	DISSOLVED OXYGEN (mg/l)	IRON (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	TOC (mg/L)	SPECIFIC CONDUCT. umhos/cm
08/30/01	3100		6300	2	0.24	0.0005u	7.6		1.9	10000
09/05/01	2800		5900	1.8	0.24	0.0005u	7.2		2.6	10000
09/12/01	2800		6300	1.7	0.12	0.0005u	7.3		2.3	10000
09/20/01				1.8	0.037	0.0005u	7.3	0.0032u	1.6	
09/26/01	3000	670	5900	2.7	0.038	0.0005u	7.6	0.0032u	1.4	10000
10/3/01	3000	680		0.88	0.025u	0.0005u	7.2	0.0032U	2.1	10000
10/10/01	2900	660	6000	1.4	0.032	0.0005u	7.3	0.0032U	1.4	10000
10/17/01	2800	630	6600	0.8	0.025	0.0005u	7.3	0.0032U	1.4	10000
10/23/01	2700	610	5400	2.4	0.029	0.0005u	7.3	0.0032U	1.2	10000
11/01/01	2700	600	6300	4.4	0.025u	0.0005u	7.3	0.0032U	1.8	10000
11/06/01	2700	610	6300	0.72	0.025u	0.0005u	7.2	0.0032U	2.2	10000
11/15/01	3900	630	6100	0.8	0.025u	0.0005u	7.6	0.0032U	2.2	10000
11/29/01	2800	650	5800	1.2	0.025u	0.0005u	7.3	0.0032U	1.4	10000
12/5/01	2900	650	6000	1.1	0.026	0.0005u	7.3	0.0032u	1.3	10000
12/13/01	3000	700	5900		0.032	0.0005u	7.3	0.0032u		10000

DATE	COLOR c.u.	FIELD TEMP. (°C)	TOTAL COLIFORMS (COL/100ml)	FECAL COLIFORMS (COL/100ml)	GROSS ALPHA (Pci/l) 1,2
08/30/01	5.0U	27.8	100u	100u	68
09/05/01	5.0U	30.9	1u	1u	
09/12/01	5.0U	27.8	100u	100u	
09/20/01		28.1	100u	100u	
09/26/01	5.0U	26.3	1.0U	1.0U	
10/3/01	5.0U	28	1	1.0U	
10/10/01	5.0U	28	1.0U	1.0U	
10/17/01	5.0U	26.8	1.0U	1.0U	
10/23/01	5u	28.6	100	100	43
11/01/01	5.0U	25.5	1.0U	1.0U	
11/06/01	5.0U	24.5	1.0U	1.0U	
11/15/01	5.0U	26.5	1.0U	1.0U	28
11/29/01	6	25.1	1.0U	1.0U	
12/5/01	5u	25.9	1.0U	1.0U	
12/13/01	5u		1.0U	1.0U	28

Table 3.7
Analytical Results From Analyses of Water Recovered From DZ#2 During Recharge
(ASRZMW2)

DATE	CHLORIDES (mg/l)	SULFATE (mg/l)	TDS (mg/l)	DISSOLVED OXYGEN (mg/l)	IRON (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	TOC (mg/L)	SPECIFIC CONDUCT. umhos/cm
08/29/01	3000	680	6100	2.4	0.29	0.0005u	8	<0.0032u		
09/05/01	2800		5800	1.3	0.057	0.0005u	8.3		2.6	10000
09/12/01	2700		6000	1.6	0.056	0.0005u	7.1		2	10000
09/20/01	2700		6200	1.2	0.025u	0.0005u	7.4	<0.0032u	1.4	9900
09/26/01	2800	610	5700	1.8	0.025u	0.0005u	7.4	<0.0032u	1.4	9800
10/3/01	2900	620		0.9	0.025u	0.0005u	7.3	0.01	2	9700
10/10/01	2700	610	5700	0.8	0.025u	0.0005u	7.3	<0.0032u	1.3	9700
10/17/01	2600	570	6400	0.7	0.025u	0.0005u	7.2	<0.0032u	1.7	9700
10/23/01	2600	570	5000	2.2	0.025u	0.0005u	7.3	<0.0032u	1.2	9600
11/01/01	2800	620	6100	1	0.025u	0.0005u	7.2	<0.0032u	1.8	9500
11/06/01	2400	540	5800	0.8	0.025u	0.0005u	7.3	<0.0032u	2.2	9600
11/15/01	2600	570	6000	0.8	0.025u	0.0005u	7.5	<0.0032u	2.1	9400
11/29/01	2700	600	5600	0.9	0.025u	0.0005u	7.1	<0.0032u	1.4	9500
12/5/01	2700	600	5300	1.1	0.25u	0.0005u	7.2	<0.0032u	1.3	9600
12/11/01	2800	640	5600	0.9	0.055	0.0005u	7.2	<0.0032u		9500

DATE	COLOR c.u.	FIELD TEMP. (°C)	TOTAL COLIFORMS (COL/100ml)	FECAL COLIFORMS (COL/100ml)	GROSS ALPHA (Pci/l)
08/29/01	5		100u	100u	66
09/05/01	5.0U	29	1u	1u	63
09/12/01	5.0U	28.4	100u	100u	
09/20/01	5.0U	28.6	100u	100u	
09/26/01	5	27.2	1u	1u	
10/3/01	6	28	1u	1u	
10/10/01	5.0U	28.5	1u	1u	
10/17/01	5.0U	28	1u	1u	
10/23/01	5.0U	29.5	1u	1u	51
11/01/01	5.0U	28.8	1u	1u	
11/06/01	5.0U	26.6	1u	1u	
11/15/01	5.0U	26.9	1u	1u	28
11/29/01	5	24.9	1u	1u	
12/5/01	5.0U	27	1u	1u	
12/11/01	5.0U	26.1	1u	1u	10.5

Table 3.8

Average Daily Recovery Rates (MGD)

DATE	ASR-1 Average Daily Recovery Rate (MGD)	ASR-2 Average Daily Recovery Rate (MGD)	ASR-3 Average Daily Recovery Rate (MGD)	Total Average Daily Recovery Rate (MGD)
4/1/02	0.000	0.000	0.000	0.000
4/2/02	0.806	0.744	0.701	2.251
4/3/02	0.506	0.497	0.521	1.524
4/4/02	0.371	0.642	0.570	1.583
4/5/02	1.260	1.096	1.010	3.366
4/6/02	0.640	0.644	0.636	1.920
4/7/02	1.022	1.031	1.019	3.072
4/8/02	0.859	0.853	0.830	2.542
4/9/02	0.991	0.281	0.838	2.110
4/10/02	0.576	0.374	0.328	1.278
4/11/02	0.461	0.374	0.329	1.164
4/12/02	0.682	0.357	0.853	1.892
4/13/02	0.990	1.135	1.166	3.291
4/14/02	0.999	0.509	0.504	2.012
4/15/02	0.864	0.918	0.942	2.724
4/16/02	0.864	0.887	0.874	2.625
4/17/02	0.649	0.640	0.629	1.918
4/18/02	0.772	0.764	0.750	2.286
4/19/02	0.879	0.866	0.850	2.595
4/20/02	0.878	0.866	0.849	2.593
4/21/02	0.670	0.656	0.647	1.973
4/22/02	0.833	0.843	0.833	2.509
4/23/02	0.674	0.753	0.743	2.170
4/24/02	0.618	0.529	0.502	1.649
4/25/02	0.990	0.990	1.005	2.985
4/26/02	0.863	0.849	0.834	2.546
4/27/02	0.802	0.802	0.791	2.395
4/28/02	0.567	0.215	0.559	1.341
4/29/02	0.847	0.259	0.849	1.955
4/30/02	0.653	0.392	0.650	1.695
5/1/02	0.571	0.520	0.569	1.660
5/2/02	0.645	0.645	0.635	1.925
5/3/02	0.461	0.460	0.450	1.371
5/4/02	0.542	0.532	0.520	1.594
5/5/02	0.716	0.703	0.688	2.107
5/6/02	0.410	0.440	0.426	1.276
5/7/02	0.559	0.520	0.302	1.381
5/8/02	0.693	0.679	0.343	1.715
5/9/02	0.482	0.487	0.253	1.222
5/10/02	0.470	0.446	0.999	1.915
5/11/02	0.620	0.608	1.401	2.629
5/12/02	0.620	0.608	0.555	1.783
5/13/02	0.376	0.312	0.149	0.837
5/14/02	0.574	0.470	0.402	1.446
5/15/02	0.314	0.346	0.218	0.878

Table 3.8

Average Daily Recovery Rates (MGD)

DATE	ASR-1 Average Daily Recovery Rate (MGD)	ASR-2 Average Daily Recovery Rate (MGD)	ASR-3 Average Daily Recovery Rate (MGD)	Total Average Daily Recovery Rate (MGD)
5/16/02	0.373	0.217	0.258	0.848
5/17/02	0.501	0.481	0.262	1.244
5/18/02	0.588	0.574	0.298	1.460
5/19/02	0.586	0.556	0.320	1.462
5/20/02	0.989	0.800	0.309	2.098
5/21/02	0.104	0.248	0.304	0.656
5/22/02	0.409	0.383	0.165	0.957
5/23/02	0.777	0.649	0.249	1.675
5/24/02	0.842	0.696	0.273	1.811
5/25/02	0.952	0.797	0.315	2.064
5/26/02	0.706	0.589	0.228	1.523
5/27/02	0.607	0.501	0.207	1.315
5/28/02	0.870	0.775	0.285	1.930
5/29/02	0.780	0.594	0.249	1.623
5/30/02	0.765	0.639	0.258	1.662
5/31/02	0.602	0.492	0.259	1.353
6/1/02	0.443	0.358	0.301	1.102
6/2/02	0.411	0.332	0.279	1.022
6/3/02	0.438	0.356	0.298	1.092
6/4/02	0.439	0.373	0.309	1.121
6/5/02	0.439	0.339	0.291	1.069
6/6/02	0.703	0.584	0.233	1.520
6/7/02	0.513	0.419	0.153	1.085
6/8/02	0.525	0.883	0.359	1.767
6/9/02	1.144	0.498	0.198	1.840
6/10/02	0.990	0.613	0.240	1.843
6/11/02	1.000	0.543	0.220	1.763
6/12/02	1.171	0.522	0.225	1.918
6/13/02	0.777	0.640	0.273	1.690
6/14/02	0.392	0.323	0.152	0.867
6/15/02	0.462	0.625	0.347	1.434
6/16/02	0.373	0.417	0.247	1.037
6/17/02	0.518	0.689	0.341	1.548
6/18/02	0.393	0.573	0.255	1.221
6/19/02	0.473	0.578	0.000	1.051
6/20/02	0.473	0.579	0.000	1.052
6/21/02	0.593	0.710	0.000	1.303
6/22/02	0.366	0.428	0.000	0.794
6/23/02	0.466	0.564	0.000	1.030
6/24/02	0.446	0.514	0.000	0.960

Table 3.9
Analyses of Water Recovered from ASR Wells During Cycle 1E Recovery

ASR-1

DATE	Chlorides (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (mg/l)	pH (s.u)	Arsenic (mg/l	Specific. Conduct. (umhos/cm	Color (c.u.)	Temp (oC)	Total Coliform (col./100ml)	Fecal Coliform (col./100ml)	Gross Alpha (Pci/l)
4/2/02	93	58	710	1.6	2.7		6.4	BDL	1200	45	25.8	0	0	10
4/11/02	120	91	760	0.6	0.67	BDL	6.4	BDL	1200	18	25	0	0	
4/17/02	110	84	750	1.3	0.5	BDL	6.6	BDL	1200	17	26.1	0	0	
4/25/02	140	96	820	0.7	0.45	BDL	6.8	BDL	1200	18	26.9	0	0	
5/7/02	140	82	750	0.46	0.36	BDL	7.2	0.0064	1200	16	30.6	0	0	
5/14/02	160	96	720	0.65	0.36	BDL	6.9	BDL	1200	18	28	0	0	
5/22/02	170	97	710	1.56	0.34	BDL	6.76	BDL	1200	5	27.6	*1100*	0	
5/29/02	180	95	730	0.8	0.29	BDL	6.7	0.0038	1200	15	30	0	0	

ASR-2

DATE	Chlorides (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (mg/l)	pH (s.u)	Arsenic (mg/l	Specific. Conduct. (umhos/cm	Color (c.u.)	Temp (oC)	Total Coliform (col./100ml)	Fecal Coliform (col./100ml)	Gross Alpha (Pci/l)
4/2/02	92	75	700	0.5	2.8		6.9	0.03	1200	27	25.5	0	0	6.4
4/11/02	110	99	770	0.5	0.61	BDL	6.3	0.023	1200	15	25.4	0	0	
4/17/02	110	95	800	1.6	0.41	BDL	6.8	0.018	1200	14	25.5	0	0	
4/25/02	130	100	1100	0.6	0.37	BDL	6.8	0.017	1200	16	26.7	0	0	
5/7/02	150	91	760	0.87	0.27	BDL	6.9	0.016	1200	13	29.8	0	0	
5/14/02	180	110	780	0.51	0.27	BDL	6.8	0.015	1300	13	26.9	0	0	
5/22/02	200	110	770	1.54	0.24	BDL	6.7	0.014	1300	5	28.2	0	0	
5/29/02	230	110	850	0.6	0.25	BDL	6.7	0.019	1400	13	29.9	0	0	

ASR-3

DATE	Chlorides (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (mg/l)	pH (s.u)	Arsenic (mg/l	Specific. Conduct. (umhos/cm	Color (c.u.)	Temp (oC)	Total Coliform (col./100ml)	Fecal Coliform (col./100ml)	Gross Alpha (Pci/l)
4/2/02	91	77	710	0.7	4		6.8	0.049	1200	50	26.6	0	0	11.4
4/11/02	130	100	780	0.6	0.52	BDL	6.4	0.032	1200	18	25.2	0	0	
4/17/02	140	100	790	1.2	0.29	BDL	6.9	0.026	1300	16	25.8	0	0	
4/25/02	190	100	1000	0.8	0.33	BDL	7.2	0.024	1300	16	26.4	0	0	
5/7/02	220	100	840	0.58	0.26	BDL	6.9	0.00	1500	14	29.7	0	0	
5/14/02	260	120	930	0.47	0.3	BDL	7	0.018	1500	11	29.5	0	0	
5/22/02	280	130	870	1.6	0.31	BDL	6.8	0.02	1600	8	28.1	0	0	
5/29/02	300	130	970	0.7	0.33	BDL	6.6	0.02	1600	15	28.6	0	0	

BDL = Below Detection Limits

Table 3.10
Analytical Results of Analyses Performed on Water Recovered From Monitoring Wells During Recovery

SHALLOW ZONE-#1 SZ#1

Date	Chloride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	Specific Conduct. (umhos/cm)	Color (c.u.)	Temp (°C)	Total Coliform (Col./100ml)	Fecal Coliform (Col./100ml)	Gross Alpha (Pci/l)
4/4/02	2800	650	6300	1.8	0.32		7.2	0.0043	10000	5	25.1	0	0	39
4/11/02	3400	790	6200	0.3	0.31	BDL	7.2	BDL	10000	5	24.5	0	0	
4/17/02	3000	700	6200	0.8	0.39	BDL	6.9	BDL	10000	8	28.7	0	0	
4/25/02	3200	860	6100	0.6	0.36	BDL	7.3	BDL	10000	5	27.7	0	0	
5/7/02	3800	940	6000	0.53	0.33	BDL	7.2	BDL	10000	5	30.4	0	0	
5/14/02	3100	760	6200	0.36	0.32	BDL	7.3	BDL	10000	5	27.6	0	0	
5/22/02	3200	790	5300	1.85	0.63	BDL	7.28	BDL	10000	5	29.5	0	0	
5/29/02	3100	760	6300	0.5	0.32	BDL	7	BDL	10000	5	29.9	0	0	

DEEP ZONE-#1 DZ#1

Date	Chloride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	Specific Conduct. (umhos/cm)	Color (c.u.)	Temp (°C)	Total Coliform (Col./100ml)	Fecal Coliform (Col./100ml)	Gross Alpha (Pci/l)
4/3/02	200	110	760	0.5	1.3		7.4	BDL	1300	5	28	0	0	31
4/11/02	280	140	890	0.4	1.2	BDL	7.1	BDL	1500	5	24.8	0	0	
4/17/02	280	140	1000	0.95	1.2	BDL	6.8	BDL	1600	9	29	0	0	
4/25/02	280	330	950	0.6	1	BDL	7.2	BDL	1600	5	28.5	0	0	
5/7/02	330	150	1100	0.75	1.1	BDL	7	BDL	1700	5	27.4	0	0	
5/14/02	370	170	1100	0.39	0.96	BDL	7.4	BDL	1800	10	29.2	6	3	
5/22/02	370	170	1800	1.82	0.95	BDL	7.3	BDL	1800	5	27.8	0	0	
5/29/02	610	240	1600	0.9	1.4	BDL	7	BDL	2600	5	27.8	0	0	

SHALLOW ZONE-#2 SZ#2

Date	Chloride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	Specific Conduct. (umhos/cm)	Color (c.u.)	Temp (°C)	Total Coliform (Col./100ml)	Fecal Coliform (Col./100ml)	Gross Alpha (Pci/l)
4/2/02	3000	730	5800	0.6	0		7.35	BDL	10000	5	25.4	0	0	35
4/11/02	3300	740	6100	0.2	0.53	BDL	7.3	BDL	10000	5	24.5	0	0	
4/17/02	3000	680	6100	1.4	0.025	BDL	7.1	BDL	10000	9	24.8	0	0	
4/25/02	3200	840	6100	0.4	0	BDL	7.3	BDL	10000	6	26.6	0	0	
5/7/02	3500	850	5800	0.38	0.034	BDL	7.2	BDL	10000	5	27.4	0	0	
5/14/02	3300	780	6100	0.31	0	BDL	6.9	BDL	10000	5	29	1	0	
5/22/02	3100	750	5000	4.34	0	BDL	7.22	BDL	10000	5	30.1	0	0	
5/29/02	3200	790	6200	2.9	0.028	BDL	7.2	BDL	10000	5	30.2	0	0	

DEEP ZONE-#2 DZ#2

Date	Chloride (mg/l)	Sulfate (mg/l)	TDS (mg/l)	Dissolved Oxygen (mg/l)	Iron (mg/l)	THM'S (ug/l)	pH (s.u.)	Arsenic (mg/l)	Specific Conduct. (umhos/cm)	Color (c.u.)	Temp (°C)	Total Coliform (Col./100ml)	Fecal Coliform (Col./100ml)	Gross Alpha (Pci/l)
4/3/02	2600	580	5400	0.3	0.04		7.3	BDL	9400	5	28.1	0	0	31
4/11/02	3100	690	5800	0.3	0.025	BDL	7.2	BDL	9600	5	24.9	0	0	
4/17/02	2800	620	5700	0.9	0.075	BDL	7	BDL	9600	8	29.8	0	0	
4/25/02	2900	770	5400	0.5	0	BDL	6.5	BDL	9600	6	26.4	0	0	
5/7/02	3600	830	5600	0.32	0	BDL	7.2	BDL	9600	5	30.9	0	0	
5/14/02	3100	700	5800	0.44	0	BDL	7.2	BDL	9700	5	29.5	0	0	
5/22/02	3000	700	5400	1.71	0	BDL	7.17	BDL	9700	5	27.4	0	0	
5/29/02	3800	660	5900	0.7	0	BDL	7	0.005	9200	5	28.8	0	0	

BDL= Below Detection Limit

APPENDIX 3.1

PRIMARY AND SECONDARY DRINKING WATER ANALYSIS SUMMARY

...ice, FL 34946

...# 82500/E82417
...irst Coast Hwy., Suite 1
...dine Beach, FL 32034

...# 83486/E83509
...terprise Road, Suite 1
..., FL 32725

...# 85512/E85370
...idge Avenue
...cres, FL 33936

...# 84256/E84418
...awaw Blvd.
...il, FL 34607

...ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 ... (561) 467-1584

Chain-of-Custody

Company: Florida Water Services Method of Shipment: fed ex

Address: 960 N. Collier Blvd
Marco Island FL 34145

Cooler #'s

Date 08-29-01 Time

Phone: (941) 394-3353 Fax: (941) 394-4069

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: S. SIMOS

Purchase Order #:

USE BALL POINT PEN ONLY

[X] Standard Turn Around Time

[ ] Rush in ____ Business Days

For Lab Use Only

Temperature Checked (Y) N Custody Seals Intact Y N pH Checked Y N HPN # 200734

PRESERVATIVE: D | A | B | H | C | E | F

Preservation Key: H - Hydrochloric Acid; N - Nitric Acid; S - Sulfuric Acid; SH - Sodium Hydroxide; P - Phosphoric Acid; ST - Sodium Thiosulfate; U - Unpreserved

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	GRASPha	549 Diquat	508 Pest	515.1	OLD R	525.2	531.1 Carbamates	1.42 Methods B	Field COMMENTS D.O.	°C pH	Temp
	08-27-01	1730	G	GW	8	Mon. Well Deep 2,3	1	1	1	1	1	1	1	1	2.4	8.01	25.1

*Type: G - Grab C - Composite O - Other ** Matrix: S - Solid SL - Sludge DW - Drinking Water GW - Ground Water SW - Surface Water WW - Wastewater

BY S. SIMOS	RELINQUISHED BY	RELINQUISHED BY	
8-29-01 2100	DATE/TIME	DATE/TIME	
	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY	
	DATE/TIME	DATE/TIME	8-30-01 0945

with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

ce, FL 34946

2500/E82417
t Coast Hwy., Suite 1
e Beach, FL 32034

3486/E83509
prise Road, Suite 1
L 32725

5512/E85370
ge Avenue
es, FL 33936

256/E84418
raw Blvd.
FL 34607

...ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Cus...y

USE BALL POINT PEN ONLY

Company: Florida Water Services Method of Shipment: Fed-EX

Address: 960 N. Collier Blvd

Marco Island FL 34145 Cooler #'s

Date 08-29-01 Time

☒ Standard Turn Around Time

☐ Rush in _____ Business Days

Phone: (941) 394-3353 Fax: (941) 394-4069

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: SIMES

Purchase Order #:

For Lab Use Only

Temperature Checked (Y) N | Custody Seals Intact Y N | pH Checked Y N | HPN # 2007936

LD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	PRESERVATIVE	ANALYSES REQUESTED: ALK, Spec Cond, pH, Color, TDS	MBAS	REG. VOC	SO4 EDB DBCP	SOS	THMS	SM5 ENDOTH	CN	COMMENTS
	08-29-01	1730	G	GW		Mon. Well Deep 2,3		1	1	3	3	3	3	3	1	

Preservation Key: H-Hydrochloric Acid; P-Phosphoric Acid; N-Nitric Acid; ST-Sodium Thiosulfate; S-Sulfuric Acid; U-Unpreserved; SH-Sodium Hydroxide

*e: G-Grab C-Composite O-Other

** Matrix: S-Solid SL-Sludge DW-Drinking Water GW-Ground Water SW-Surface Water WW-Wastewater

J.SIMES	RELINQUISHED BY	RELINQUISHED BY	
8-29-01 2100	DATE/TIME	DATE/TIME	
	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY	
	DATE/TIME	DATE/TIME	8-30-01 0945

th REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

rce, FL 34946

82500/E82417
st Coast Hwy., Suite 1
ne Beach, FL 32034

83486/E83509
rprise Road, Suite 1
FL 32725

55512/E85370
dge Avenue
es, FL 33936

4256/E84418
rsaw Blvd.
, FL 34607

BRANCH ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Custody

USE BALL POINT PEN ONLY

Company: Florida Water Services Method of Shipment: fed-EX

Address: 960 N. Collier Blvd. Cooler #'s

Marco Island FL 34145 Date 08-29-01 Time

☒ Standard Turn Around Time

☐ Rush in _____ Business Days

Phone (941) 394-3353 Fax: (941) 394-4069

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: SIMOS

Purchase Order #:

For Lab Use Only

Temperature Checked Y (N)

Custody Seals Intact Y N

pH Checked Y N

HPN # 2007934

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	PRESERVATIVE 4	3	5					ANALYSES REQUESTED 547 Glyphosate	Nitrate NO3Cl	504.1 EDB/DBCP	TOTAL COLIFORM (MF)							COMMENTS
	08-29-01	1730	G	GW	3	Mon. Well Deep 2,3								1	1	1								

Preservation Key

H - Hydrochloric Acid P - Phosphoric Acid
N - Nitric Acid ST - Sodium Thiosulfate
S - Sulfuric Acid U - Unpreserved
SH - Sodium Hydroxide

*Type: G - Grab C - Composite O - Other

**Matrix: S - Solid SL - Sludge DW - Drinking Water GW - Ground Water SW - Surface Water WW - Wastewater

SIMOS	RELINQUISHED BY		RELINQUISHED BY
8-29-01 2100	DATE/TIME		DATE/TIME
	RECEIVED BY		RECEIVED FOR HBEL CUSTODY BY
	DATE/TIME		DATE/TIME 8.30.01 0945

6th REPORT: YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

HARBOR BRANCH OCEANOGRAPHIC INSTITUTION

eptember 20, 2001

Frank Kane
Florida Water Services
960 N Collier Blvd
Marco Island, FL 341452721

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan [2007936]
Received: 8/30/01 9:45

Dear Frank Kane;

Analytical results presented in this report have been reviewed for compliance with the Harbor Branch Environmental Laboratory Comprehensive Quality Assurance Plan (FDEP CQAP #870174) and applicable quality control criteria. The quality control parameters evaluated have met all method and compliance criteria unless otherwise noted on a Quality Control Summary Page immediately following this coversheet.

FDOH Safe Drinking Water Act, Clean Water Act and RCRA Certification #'s:

E96080, E83509, E82417, E85370, E84418

Note: This report is not to be copied, except in full, without the expressed written consent of the Harbor Branch Environmental Laboratory.

Respectfully submitted,

Cindy Cromer
Laboratory Director

HARBOR BRANCH ENVIRONMENTAL LABORATORY
500 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007936001
Sample ID: MW Deep 2,3 Grab
Matrix: Environmental Water

Sampled: 08/29/01 17:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Specific Conductance	EPA 120.1	08/31/01 15:45	GG	10000	umhos/cm	0.36		E96080
pH [6.5-8.5]	EPA 150.1	09/5/01 13:30	TCL	7.76	SU	0.200	Q	E96080
Aluminum	EPA 200.7	09/5/01 13:02	SP	0.57	mg/L	0.020		E96080
Arsenic	EPA 200.7	09/5/01 13:02	SP	0.0032 U	mg/L	0.0032		E96080
Barium	EPA 200.7	09/5/01 13:02	SP	2.3	mg/L	0.0018		E96080
Beryllium	EPA 200.7	09/5/01 13:02	SP	0.00010 U	mg/L	0.00010		E96080
Cadmium	EPA 200.7	09/5/01 13:02	SP	0.00070 U	mg/L	0.00070		E96080
Chromium	EPA 200.7	09/5/01 13:02	SP	0.0018 U	mg/L	0.0018		E96080
Copper	EPA 200.7	09/5/01 13:02	SP	0.0014 U	mg/L	0.0014		E96080
Iron	EPA 200.7	09/5/01 13:02	SP	0.29	mg/L	0.025		E96080
Manganese	EPA 200.7	09/5/01 13:02	SP	0.0093	mg/L	0.0038		E96080
Nickel	EPA 200.7	09/5/01 13:02	SP	0.0020 U	mg/L	0.0020		E96080
Silver	EPA 200.7	09/5/01 13:02	SP	0.0010 U	mg/L	0.0010		E96080
Sodium	EPA 200.7	09/5/01 13:02	SP	2100	mg/L	0.50		E96080
Zinc	EPA 200.7	09/5/01 13:02	SP	0.013	mg/L	0.010		E96080
Antimony	EPA 200.9	09/6/01 16:45	DM	0.0010 U	mg/L	0.0010		E96080
Lead	EPA 200.9	09/6/01 12:34	DM	0.0074	mg/L	0.0011		E96080
Selenium	EPA 200.9	09/5/01 17:08	DM	0.0020 U	mg/L	0.0020		E96080
Thallium	EPA 200.9	09/7/01 10:26	DM	0.0010 U	mg/L	0.0010		E96080
Mercury	EPA 245.1	09/5/01 18:20	DM	0.000060 U	mg/L	0.000060		E96080
Chloride	EPA 300.0	09/7/01 9:46	SMB	3000	mg/L	20		E96080
Fluoride	EPA 300.0	08/31/01 9:59	SMB	2.0	mg/L	0.055		E96080
Nitrate as N	EPA 300.0	08/30/01 23:29	SMB	0.0030 U	mg/L	0.0030		E96080
Nitrite as N	EPA 300.0	08/30/01 23:29	SMB	0.0022 U	mg/L	0.0022		E96080
Sulfate	EPA 300.0	09/7/01 9:46	SMB	680	mg/L	5.6		E96080
Alkalinity	EPA 310.1	09/5/01 10:00	GG	150	mg/L CaCO3	2.0		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007936001
Sample ID: MW Deep 2,3 Grab
Matrix: Environmental Water

Sampled: 08/29/01 17:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
1,2-Dibromo-3-chloropropane	EPA 504.1	08/30/01 22:52	RS	**0.0022 U**	ug/L	0.0022		E96080
1,2-Dibromoethane	EPA 504.1	08/30/01 22:52	RS	**0.0024 U**	ug/L	0.0024		E96080
Chlordane	EPA 505	08/30/01 23:56	RS	**0.086 U**	ug/L	0.086		E96080
Endrin	EPA 505	08/30/01 23:56	RS	**0.038 U**	ug/L	0.038		E96080
gamma-BHC (Lindane)	EPA 505	08/30/01 23:56	RS	**0.020 U**	ug/L	0.020		E96080
He[illegible]chlor	EPA 505	08/30/01 23:56	RS	**0.084 U**	ug/L	0.084		E96080
Hep[illegible]achlor epoxide	EPA 505	08/30/01 23:56	RS	**0.020 U**	ug/L	0.020		E96080
Methoxychlor	EPA 505	08/30/01 23:56	RS	**0.016 U**	ug/L	0.016		E96080
Toxaphene	EPA 505	08/30/01 23:56	RS	**0.95 U**	ug/L	0.95		E96080
PCB	EPA 508	09/8/01 6:27	RS	**0.23 U**	ug/L	0.23		E96080
2,4,5-TP	EPA 515.1	09/8/01 0:28	RS	**0.41 U**	ug/L	0.41		E96080
2,4-D	EPA 515.1	09/8/01 0:28	RS	**0.53 U**	ug/L	0.53		E96080
Dalapon	EPA 515.1	09/8/01 0:28	RS	**2.6 U**	ug/L	2.6		E96080
Dinoseb	EPA 515.1	09/8/01 0:28	RS	**0.58 U**	ug/L	0.58		E96080
Pentachlorophenol	EPA 515.1	09/8/01 0:28	RS	**0.34 U**	ug/L	0.34		E96080
Picloram	EPA 515.1	09/8/01 0:28	RS	**0.26 U**	ug/L	0.26		E96080
1,1,1,2-Tetrachloroethane	EPA 524.2	08/30/01 22:03	WR	**0.15 U**	ug/L	0.15		E96080
1,1,1-Trichloroethane	EPA 524.2	08/30/01 22:03	WR	**0.25 U**	ug/L	0.25		E96080
1,1,2,2-Tetrachloroethane	EPA 524.2	08/30/01 22:03	WR	**0.39 U**	ug/L	0.39		E96080
1,1,2-Trichloroethane	EPA 524.2	08/30/01 22:03	WR	**0.23 U**	ug/L	0.23		E96080
,1-Dichloroethane	EPA 524.2	08/30/01 22:03	WR	**0.11 U**	ug/L	0.11		E96080
,1-Dichloroethene	EPA 524.2	08/30/01 22:03	WR	**0.21 U**	ug/L	0.21		E96080
,1-Dichloropropene	EPA 524.2	08/30/01 22:03	WR	**0.10 U**	ug/L	0.10		E96080
,2,3-Trichloropropane	EPA 524.2	08/30/01 22:03	WR	**0.26 U**	ug/L	0.26		E96080
2,4 [illegible]hlorobenzene	EPA 524.2	08/30/01 22:03	WR	**0.37 U**	ug/L	0.37		E96080
2-Dichlorobenzene	EPA 524.2	08/30/01 22:03	WR	**0.35 U**	ug/L	0.35		E96080
2-Dichloroethane	EPA 524.2	08/30/01 22:03	WR	**0.45 U**	ug/L	0.45		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
?00 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007936001
Sample ID: MW Deep 2,3 Grab
Matrix: Environmental Water

Sampled: 08/29/01 17:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
1,2-Dichloropropane	EPA 524.2	08/30/01 22:03	WR	**0.23 U**	ug/L	0.23		E96080
1,3-Dichlorobenzene	EPA 524.2	08/30/01 22:03	WR	**0.22 U**	ug/L	0.22		E96080
1,3-Dichloropropane	EPA 524.2	08/30/01 22:03	WR	**0.30 U**	ug/L	0.30		E96080
1,3-Dichloropropene	EPA 524.2	08/30/01 22:03	WR	**0.30 U**	ug/L	0.30		E96080
1,4-Dichlorobenzene	EPA 524.2	08/30/01 22:03	WR	**0.28 U**	ug/L	0.28		E96080
2 chloropropane	EPA 524.2	08/30/01 22:03	WR	**0.47 U**	ug/L	0.47		E96080
2-Chlorotoluene	EPA 524.2	08/30/01 22:03	WR	**0.18 U**	ug/L	0.18		E96080
4-Chlorotoluene	EPA 524.2	08/30/01 22:03	WR	**0.16 U**	ug/L	0.16		E96080
Benzene	EPA 524.2	08/30/01 22:03	WR	**0.090 U**	ug/L	0.090		E96080
Bromobenzene	EPA 524.2	08/30/01 22:03	WR	**0.20 U**	ug/L	0.20		E96080
Bromodichloromethane	EPA 524.2	08/30/01 22:03	WR	**0.27 U**	ug/L	0.27		E96080
Bromoform	EPA 524.2	08/30/01 22:03	WR	**0.48 U**	ug/L	0.48		E96080
Bromomethane	EPA 524.2	08/30/01 22:03	WR	**0.41 U**	ug/L	0.41		E96080
Carbon tetrachloride	EPA 524.2	08/30/01 22:03	WR	**0.28 U**	ug/L	0.28		E96080
Chlorobenzene	EPA 524.2	08/30/01 22:03	WR	**0.23 U**	ug/L	0.23		E96080
Chloroethane	EPA 524.2	08/30/01 22:03	WR	**0.42 U**	ug/L	0.42		E96080
Chloroform	EPA 524.2	08/30/01 22:03	WR	**0.18 U**	ug/L	0.18		E96080
Chloromethane	EPA 524.2	08/30/01 22:03	WR	**0.43 U**	ug/L	0.43		E96080
cis-1,2-Dichloroethene	EPA 524.2	08/30/01 22:03	WR	**0.23 U**	ug/L	0.23		E96080
Dibromochloromethane	EPA 524.2	08/30/01 22:03	WR	**0.40 U**	ug/L	0.40		E96080
Dibromomethane	EPA 524.2	08/30/01 22:03	WR	**0.41 U**	ug/L	0.41		E96080
Dichlorodifluoromethane	EPA 524.2	08/30/01 22:03	WR	**0.49 U**	ug/L	0.49		E96080
Ethylbenzene	EPA 524.2	08/30/01 22:03	WR	**0.19 U**	ug/L	0.19		E96080
Methyl-tert-butyl-ether	EPA 524.2	08/30/01 22:03	WR	**0.24 U**	ug/L	0.24		E96080
Me e chloride	EPA 524.2	08/30/01 22:03	WR	**0.49 U**	ug/L	0.49		E96080
Styrene	EPA 524.2	08/30/01 22:03	WR	**0.24 U**	ug/L	0.24		E96080
Tetrachloroethene	EPA 524.2	08/30/01 22:03	WR	**0.26 U**	ug/L	0.26		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007936001
Sample ID: MW Deep 2,3 Grab
Matrix: Environmental Water

Sampled: 08/29/01 17:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Toluene	EPA 524.2	08/30/01 22:03	WR	**0.18 U**	ug/L	0.18		E96080
Total THMs	EPA 524.2	08/30/01 22:03	WR	**0.00050 U**	mg/L	0.00050		E96080
Total Xylenes	EPA 524.2	08/30/01 22:03	WR	**0.30 U**	ug/L	0.30		E96080
trans-1,2-Dichloroethene	EPA 524.2	08/30/01 22:03	WR	**0.18 U**	ug/L	0.18		E96080
Trichloroethene	EPA 524.2	08/30/01 22:03	WR	**0.21 U**	ug/L	0.21		E96080
T[illegible]hlorofluoromethane	EPA 524.2	08/30/01 22:03	WR	**0.20 U**	ug/L	0.20		E96080
V[illegible] chloride	EPA 524.2	08/30/01 22:03	WR	**0.33 U**	ug/L	0.33		E96080
Alachlor	EPA 525	09/3/01 1:28	WR	**0.67 U**	ug/L	0.67		E96080
Atrazine	EPA 525	09/3/01 1:28	WR	**0.53 U**	ug/L	0.53		E96080
Benzo(a)pyrene	EPA 525	09/3/01 1:28	WR	**0.077 U**	ug/L	0.077		E96080
bis(2-ethylhexyl)phthalate	EPA 525	09/3/01 1:28	WR	**0.93 U**	ug/L	0.93		E96080
Di(2-ethylhexyl)adipate	EPA 525	09/3/01 1:28	WR	**0.75 U**	ug/L	0.75		E96080
Hexachlorobenzene	EPA 525	09/3/01 1:28	WR	**0.34 U**	ug/L	0.34		E96080
Hexachlorocyclopentadiene	EPA 525	09/3/01 1:28	WR	**0.26 U**	ug/L	0.26		E96080
Simazine	EPA 525	09/3/01 1:28	WR	**0.69 U**	ug/L	0.69		E96080
Carbofuran	EPA 531.1	09/3/01 14:56	JJM	**0.18 U**	ug/L	0.18		E96080
Oxamyl	EPA 531.1	09/3/01 14:56	JJM	**0.10 U**	ug/L	0.10		E96080
Glyphosate	EPA 547	09/12/01 17:09	SAL	**10 U**	ug/L	10		E84129
Endothall	EPA 548.1	09/19/01 14:42	WR	**2.8 U**	ug/L	2.8		E96080
Diquat	EPA 549.1	09/10/01 14:10	JJM	**2.6 U**	ug/L	2.6		E96080
Gross Alpha	EPA 900.0	09/12/01 0:00	KNL	**66 +/- 16**	pCi/L			E84025
Radium 226	EPA 903.1	09/13/01 0:00	KNL	**7.8 +/- 1.3**	pCi/L			E84025
Radium 228	EPA Alter.	09/20/01 0:00	KNL	**0.0 +/- 0.7**	pCi/L			E84025
Color	SM2120 B	08/30/01 14:30	TCL	**5.0**	CU	5.0		E96080
Od	SM2150 B	08/30/01 12:00	PHM	**1.1**	T.O.N.	1.0		E96080
Total Dissolved Solids	SM2540 C	08/31/01 16:00	JL	**6100**	mg/L	50		E96080
Cyanide	SM4500CN E	08/31/01 14:01	JL	**0.016 U**	mg/L	0.016		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
7500 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007936001
Sample ID: MW Deep 2,3 Grab
Matrix: Environmental Water

Sampled: 08/29/01 17:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Surfactants as LAS, Mol.wt.340	SM5540 C	08/31/01 11:20	JL	0.24	mg/L	0.019		E96080
Background on Total Coli	SM9222 D	08/30/01 12:30	GG	100 U	CFU/100mL	100	B	E96080
Confirmed Fecal Coliform	SM9222 D	08/30/01 12:30	GG	100 U	CFU/100mL	100	B	E96080
Confirmed Total Coliform	SM9222 D	08/30/01 12:30	GG	100 U	CFU/100mL	100	B	E96080
Total Coliform	SM9222 D	08/30/01 12:30	GG	100 U	CFU/100mL	100	B	E96080

DOH Certification #E84025
DEP COMPQAP # 870251

KNL LABORATORY SERVICES
2742 N. Florida Ave.
P.O. Box 1833
Tampa, Florida 33601
(813) 229-2879
Fax (813) 229-0002

Report Date: September 20, 2001

Harbor Branch Environmental Labs
5600 U.S. 1 North
Ft. Pierce, FL 34946

Attn: Eric Charest

Field Custody:	Client
Client/Field ID:	2007936001
Sample Collection:	8-29-01
Lab ID No:	61143
Lab Custody Date:	8-31-01
Sample description:	GW

Parameter	Units	Results			Analysis Date	Method	Data Qualifier
Gross Alpha	pCi/l	66	±	16	9-12-01	EPA 900.0	
Radium-226	pCi/l	7.8	±	1.3	9-13-01	EPA 903.1	
Radium-228	pCi/l	0.0	±	0.7	9-20-01	EPA Ra-05	

pha Standard: Th-230

James W. Hayes
Laboratory Manager

nch
ntal Laboratory

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U. S. 1 North, Ft. Pierce, FL 34946, 561-465-2400 ext. 292
Fax: (561) 467-1584
CHAIN OF CUSTODY RECORD

Form 001A

ng Laboratory: KNL

mples are to be shipped by Fed. Ex to arrive on ~~8.31.01~~ 8.31.01 TAT: Std.

OR BRANCH ENVIRONMENTAL LABORATORY

NAME:

TYPE: Composite = C, Grab = G.

MATRIX: Drk Wtr. = DW, Otd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

ATIVE Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU, ed = U

Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	HBEL SAMPLE ID	#	ANALYSIS REQUIRED: PRESERVATIVE HNO3						COLLECTION REMARKS / SAMPLE COMMENTS
							Gross α Conditional						
S	GW	8/29	1545	G	2007935 001	1	✓						
S	GW	8/29	1730	G	2007936 001	1	✓						
S	GW	8/29	1630	G	2007937 001	1	✓						

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Mark	8.30.01	1600			
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY	DATE	TIME
			yn Anderson / KNL	8/31/01	1000

Page of

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name: 2007935-2007937, 2008032

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Sample Description		2007935001					
Matrix		Groundwater					
SAL Sample Number		25635.01					
Date/Time Collected		08/29/01 15:45					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 16:57		DF
Sample Description		2007936001					
Matrix		Groundwater					
SAL Sample Number		25635.02					
Date/Time Collected		08/29/01 17:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:09		DF
Sample Description		2007937001					
Matrix		Groundwater					
SAL Sample Number		25635.03					
Date/Time Collected		08/29/01 16:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:22		DF
Sample Description		2008032001					
Matrix		Wastewater					
SAL Sample Number		25635.04					
Date/Time Collected		09/07/01 08:20					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	610	EPA 547	10	09/12/01 17:44		DF

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name 2007935-2007937, 2008032

Footnotes

U Analyte was not detected; indicated concentration is method detection limit.

5600 U. S. 1 North, Ft. Pierce, FL. 3494 1-465-2400 ext. 292
Fax: (561) 467-1584

CHAIN OF CUSTODY RECORD

For 791A

ving Laboratory: Southern Analytical

samples are to be shipped by Fed Ex to arrive on 9.11.01. TAT: Std.

BOR BRANCH ENVIRONMENTAL LABORATORY

CT NAME:

E TYPE: Composite = C, Grab = G,
O

MATRIX: Drk. Wtr. = DW, Grd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

VATIVE: Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU;
rved = U

ni Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	HBEL SAMPLE ID	#	ANALYSIS REQUIRED / PRESERVATIVE 547	COLLECTION REMARKS / SAMPLE COMMENTS
S	GW	8/29	1545	G	2007935 001	1	✓	
S	GW	8/29	1730	G	2007936 001	1	✓	
S	GW	8/29	1630	G	2007937 001	1	✓	
L	WW	9/7	0810	G	2005032 001	1	✓	LCRC/Intc.

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[illegible]	9.10.01	1600	FEDEX		
FEDEX			LABORATORY NAME AND RECEIVED BY: Via Image / Southern Analytical Labs	9/11/01	1400

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

INORGANIC ANALYSIS
62 - 550.310 (1)
(PWS030)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep 2,3 Grab

Sample Number: 2007936001

Sampling Date: 8/29/01 17:30

Preservative: Nitric Acid, Sodium Hydroxide, or None

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1005	Arsenic	[0.05]	**0.0032 U**	mg/L	EPA 200.7	0.0032	9/05/01	E96080
1010	Barium	[2]	**2.3**	mg/L	EPA 200.7	0.0018	9/05/01	E96080
1015	Cadmium	[0.005]	**0.00070 U**	mg/L	EPA 200.7	0.00070	9/05/01	E96080
1020	Chromium	[0.1]	**0.0018 U**	mg/L	EPA 200.7	0.0018	9/05/01	E96080
[illegible]24	Cyanide	[0.2]	**0.016 U**	mg/L	SM4500CN E	0.016	8/31/01	E96080
[illegible]025	Fluoride	[4]	**2.0**	mg/L	EPA 300.0	0.055	8/31/01	E96080
1030	Lead	[0.015]	**0.0074**	mg/L	EPA 200.9	0.0011	9/06/01	E96080
1035	Mercury	[0.002]	**0.000060 U**	mg/L	EPA 245.1	0.000060	9/05/01	E96080
1036	Nickel	[0.1]	**0.0020 U**	mg/L	EPA 200.7	0.0020	9/05/01	E96080
1040	Nitrate as N	[10]	**0.0030 U**	mg/L	EPA 300.0	0.0030	8/30/01 23:29	E96080
1041	Nitrite as N	[1]	**0.0022 U**	mg/L	EPA 300.0	0.0022	8/30/01 23:29	E96080
1045	Selenium	[0.05]	**0.0020 U**	mg/L	EPA 200.9	0.0020	9/05/01	E96080
1052	Sodium	[160]	**2100**	mg/L	EPA 200.7	0.50	9/05/01	E96080
1074	Antimony	[0.006]	**0.0010 U**	mg/L	EPA 200.9	0.0010	9/06/01	E96080
1075	Beryllium	[0.004]	**0.00010 U**	mg/L	EPA 200.7	0.00010	9/05/01	E96080
1085	Thallium	[0.002]	**0.0010 U**	mg/L	EPA 200.9	0.0010	9/07/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Trihalomethane Analysis
62-550.310 (2) (a)
(PWS027)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep 2,3 Grab

Sample Number: 2007936001

Sampling Date: 8/29/01 17:30

Preservative: 1:1 Hydrochloric Acid

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Chlorine Residual	Result		Method	MDL	Date	Lab ID
2950	Total THMs	[0.10]		0.00050 U	mg/L	EPA 524.2	0.00050	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Volatile Organic Analysis
62 - 550.310 (2) (b)
(PWS028)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep 2,3 Grab

Sample Number: 2007936001

Sampling Date: 8/29/01 17:30

Preservative: 1:1 Hydrochloric Acid and Sodium Thiosulfate

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
2378	1,2,4-Trichlorobenzene	[70]	**0.37 U**	ug/L	EPA 524.2	0.37	8/30/01	E96080
2380	cis-1,2-Dichloroethene	[70]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2955	Total Xylenes	[10000]	**0.30 U**	ug/L	EPA 524.2	0.30	8/30/01	E96080
2964	Methylene chloride	[5]	**0.49 U**	ug/L	EPA 524.2	0.49	8/30/01	E96080
[illegible]68	1,2-Dichlorobenzene	[600]	**0.35 U**	ug/L	EPA 524.2	0.35	8/30/01	E96080
[illegible]969	1,4-Dichlorobenzene	[75]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
2976	Vinyl chloride	[1]	**0.33 U**	ug/L	EPA 524.2	0.33	8/30/01	E96080
2977	1,1-Dichloroethene	[7]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2979	trans-1,2-Dichloroethene	[100]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
2980	1,2-Dichloroethane	[3]	**0.45 U**	ug/L	EPA 524.2	0.45	8/30/01	E96080
2980	1,1,1-Trichloroethane	[200]	**0.25 U**	ug/L	EPA 524.2	0.25	8/30/01	E96080
2982	Carbon tetrachloride	[3]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
2983	1,2-Dichloropropane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2984	Trichloroethene	[3]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2985	1,1,2-Trichloroethane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2987	Tetrachloroethene	[3]	**0.26 U**	ug/L	EPA 524.2	0.26	8/30/01	E96080
2989	Chlorobenzene	[100]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2990	Benzene	[1]	**0.090 U**	ug/L	EPA 524.2	0.090	8/30/01	E96080
2991	Toluene	[1000]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
2992	Ethylbenzene	[700]	**0.19 U**	ug/L	EPA 524.2	0.19	8/30/01	E96080
2996	Styrene	[70]	**0.24 U**	ug/L	EPA 524.2	0.24	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
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(561) 465-2400, Ext. 285

PESTICIDES PCB CHEMICAL ANALYSIS
62 - 550.310 (2) (c)
(PWS029)

lient: Florida Water Services
ample Location: MW Deep 2,3 Grab
ample Number: 2007936001
ampling Date: 8/29/01 17:30
eservative: Sodium Thiosulfate
ate Received: 8/30/01 9:45

Workorder: 2601 Marco Lakes ASR DW Scan

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
005	Endrin	[2]	0.038 U	ug/L	EPA 505	0.038	8/30/01	E96080
010	gamma-BHC (Lindane)	[0.2]	0.020 U	ug/L	EPA 505	0.020	8/30/01	E96080
015	Methoxychlor	[40]	0.016 U	ug/L	EPA 505	0.016	8/30/01	E96080
020	Toxaphene	[3]	0.95 U	ug/L	EPA 505	0.95	8/30/01	E96080
031	Dalapon	[200]	2.6 U	ug/L	EPA 515.1	2.6	9/08/01	E96080
032	Diquat	[20]	2.6 U	ug/L	EPA 549.1	2.6	9/10/01	E96080
)	Endothall	[100]	2.8 U	ug/L	EPA 548.1	2.8	9/19/01	E96080
034	Glyphosate	[700]	10 U	ug/L	EPA 547	10	9/12/01	E84129
035	Di(2-ethylhexyl)adipate	[400]	0.75 U	ug/L	EPA 525	0.75	9/03/01	E96080
36	Oxamyl	[200]	0.10 U	ug/L	EPA 531.1	0.10	9/03/01	E96080
37	Simazine	[4]	0.69 U	ug/L	EPA 525	0.69	9/03/01	E96080
39	bis(2-ethylhexyl)phthalate	[6]	0.93 U	ug/L	EPA 525	0.93	9/03/01	E96080
40	Picloram	[500]	0.26 U	ug/L	EPA 515.1	0.26	9/08/01	E96080
41	Dinoseb	[7]	0.58 U	ug/L	EPA 515.1	0.58	9/08/01	E96080
42	Hexachlorocyclopentadiene	[50]	0.26 U	ug/L	EPA 525	0.26	9/03/01	E96080
46	Carbofuran	[40]	0.18 U	ug/L	EPA 531.1	0.18	9/03/01	E96080
50	Atrazine	[3]	0.53 U	ug/L	EPA 525	0.53	9/03/01	E96080
51	Alachlor	[2]	0.67 U	ug/L	EPA 525	0.67	9/03/01	E96080
35	Heptachlor	[0.4]	0.084 U	ug/L	EPA 505	0.084	8/30/01	E96080
7	Heptachlor epoxide	[.2]	0.020 U	ug/L	EPA 505	0.020	8/30/01	E96080
5	2,4-D	[70]	0.53 U	ug/L	EPA 515.1	0.53	9/08/01	E96080
0	2,4,5-TP	[50]	0.41 U	ug/L	EPA 515.1	0.41	9/08/01	E96080
4	Hexachlorobenzene	[1]	0.34 U	ug/L	EPA 525	0.34	9/03/01	E96080
6	Benzo(a)pyrene	[.2]	0.077 U	ug/L	EPA 525	0.077	9/03/01	E96080
6	Pentachlorophenol	[1]	0.34 U	ug/L	EPA 515.1	0.34	9/08/01	E96080
	PCB	[.5]	0.23 U	ug/L	EPA 508	0.23	9/08/01	E96080
	1,2-Dibromo-3-chloropropane	[.2]	0.0022 U	ug/L	EPA 504.1	0.0022	8/30/01	E96080
3	1,2-Dibromoethane	[.02]	0.0024 U	ug/L	EPA 504.1	0.0024	8/30/01	E96080
	Chlordane	[2]	0.086 U	ug/L	EPA 505	0.086	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
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F 1 465-2400, Ext. 285

RADIOCHEMICAL ANALYSIS
62 - 550.310 (5)
(PWS033)

lient:	Florida Water Services	Workorder:	2601 Marco Lakes ASR DW Scan
ample Location:	MW Deep 2,3 Grab		
ample Number:	2007936001		
mpling Date:	8/29/01 17:30		
eservative:	Nitric Acid		
te Received:	8/30/01 9:45		

ID	Parameter	Result | Error		Method	Date	Lab ID
4000	Gross Alpha	66 +/- 16	pCi/L	EPA 900.0	9/12/01	E84025
4020	Radium 226	7.8 +/- 1.3	pCi/L	EPA 903.1	9/13/01	E84025
[illegible]0	Radium 228	0.0 +/- 0.7	pCi/L	EPA Alter.	9/20/01	E84025

HARBOR BRANCH ENVIRONMENTAL LABORATORY
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SECONDARY CHEMICAL ANALYSIS
62 - 550.320
(PWS031)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep 2,3 Grab

Sample Number: 2007936001

Sampling Date: 8/29/01 17:30

Preservative: Nitric Acid or None

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1002	Aluminum	[0.2]	**0.57**	mg/L	EPA 200.7	0.020	9/05/01	E96080
1017	Chloride	[250]	**3000**	mg/L	EPA 300.0	20	9/07/01	E96080
1022	Copper	[1]	**0.0014 U**	mg/L	EPA 200.7	0.0014	9/05/01	E96080
1025	Fluoride	[4]	**2.0**	mg/L	EPA 300.0	0.055	8/31/01	E96080
1028	Iron	[0.3]	**0.29**	mg/L	EPA 200.7	0.025	9/05/01	E96080
1032	Manganese	[0.05]	**0.0093**	mg/L	EPA 200.7	0.0038	9/05/01	E96080
1050	Silver	[0.1]	**0.0010 U**	mg/L	EPA 200.7	0.0010	9/05/01	E96080
1055	Sulfate	[250]	**680**	mg/L	EPA 300.0	5.6	9/07/01	E96080
1095	Zinc	[5]	**0.013**	mg/L	EPA 200.7	0.010	9/05/01	E96080
1905	Color	[15]	**5.0**	CU	SM2120 B	5.0	8/30/01	E96080
1920	Odor	[3]	**1.1**	T.O.N.	SM2150 B	1.0	8/30/01	E96080
1925	pH	[6.5-8.5]	**7.76**	SU	EPA 150.1	0.200	9/05/01	E96080
1930	Total Dissolved Solids	[500]	**6100**	mg/L	SM2540 C	50	8/31/01	E96080
2905	Foaming Agents	[0.5]	**0.24**	mg/L	SM5540 C	0.019	8/31/01	E96080

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Unregulated Group II Analysis
62 - 550.410
(PWS034)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: MW Deep 2,3 Grab
Sample Number: 2007936001
Sampling Date: 8/29/01 17:30
Preservative: 1:1 Hydrochloric Acid
Date Received: 8/30/01 9:45

ID	Parameter	Result		Method	MDL	Date	Lab ID
2210	Chloromethane	0.43 U	ug/L	EPA 524.2	0.43	8/30/01	E96080
2212	Dichlorodifluoromethane	0.49 U	ug/L	EPA 524.2	0.49	8/30/01	E96080
2214	Bromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2216	Chloroethane	0.42 U	ug/L	EPA 524.2	0.42	8/30/01	E96080
[illegible]	Trichlorofluoromethane	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080
2251	Methyl-tert-butyl-ether	0.24 U	ug/L	EPA 524.2	0.24	8/30/01	E96080
2408	Dibromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2410	1,1-Dichloropropene	0.10 U	ug/L	EPA 524.2	0.10	8/30/01	E96080
2412	1,3-Dichloropropane	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
2413	1,3-Dichloropropene	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
2414	1,2,3-Trichloropropane	0.26 U	ug/L	EPA 524.2	0.26	8/30/01	E96080
2416	2,2-Dichloropropane	0.47 U	ug/L	EPA 524.2	0.47	8/30/01	E96080
2941	Chloroform	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
2942	Bromoform	0.48 U	ug/L	EPA 524.2	0.48	8/30/01	E96080
2943	Bromodichloromethane	0.27 U	ug/L	EPA 524.2	0.27	8/30/01	E96080
2944	Dibromochloromethane	0.40 U	ug/L	EPA 524.2	0.40	8/30/01	E96080
965	2-Chlorotoluene	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
966	4-Chlorotoluene	0.16 U	ug/L	EPA 524.2	0.16	8/30/01	E96080
967	1,3-Dichlorobenzene	0.22 U	ug/L	EPA 524.2	0.22	8/30/01	E96080
978	1,1-Dichloroethane	0.11 U	ug/L	EPA 524.2	0.11	8/30/01	E96080
986	1,1,1,2-Tetrachloroethane	0.15 U	ug/L	EPA 524.2	0.15	8/30/01	E96080
988	1,1,2,2-Tetrachloroethane	0.39 U	ug/L	EPA 524.2	0.39	8/30/01	E96080
993	Bromobenzene	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080

00 U.S. 1 North
t Pierce, FL 34946

OH # 82500/E82417
90 First Coast Hwy., Suite 1
oandina Beach, FL 32034

OH # 83486/E83509
5 Enterprise Road, Suite 1
tona, FL 32725

OH # 85512/E85370
Coolidge Avenue
gh Acres, FL 33936

OH # 84256/E84418
4 Osawaw Blvd.
ng Hill, FL 34607

HARBOR BRANCH ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-custody

Company: Florida Water Services

Address: 960 N. Collier Blvd.
Marco Island FL 34145

Phone: (941) 394-3353 Fax (941) 394-4069

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: SIMOS

Purchase Order #:

Method of Shipment: Fed Ex

Cooler #'s

Date 08-29-01 Time

USE BALL POINT PEN ONLY

[X] Standard Turn Around Time

[ ] Rush in _____ Business Days

For Lab Use Only

Temperature Checked (Y) N

Custody Seals Intact Y N

pH Checked Y N

HPN # 2007935

PRESERVATIVE

ANALYSES REQUESTED

Preservation Key
H - Hydrochloric Acid P - Phosphoric Acid
N - Nitric Acid ST - Sodium Thiosulfate
S - Sulfuric Acid U - Unpreserved
SH - Sodium Hydroxide

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	531.1 CARBAMATES	547 Glyphosate	549 Diquat	GROSS ALPHA	11 TOTAL METALS	MBAS	SO4, ALK, PH, COLOR, TDS	NO3 NO2 Cl SO4	COMMENTS
	08-29-01	1545	G	GW	6	ASR Inj. H2O	V	V	V	V	V	V	V	V	PH D.O. temp.

Sample Type: G - Grab C - Composite O - Other

** Matrix: S - Solid SL - Sludge DW - Drinking Water GW - Ground Water SW - Surface Water WW - Wastewater

SHED BY S.SIMOS		RELINQUISHED BY	RELINQUISHED BY
E 08-29-01	2100	DATE/TIME	DATE/TIME
BY		RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY
E		DATE/TIME	DATE/TIME 8-30-01 0945

WHITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 2[illegible] Fax: (561) 467-1584

Chain-of-Custody

USE BALL POINT PEN ONLY

FDOH # 82500/E82417
5380 First Coast Hwy., Suite 1
Fernandina Beach, FL 32034

FDOH # 83486/E83509
255 Enterprise Road, Suite 1
Deltona, FL 32725

DOH # 85512/E85370
07 Coolidge Avenue
shigh Acres, FL 33936

OH # 84256/E84418
514 Osawaw Blvd.
pring Hill, FL 34607

Company: Florida Water Services
Address: 960 N. Collier Blvd.
Marco Island FL. 34145
Phone (941) 394-3353 Fax (941) 394-4069
Client Contact: Frank Kane
Project Name: Marco Lakes ASR
Sampled By: SIMOS
Purchase Order #:

Method of Shipment: Fed Ex
Cooler #'s
Date 08-29-01 Time

☐ Standard Turn Around Time
☐ Rush in _____ Business Days

For Lab Use Only
Temperature Checked Y N
Custody Seals Intact Y N
pH Checked Y N
HPN # 2007935

PRESERVATIVE

ANALYSES REQUESTED

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	N'ODOR	508 PEST A	525.2 C	515.1 B	CN D1	548 BaP DOTHER E	505 H	VOC K	COMMENTS
	08-29-01	1545	G	W	17	ASR INT. H2O	1	1	1	1	1	3	3	3	

Preservation Key
H - Hydrochloric Acid
N - Nitric Acid
S - Sulfuric Acid
SH - Sodium Hydroxide
P - Phosphoric Acid
ST - Sodium Thiosulfate
U - Unpreserved

* Sample Type: G - Grab C - Composite O - Other
** Matrix: S - Solid SL - Sludge DW - Drinking Water GW - Ground Water SW - Surface Water WW - Wastewater

RELINQUISHED BY	RELINQUISHED BY
DATE/TIME	DATE/TIME
RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY
DATE/TIME	DATE/TIME

HED BY S.SIMOS
08-29-01 2100
Y

WHITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

8-30-01 0945

rt Pierce, FL 34946

OH # 82500/E82417
90 First Coast Hwy., Suite 1
rnandina Beach, FL 32034

OH # 83488/E83509
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tona, FL 32725

OH # 85512/E85370
7 Coolidge Avenue
igh Acres, FL 33936

H # 84256/E84418
4 Osawaw Blvd.
ng Hill, FL 34607

HALL ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Custody

USE BALL POINT PEN ONLY

Company: Florida Water Services

Address: 960 N. Collier Blvd, Marco Island FL 34145

Phone: (941) 394-3353 Fax (941) 394-4069

Client Contact: FRANK KANE

Project Name: Marco Lakes ASR

Sampled By: SIMOS

Purchase Order #:

Method of Shipment: Fed EX

Cooler #'s

Date 08-29-01 Time

☒ Standard Turn Around Time

☐ Rush in _____ Business Days

For Lab Use Only

Temperature Checked (Y) N

Custody Seals Intact Y N

pH Checked Y N

HPN # 2007935

PRESERVATIVE

ANALYSES REQUESTED

Preservation Key
H - Hydrochloric Acid
N - Nitric Acid
S - Sulfuric Acid
SH - Sodium Hydroxide
P - Phosphoric Acid
ST - Sodium Thiosulfate
U - Unpreserved

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	REF. VOC	504 EDB DBP 504.1	THMs	TOTAL COLIFORM (MF)	COMMENTS
	08-29-01	1545	G	GW	10	ASR INJ. H2O	3	3	3	1	

* Sample Type: G - Grab C - Composite O - Other

** Matrix: S - Solid SL - Sludge DW - Drinking Water GW - Ground Water SW - Surface Water WW - Wastewater

ED BY S SIMOS	RELINQUISHED BY	RELINQUISHED BY	
08-29-01 2:00	DATE/TIME	DATE/TIME	
	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY	
	DATE/TIME	DATE/TIME	8:30 01 0945

HITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

September 20, 2001

Frank Kane
Florida Water Services
960 N Collier Blvd
Marco Island, FL 341452721

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan [2007935]
Received: 8/30/01 9:45

Dear Frank Kane;

Analytical results presented in this report have been reviewed for compliance with the Harbor Branch Environmental Laboratory Comprehensive Quality Assurance Plan (FDEP CQAP #870174) and applicable quality control criteria. The quality control parameters evaluated have met all method and compliance criteria unless otherwise noted on a Quality Control Summary Page immediately following this coversheet.

FDOH Safe Drinking Water Act, Clean Water Act and RCRA Certification #'s:

E96080, E83509, E82417, E85370, E84418

Note: This report is not to be copied, except in full, without the expressed written consent of the Harbor Branch Environmental Laboratory.

espectfully submitted,

ndy Cromer
...atory Director

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007935001
Sample ID: ASR Injection Water Grab
Matrix: Environmental Water

Sampled: 08/29/01 15:45
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
pH [6.5-8.5]	EPA 150.1	09/5/01 13:30	TCL	7.33	SU	0.200	Q	E96080
Aluminum	EPA 200.7	09/1/01 14:25	SP	0.0030 U	mg/L	0.0030		E96080
Arsenic	EPA 200.7	09/1/01 14:25	SP	0.0032 U	mg/L	0.0032		E96080
Barium	EPA 200.7	09/1/01 14:25	SP	0.027	mg/L	0.0018		E96080
Beryllium	EPA 200.7	09/1/01 14:25	SP	0.00010 U	mg/L	0.00010		E96080
Cadmium	EPA 200.7	09/1/01 14:25	SP	0.00070 U	mg/L	0.00070		E96080
C nium	EPA 200.7	09/1/01 14:25	SP	0.0018 U	mg/L	0.0018		E96080
Copper	EPA 200.7	09/1/01 14:25	SP	0.0014 U	mg/L	0.0014		E96080
Iron	EPA 200.7	09/1/01 14:25	SP	0.025 U	mg/L	0.025		E96080
Manganese	EPA 200.7	09/1/01 14:25	SP	0.0038 U	mg/L	0.0038		E96080
Nickel	EPA 200.7	09/1/01 14:25	SP	0.0020 U	mg/L	0.0020		E96080
Silver	EPA 200.7	09/1/01 14:25	SP	0.0010 U	mg/L	0.0010		E96080
Sodium	EPA 200.7	09/1/01 14:25	SP	53	mg/L	0.50		E96080
Zinc	EPA 200.7	09/1/01 14:25	SP	0.010 U	mg/L	0.010		E96080
ntimony	EPA 200.9	09/6/01 18:43	DM	0.0042 U	mg/L	0.0042		E96080
ead	EPA 200.9	09/1/01 12:30	SP	0.0011 U	mg/L	0.0011		E96080
elenium	EPA 200.9	09/5/01 15:55	DM	0.0022 U	mg/L	0.0022		E96080
hallium	EPA 200.9	09/5/01 11:23	SP	0.0010 U	mg/L	0.0010		E96080
ercury	EPA 245.1	09/5/01 18:16	DM	0.000060 U	mg/L	0.000060		E96080
hloride	EPA 300.0	09/6/01 19:00	SMB	130	mg/L	5.0		E96080
uoride	EPA 300.0	08/30/01 22:52	SMB	0.16	mg/L	0.011		E96080
trate as N	EPA 300.0	08/30/01 22:52	SMB	0.19	mg/L	0.0030		E96080
rite as N	EPA 300.0	08/30/01 22:52	SMB	0.0022 U	mg/L	0.0022		E96080
lfate	EPA 300.0	09/6/01 19:00	SMB	56	mg/L	1.4		E96080
alinity	EPA 310.1	09/5/01 10:00	GG	110	mg/L CaCO3	2.0		E96080
mo-3-chloropropane	EPA 504.1	08/30/01 22:19	RS	0.0022 U	ug/L	0.0022		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007935001
Sample ID: ASR Injection Water Grab
Matrix: Environmental Water

Sampled: 08/29/01 15:45
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
1,2-Dibromoethane	EPA 504.1	08/30/01 22:19	RS	**0.0024 U**	ug/L	0.0024		E96080
Chlordane	EPA 505	08/30/01 22:10	RS	**0.084 U**	ug/L	0.084		E96080
Endrin	EPA 505	08/30/01 22:10	RS	**0.037 U**	ug/L	0.037		E96080
gamma-BHC (Lindane)	EPA 505	08/30/01 22:10	RS	**0.019 U**	ug/L	0.019		E96080
Heptachlor	EPA 505	08/30/01 22:10	RS	**0.082 U**	ug/L	0.082		E96080
Heptachlor epoxide	EPA 505	08/30/01 22:10	RS	**0.020 U**	ug/L	0.020		E96080
Methoxychlor	EPA 505	08/30/01 22:10	RS	**0.016 U**	ug/L	0.016		E96080
,phene	EPA 505	08/30/01 22:10	RS	**0.92 U**	ug/L	0.92		E96080
PCB	EPA 508	09/8/01 5:17	RS	**0.24 U**	ug/L	0.24		E96080
2,4,5-TP	EPA 515.1	09/7/01 23:51	RS	**0.41 U**	ug/L	0.41		E96080
2,4-D	EPA 515.1	09/7/01 23:51	RS	**0.53 U**	ug/L	0.53		E96080
Dalapon	EPA 515.1	09/7/01 23:51	RS	**2.6 U**	ug/L	2.6		E96080
Dinoseb	EPA 515.1	09/7/01 23:51	RS	**0.58 U**	ug/L	0.58		E96080
Pentachlorophenol	EPA 515.1	09/7/01 23:51	RS	**0.34 U**	ug/L	0.34		E96080
Picloram	EPA 515.1	09/7/01 23:51	RS	**0.26 U**	ug/L	0.26		E96080
,1,1,2-Tetrachloroethane	EPA 524.2	08/30/01 21:26	WR	**0.15 U**	ug/L	0.15		E96080
,1,1-Trichloroethane	EPA 524.2	08/30/01 21:26	WR	**0.25 U**	ug/L	0.25		E96080
1,2,2-Tetrachloroethane	EPA 524.2	08/30/01 21:26	WR	**0.39 U**	ug/L	0.39		E96080
1,2-Trichloroethane	EPA 524.2	08/30/01 21:26	WR	**0.23 U**	ug/L	0.23		E96080
1-Dichloroethane	EPA 524.2	08/30/01 21:26	WR	**0.11 U**	ug/L	0.11		E96080
1-Dichloroethene	EPA 524.2	08/30/01 21:26	WR	**0.21 U**	ug/L	0.21		E96080
1-Dichloropropene	EPA 524.2	08/30/01 21:26	WR	**0.10 U**	ug/L	0.10		E96080
2,3-Trichloropropane	EPA 524.2	08/30/01 21:26	WR	**0.26 U**	ug/L	0.26		E96080
,4-Trichlorobenzene	EPA 524.2	08/30/01 21:26	WR	**0.37 U**	ug/L	0.37		E96080
-Dichlorobenzene	EPA 524.2	08/30/01 21:26	WR	**0.35 U**	ug/L	0.35		E96080
[illegible]loroethane	EPA 524.2	08/30/01 21:26	WR	**0.45 U**	ug/L	0.45		E96080
[illegible]loropropane	EPA 524.2	08/30/01 21:26	WR	**0.23 U**	ug/L	0.23		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007935001
Sample ID: ASR Injection Water Grab
Matrix: Environmental Water

Sampled: 08/29/01 15:45
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
1,3-Dichlorobenzene	EPA 524.2	08/30/01 21:26	WR	0.22 U	ug/L	0.22		E96080
1,3-Dichloropropane	EPA 524.2	08/30/01 21:26	WR	0.30 U	ug/L	0.30		E96080
1,3-Dichloropropene	EPA 524.2	08/30/01 21:26	WR	0.30 U	ug/L	0.30		E96080
1,4-Dichlorobenzene	EPA 524.2	08/30/01 21:26	WR	0.28 U	ug/L	0.28		E96080
2,2-Dichloropropane	EPA 524.2	08/30/01 21:26	WR	0.47 U	ug/L	0.47		E96080
2-Chlorotoluene	EPA 524.2	08/30/01 21:26	WR	0.18 U	ug/L	0.18		E96080
4-Chlorotoluene	EPA 524.2	08/30/01 21:26	WR	0.16 U	ug/L	0.16		E96080
ne	EPA 524.2	08/30/01 21:26	WR	0.090 U	ug/L	0.090		E96080
Bromobenzene	EPA 524.2	08/30/01 21:26	WR	0.20 U	ug/L	0.20		E96080
Bromodichloromethane	EPA 524.2	08/30/01 21:26	WR	0.27 U	ug/L	0.27		E96080
Bromoform	EPA 524.2	08/30/01 21:26	WR	0.48 U	ug/L	0.48		E96080
Bromomethane	EPA 524.2	08/30/01 21:26	WR	0.41 U	ug/L	0.41		E96080
Carbon tetrachloride	EPA 524.2	08/30/01 21:26	WR	0.28 U	ug/L	0.28		E96080
Chlorobenzene	EPA 524.2	08/30/01 21:26	WR	0.23 U	ug/L	0.23		E96080
Chloroethane	EPA 524.2	08/30/01 21:26	WR	0.42 U	ug/L	0.42		E96080
Chloroform	EPA 524.2	08/30/01 21:26	WR	0.18 U	ug/L	0.18		E96080
hloromethane	EPA 524.2	08/30/01 21:26	WR	0.43 U	ug/L	0.43		E96080
s-1,2-Dichloroethene	EPA 524.2	08/30/01 21:26	WR	0.23 U	ug/L	0.23		E96080
bromochloromethane	EPA 524.2	08/30/01 21:26	WR	0.40 U	ug/L	0.40		E96080
bromomethane	EPA 524.2	08/30/01 21:26	WR	0.41 U	ug/L	0.41		E96080
chlorodifluoromethane	EPA 524.2	08/30/01 21:26	WR	0.49 U	ug/L	0.49		E96080
ylbenzene	EPA 524.2	08/30/01 21:26	WR	0.19 U	ug/L	0.19		E96080
thyl-tert-butyl-ether	EPA 524.2	08/30/01 21:26	WR	0.24 U	ug/L	0.24		E96080
thylene chloride	EPA 524.2	08/30/01 21:26	WR	0.49 U	ug/L	0.49		E96080
rene	EPA 524.2	08/30/01 21:26	WR	0.24 U	ug/L	0.24		E96080
loroethene	EPA 524.2	08/30/01 21:26	WR	0.26 U	ug/L	0.26		E96080
	EPA 524.2	08/30/01 21:26	WR	0.18 U	ug/L	0.18		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007935001
Sample ID: ASR Injection Water Grab
Matrix: Environmental Water

Sampled: 08/29/01 15:45
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Total THMs	EPA 524.2	08/30/01 21:26	WR	**0.00050 U**	mg/L	0.00050		E96080
Total Xylenes	EPA 524.2	08/30/01 21:26	WR	**0.30 U**	ug/L	0.30		E96080
trans-1,2-Dichloroethene	EPA 524.2	08/30/01 21:26	WR	**0.18 U**	ug/L	0.18		E96080
Trichloroethene	EPA 524.2	08/30/01 21:26	WR	**0.21 U**	ug/L	0.21		E96080
Trichlorofluoromethane	EPA 524.2	08/30/01 21:26	WR	**0.20 U**	ug/L	0.20		E96080
Vinyl chloride	EPA 524.2	08/30/01 21:26	WR	**0.33 U**	ug/L	0.33		E96080
Alachlor	EPA 525	09/3/01 0:46	WR	**0.68 U**	ug/L	0.68		E96080
ine	EPA 525	09/3/01 0:46	WR	**0.54 U**	ug/L	0.54		E96080
Benzo(a)pyrene	EPA 525	09/3/01 0:46	WR	**0.078 U**	ug/L	0.078		E96080
bis(2-ethylhexyl)phthalate	EPA 525	09/3/01 0:46	WR	**0.94 U**	ug/L	0.94		E96080
Di(2-ethylhexyl)adipate	EPA 525	09/3/01 0:46	WR	**0.76 U**	ug/L	0.76		E96080
Hexachlorobenzene	EPA 525	09/3/01 0:46	WR	**0.34 U**	ug/L	0.34		E96080
Hexachlorocyclopentadiene	EPA 525	09/3/01 0:46	WR	**0.26 U**	ug/L	0.26		E96080
Simazine	EPA 525	09/3/01 0:46	WR	**0.70 U**	ug/L	0.70		E96080
Carbofuran	EPA 531.1	09/3/01 14:24	JJM	**0.18 U**	ug/L	0.18		E96080
Oxamyl	EPA 531.1	09/3/01 14:24	JJM	**0.10 U**	ug/L	0.10		E96080
Glyphosate	EPA 547	09/12/01 16:57	SAL	**10 U**	ug/L	10		E84129
Endothall	EPA 548.1	09/19/01 14:20	WR	**2.8 U**	ug/L	2.8		E96080
Diquat	EPA 549.1	09/10/01 14:03	JJM	**2.6 U**	ug/L	2.6		E96080
Gross Alpha	EPA 900.0	09/12/01 0:00	KNL	**8.7 +/- 1.6**	pCi/L			E84025
Radium 226	EPA 903.1	09/13/01 0:00	KNL	**2.2 +/- 0.8**	pCi/L			E84025
Color	SM2120 B	08/30/01 14:30	TCL	**27**	CU	5.0		E96080
Odor	SM2150 B	08/30/01 12:00	PHM	**1.2**	T.O.N.	1.0		E96080
Total Dissolved Solids	SM2540 C	08/31/01 16:00	JL	**310**	mg/L	10		E96080
Cyanide	SM4500CN E	08/31/01 14:01	JL	**0.016 U**	mg/L	0.016		E96080
Surfactants as LAS, Mol.wt.340	SM5540 C	08/31/01 11:20	JL	**0.095**	mg/L	0.019		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007935001
Sample ID: ASR Injection Water Grab
Matrix: Environmental Water

Sampled: 08/29/01 15:45
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Confirmed Fecal Coliform	SM9222 D	08/30/01 12:30	GG	**1 ml filtered and background TNTC, Z qualifier used.**	CFU/100mL	100	Z	E96080
Confirmed Fecal Coliform	SM9222 D	08/30/01 12:30	GG	**0.00**	CFU/100mL	100	Z	E96080
Confirmed Total Coliform	SM9222 D	08/30/01 12:30	GG	**1 ml filtered and background TNTC, Z qualifier used.**	CFU/100mL	100	Z	E96080
Confirmed Total Coliform	SM9222 D	08/30/01 12:30	GG	**0.00**	CFU/100mL	100	Z	E96080
Total Coliform	SM9222 D	08/30/01 12:30	GG	**1 ml filtered and background was TNTC, Z qualifier used**	CFU/100mL	100	Z	E96080
Total Coliform	SM9222 D	08/30/01 12:30	GG	**0.00**	CFU/100mL	100	Z	E96080

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name: 2007935-2007937, 2008032

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Sample Description		2007935001					
Matrix		Groundwater					
SAL Sample Number		25635.01					
Date/Time Collected		08/29/01 15:45					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 16:57		DF
Sample Description		2007936001					
Matrix		Groundwater					
SAL Sample Number		25635.02					
Date/Time Collected		08/29/01 17:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:09		DF
Sample Description		2007937001					
Matrix		Groundwater					
SAL Sample Number		25635.03					
Date/Time Collected		08/29/01 16:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:22		DF
Sample Description		2008032001					
Matrix		Wastewater					
SAL Sample Number		25635.04					
Date/Time Collected		09/07/01 08:20					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	610	EPA 547	10	09/12/01 17:44		DF

FDOH Laboratory No. E84129
Comprehensive QA Plan No. 870317

Francis I. Daniels

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name **2007935-2007937, 2008032**

Footnotes

U Analyte was not detected; indicated concentration is method detection limit.

FDOH Laboratory No. E84129
Comprehensive QA Plan No. 870317

Approved By: Francis I. Daniels

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U. S. 1 North, Ft. Pierce, Fl. 946, 561-465-2400 ext. 292
Fax: (561) 467-1584

Form 001A

CHAIN OF CUSTODY RECORD

Receiving Laboratory: Southern Analytical

The samples are to be shipped by Fed Ex to arrive on 9.11.01. TAT: Std

HARBOR BRANCH ENVIRONMENTAL LABORATORY

PROJECT NAME:

SAMPLE TYPE: Composite = C, Grab = G, Other = O

MATRIX: Drk. Wtr. = DW, Grd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

PRESERVATIVE: Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU; Unpreserved = U

Client Code	MATRIX	2001 COLLECTION DATE	TIME	TYPE	HBEL SAMPLE ID	#	ANALYSIS REQUIRED / PRESERVATIVE: 547	COLLECTION REMARKS / SAMPLE COMMENTS
FMS	GW	8/29	1545	G	20007935.001	1	✓	
FMS	GW	8/29	1730	G	20007936.001	1	✓	
FMS	GW	8/29	1630	G	20007937.001	1	✓	
MCL	WW	9/7	0910	G	20005032.001	1	✓	LEACHate

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[illegible]	9.10.01	1600	FEDEX		
FEDEX			LABORATORY NAME AND RECEIVED BY: Shirley / Southern Analytical Labs	9/11/01	1400

DOH Certification #E84025
DEP COMPQAP # 870251

KNL LABORATORY SERVICES
2742 N. Florida Ave.
P.O. Box 1833
Tampa, Florida 33601
(813) 229-2879
Fax (813) 229-0002

Report Date: September 20, 2001

Harbor Branch Environmental Labs
5600 U.S. 1 North
Ft. Pierce, FL 34946

Attn: Eric Charest

Field Custody:	Client
Client/Field ID:	2007935001
Sample Collection:	8-29-01
Lab ID No:	61142
Lab Custody Date:	8-31-01
Sample description:	GW

Parameter	Units	Results			Analysis Date	Method	Data Qualifier
Gross Alpha	pCi/l	8.7	±	1.6	9-07-01	EPA 900.0	
Radium-226	pCi/l	2.2	±	0.8	9-13-01	EPA 903.1	

Alpha Standard: Th-230

James W. Hayes
Laboratory Manager

hor Branch
ronmental Laboratory

HARBOR BRANCH ENVIRONMEN .L LABORATORY
5600 U. S. 1 North, Ft. Pierce, FL 34946, 561-465-2400 ext. 292
Fax: (561) 467-1584
CHAIN OF CUSTODY RECORD

Form 001A

ceiving Laboratory: KNL

he samples are to be shipped by Fed-Ex to arrive on ~~8.31.01~~ 9.1 8.31.01 TAT: Std.

ARBOR BRANCH ENVIRONMENTAL LABORATORY

OJECT NAME:

MPLE TYPE: Composite = C, Grab = G, er = O

MATRIX: Drk Wtr. = DW, Grd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

ESERVATIVE Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU, preserved = U

Client Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	HBCL SAMPLE ID	#	ANALYSIS REQUIRED: PRESERVATIVE HNO3 — Gross α, Conditional	COLLECTION REMARKS / SAMPLE COMMENTS
FWS	GW	8/29	1545	G	2007935 001	1	✓	
FWS	GW	8/29	1730	G	2007936 001	1	✓	
FWS	GW	8/29	1630	G	2007937 001	1	✓	

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Ben North	8.30.01	1600			
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY:	DATE	TIME
			yl Anderson / KNL	8/31/01	1000

Page of

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

INORGANIC ANALYSIS
62 - 550.310 (1)
(PWS030)

lient: Florida Water Services

ample Location: ASR Injection Water Grab

ample Number: 2007935001

ampling Date: 8/29/01 15:45

eservative: Nitric Acid, Sodium Hydroxide, or None

te Received: 8/30/01 9:45

Workorder: 2601 Marco Lakes ASR DW Scan

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1005	Arsenic	[0.05]	**0.0032 U**	mg/L	EPA 200.7	0.0032	9/01/01	E96080
1010	Barium	[2]	**0.027**	mg/L	EPA 200.7	0.0018	9/01/01	E96080
1015	Cadmium	[0.005]	**0.00070 U**	mg/L	EPA 200.7	0.00070	9/01/01	E96080
1020	Chromium	[0.1]	**0.0018 U**	mg/L	EPA 200.7	0.0018	9/01/01	E96080
1024	Cyanide	[0.2]	**0.016 U**	mg/L	SM4500CN E	0.016	8/31/01	E96080
1025	Fluoride	[4]	**0.16**	mg/L	EPA 300.0	0.011	8/30/01	E96080
)	Lead	[0.015]	**0.0011 U**	mg/L	EPA 200.9	0.0011	9/01/01	E96080
1035	Mercury	[0.002]	**0.000060 U**	mg/L	EPA 245.1	0.000060	9/05/01	E96080
1036	Nickel	[0.1]	**0.0020 U**	mg/L	EPA 200.7	0.0020	9/01/01	E96080
1040	Nitrate as N	[10]	**0.19**	mg/L	EPA 300.0	0.0030	8/30/01	E96080
041	Nitrite as N	[1]	**0.0022 U**	mg/L	EPA 300.0	0.0022	8/30/01 22:52	E96080
045	Selenium	[0.05]	**0.0022 U**	mg/L	EPA 200.9	0.0022	9/05/01	E96080
052	Sodium	[160]	**53**	mg/L	EPA 200.7	0.50	9/01/01	E96080
074	Antimony	[0.006]	**0.0042 U**	mg/L	EPA 200.9	0.0042	9/06/01	E96080
075	Beryllium	[0.004]	**0.00010 U**	mg/L	EPA 200.7	0.00010	9/01/01	E96080
085	Thallium	[0.002]	**0.0010 U**	mg/L	EPA 200.9	0.0010	9/05/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Trihalomethane Analysis
62-550.310 (2) (a)
(PWS027)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: ASR Injection Water Grab
Sample Number: 2007935001
Sampling Date: 8/29/01 15:45
Preservative: 1:1 Hydrochloric Acid
Date Received: 8/30/01 9:45

ID	Parameter	MCL	Chlorine Residual	Result		Method	MDL	Date	Lab ID
2950	Total THMs	[0.10]	———	**0.00050 U**	mg/L	EPA 524.2	0.00050	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Volatile Organic Analysis
62 - 550.310 (2) (b)
(PWS028)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: ASR Injection Water Grab

Sample Number: 2007935001

Sampling Date: 8/29/01 15:45

Preservative: 1:1 Hydrochloric Acid and Sodium Thiosulfate

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
2378	1,2,4-Trichlorobenzene	[70]	**0.37 U**	ug/L	EPA 524.2	0.37	8/30/01	E96080
2380	cis-1,2-Dichloroethene	[70]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2955	Total Xylenes	[10000]	**0.30 U**	ug/L	EPA 524.2	0.30	8/30/01	E96080
2964	Methylene chloride	[5]	**0.49 U**	ug/L	EPA 524.2	0.49	8/30/01	E96080
2968	1,2-Dichlorobenzene	[600]	**0.35 U**	ug/L	EPA 524.2	0.35	8/30/01	E96080
2969	1,4-Dichlorobenzene	[75]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
3	Vinyl chloride	[1]	**0.33 U**	ug/L	EPA 524.2	0.33	8/30/01	E96080
2977	1,1-Dichloroethene	[7]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2979	trans-1,2-Dichloroethene	[100]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
2980	1,2-Dichloroethane	[3]	**0.45 U**	ug/L	EPA 524.2	0.45	8/30/01	E96080
2980	1,1,1-Trichloroethane	[200]	**0.25 U**	ug/L	EPA 524.2	0.25	8/30/01	E96080
2982	Carbon tetrachloride	[3]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
2983	1,2-Dichloropropane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2984	Trichloroethene	[3]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2985	1,1,2-Trichloroethane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2987	Tetrachloroethene	[3]	**0.26 U**	ug/L	EPA 524.2	0.26	8/30/01	E96080
989	Chlorobenzene	[100]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
990	Benzene	[1]	**0.090 U**	ug/L	EPA 524.2	0.090	8/30/01	E96080
991	Toluene	[1000]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
992	Ethylbenzene	[700]	**0.19 U**	ug/L	EPA 524.2	0.19	8/30/01	E96080
996	Styrene	[70]	**0.24 U**	ug/L	EPA 524.2	0.24	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

PESTICIDES PCB CHEMICAL ANALYSIS
62 - 550.310 (2) (c)
(PWS029)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: ASR Injection Water Grab
Sample Number: 2007935001
Sampling Date: 8/29/01 15:45
Preservative: Sodium Thiosulfate
Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
2005	Endrin	[2]	**0.037 U**	ug/L	EPA 505	0.037	8/30/01	E96080
2010	gamma-BHC (Lindane)	[0.2]	**0.019 U**	ug/L	EPA 505	0.019	8/30/01	E96080
2015	Methoxychlor	[40]	**0.016 U**	ug/L	EPA 505	0.016	8/30/01	E96080
2020	Toxaphene	[3]	**0.92 U**	ug/L	EPA 505	0.92	8/30/01	E96080
2031	Dalapon	[200]	**2.6 U**	ug/L	EPA 515.1	2.6	9/07/01	E96080
2032	Diquat	[20]	**2.6 U**	ug/L	EPA 549.1	2.6	9/10/01	E96080
2033	Endothall	[100]	**2.8 U**	ug/L	EPA 548.1	2.8	9/19/01	E96080
[illegible]	Glyphosate	[700]	**10 U**	ug/L	EPA 547	10	9/12/01	E84129
2035	Di(2-ethylhexyl)adipate	[400]	**0.76 U**	ug/L	EPA 525	0.76	9/03/01	E96080
2036	Oxamyl	[200]	**0.10 U**	ug/L	EPA 531.1	0.10	9/03/01	E96080
2037	Simazine	[4]	**0.70 U**	ug/L	EPA 525	0.70	9/03/01	E96080
2039	bis(2-ethylhexyl)phthalate	[6]	**0.94 U**	ug/L	EPA 525	0.94	9/03/01	E96080
2040	Picloram	[500]	**0.26 U**	ug/L	EPA 515.1	0.26	9/07/01	E96080
2041	Dinoseb	[7]	**0.58 U**	ug/L	EPA 515.1	0.58	9/07/01	E96080
2042	Hexachlorocyclopentadiene	[50]	**0.26 U**	ug/L	EPA 525	0.26	9/03/01	E96080
2046	Carbofuran	[40]	**0.18 U**	ug/L	EPA 531.1	0.18	9/03/01	E96080
2050	Atrazine	[3]	**0.54 U**	ug/L	EPA 525	0.54	9/03/01	E96080
2051	Alachlor	[2]	**0.68 U**	ug/L	EPA 525	0.68	9/03/01	E96080
2065	Heptachlor	[0.4]	**0.082 U**	ug/L	EPA 505	0.082	8/30/01	E96080
2067	Heptachlor epoxide	[.2]	**0.020 U**	ug/L	EPA 505	0.020	8/30/01	E96080
2105	2,4-D	[70]	**0.53 U**	ug/L	EPA 515.1	0.53	9/07/01	E96080
2110	2,4,5-TP	[50]	**0.41 U**	ug/L	EPA 515.1	0.41	9/07/01	E96080
2274	Hexachlorobenzene	[1]	**0.34 U**	ug/L	EPA 525	0.34	9/03/01	E96080
2306	Benzo(a)pyrene	[.2]	**0.078 U**	ug/L	EPA 525	0.078	9/03/01	E96080
2326	Pentachlorophenol	[1]	**0.34 U**	ug/L	EPA 515.1	0.34	9/07/01	E96080
2383	PCB	[.5]	**0.24 U**	ug/L	EPA 508	0.24	9/08/01	E96080
2411	1,2-Dibromo-3-chloropropane	[.2]	**0.0022 U**	ug/L	EPA 504.1	0.0022	8/30/01	E96080
[illegible]	1,2-Dibromoethane	[.02]	**0.0024 U**	ug/L	EPA 504.1	0.0024	8/30/01	E96080
2959	Chlordane	[2]	**0.084 U**	ug/L	EPA 505	0.084	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

RADIOCHEMICAL ANALYSIS
62 - 550.310 (5)
(PWS033)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: ASR Injection Water Grab

Sample Number: 2007935001

Sampling Date: 8/29/01 15:45

Preservative: Nitric Acid

Date Received: 8/30/01 9:45

ID	Parameter	Result | Error		Method	Date	Lab ID
4000	Gross Alpha	8.7 +/- 1.6	pCi/L	EPA 900.0	9/12/01	E84025
4020	Radium 226	2.2 +/- 0.8	pCi/L	EPA 903.1	9/13/01	E84025

HARBOR BRANCH ENVIRONMENTAL LABORATORY
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SECONDARY CHEMICAL ANALYSIS
62 - 550.320
(PWS031)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: ASR Injection Water Grab

Sample Number: 2007935001

Sampling Date: 8/29/01 15:45

Preservative: Nitric Acid or None

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1002	Aluminum	[0.2]	**0.0030 U**	mg/L	EPA 200.7	0.0030	9/01/01	E96080
1017	Chloride	[250]	**130**	mg/L	EPA 300.0	5.0	9/06/01	E96080
1022	Copper	[1]	**0.0014 U**	mg/L	EPA 200.7	0.0014	9/01/01	E96080
1025	Fluoride	[4]	**0.16**	mg/L	EPA 300.0	0.011	8/30/01	E96080
1028	Iron	[0.3]	**0.025 U**	mg/L	EPA 200.7	0.025	9/01/01	E96080
1[illegible]	Manganese	[0.05]	**0.0038 U**	mg/L	EPA 200.7	0.0038	9/01/01	E96080
1050	Silver	[0.1]	**0.0010 U**	mg/L	EPA 200.7	0.0010	9/01/01	E96080
1055	Sulfate	[250]	**56**	mg/L	EPA 300.0	1.4	9/06/01	E96080
1095	Zinc	[5]	**0.010 U**	mg/L	EPA 200.7	0.010	9/01/01	E96080
1905	Color	[15]	**27**	CU	SM2120 B	5.0	8/30/01	E96080
1920	Odor	[3]	**1.2**	T.O.N.	SM2150 B	1.0	8/30/01	E96080
1925	pH	[6.5-8.5]	**7.33**	SU	EPA 150.1	0.200	9/05/01	E96080
1930	Total Dissolved Solids	[500]	**310**	mg/L	SM2540 C	10	8/31/01	E96080
1905	Foaming Agents	[0.5]	**0.095**	mg/L	SM5540 C	0.019	8/31/01	E96080

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(561) 465-2400, Ext. 285

Unregulated Group II Analysis
62 - 550.410
(PWS034)

Client:	Florida Water Services	Workorder:	2601 Marco Lakes ASR DW Scan
Sample Location:	ASR Injection Water Grab		
Sample Number:	2007935001		
Sampling Date:	8/29/01 15:45		
Preservative:	1:1 Hydrochloric Acid		
Date Received:	8/30/01 9:45		

ID	Parameter	Result		Method	MDL	Date	Lab ID
2210	Chloromethane	0.43 U	ug/L	EPA 524.2	0.43	8/30/01	E96080
2212	Dichlorodifluoromethane	0.49 U	ug/L	EPA 524.2	0.49	8/30/01	E96080
2214	Bromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2216	Chloroethane	0.42 U	ug/L	EPA 524.2	0.42	8/30/01	E96080
2218	Trichlorofluoromethane	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080
[illegible]	Methyl-tert-butyl-ether	0.24 U	ug/L	EPA 524.2	0.24	8/30/01	E96080
2408	Dibromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2410	1,1-Dichloropropene	0.10 U	ug/L	EPA 524.2	0.10	8/30/01	E96080
2412	1,3-Dichloropropane	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
2413	1,3-Dichloropropene	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
2414	1,2,3-Trichloropropane	0.26 U	ug/L	EPA 524.2	0.26	8/30/01	E96080
2416	2,2-Dichloropropane	0.47 U	ug/L	EPA 524.2	0.47	8/30/01	E96080
2941	Chloroform	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
2942	Bromoform	0.48 U	ug/L	EPA 524.2	0.48	8/30/01	E96080
943	Bromodichloromethane	0.27 U	ug/L	EPA 524.2	0.27	8/30/01	E96080
944	Dibromochloromethane	0.40 U	ug/L	EPA 524.2	0.40	8/30/01	E96080
965	2-Chlorotoluene	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
966	4-Chlorotoluene	0.16 U	ug/L	EPA 524.2	0.16	8/30/01	E96080
967	1,3-Dichlorobenzene	0.22 U	ug/L	EPA 524.2	0.22	8/30/01	E96080
978	1,1-Dichloroethane	0.11 U	ug/L	EPA 524.2	0.11	8/30/01	E96080
986	1,1,1,2-Tetrachloroethane	0.15 U	ug/L	EPA 524.2	0.15	8/30/01	E96080
988	1,1,2,2-Tetrachloroethane	0.39 U	ug/L	EPA 524.2	0.39	8/30/01	E96080
993	Bromobenzene	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080

Pierce, FL 34946

82500/E82417
First Coast Hwy., Suite 1
ndina Beach, FL 32034

83486/E83509
nterprise Road, Suite 1
a, FL 32725

85512/E85370
oolidge Avenue
Acres, FL 33936

84256/E84418
Osawaw Blvd.
Hill, FL 34607

...BOR BRANCH ENVIRONM...NTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Custody

USE BALL POINT PEN ONLY

Company: Florida Water Services Method of Shipment: fed EX

Address: 960 N. Collier Blvd. Marco Island FL 34145

Cooler #'s

Date 08-29-01 Time

☒ Standard Turn Around Time

☐ Rush in _____ Business Days

Phone: (941) 394-3353 Fax (941) 394-4069

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: SIMOS

Purchase Order #:

For Lab Use Only

Temperature Checked (Y) N | Custody Seals Intact Y N | pH Checked Y N | HPN # 2007937

PRESERVATIVE: a | c | B | A | D | b | c

ANALYSES REQUESTED

Preservation Key: H-Hydrochloric Acid; N-Nitric Acid; S-Sulfuric Acid; SH-Sodium Hydroxide; P-Phosphoric Acid; ST-Sodium Thiosulfate; U-Unpreserved

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	Gross ALPHA	ODOR	525.2	515.1	508 Pest	549 Diquat	1"F2"Methods	ALK, Co, ND PH, Color, TDS	COMMENTS °C PH	D.O.	temp
	08-29-01	1630	G	GW	8	Mon. Well Deep Zone 1	1	1	1	1	1	1	1	1	8.0	2.6	28.5

* Type: G-Grab C-Composite O-Other ** Matrix: S-Solid SL-Sludge DW-Drinking Water GW-Ground Water SW-Surface Water WW-Wastewater

BY S.SIMOS	RELINQUISHED BY	RELINQUISHED BY	
08-29-01 2100	DATE/TIME	DATE/TIME	
	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY	
	DATE/TIME	DATE/TIME	8:30-01 0945

E with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

DOH # 82500/E82417
390 First Coast Hwy., Suite 1
rnandina Beach, FL 32034

OH # 83486/E83509
5 Enterprise Road, Suite 1
ltona, FL 32725

OH # 85512/E85370
7 Coolidge Avenue
igh Acres, FL 33936

OH # 84256/E84418
4 Osaweaw Blvd.
ng Hill, FL 34607

ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Custody

Company: Florida Water Services
Address: 960 N. Collier Blvd. Marco Island FL 34145
Phone (941) 394-3353 Fax (941) 394-4069
Client Contact: Frank Kane
Project Name: Marco Lakes ASR
Sampled By: SIMOS
Purchase Order #:

Method of Shipment: fed-ex
Cooler #'s
Date Time

USE BALL POINT PEN ONLY
[X] Standard Turn Around Time
[ ] Rush in _____ Business Days

For Lab Use Only
Temperature Checked (Y) N
Custody Seals Intact Y N
pH Checked Y N
HPN # 2007937

PRESERVATIVE: a | b | c | d | e | f | g | h | i

Preservation Key
H – Hydrochloric Acid
N – Nitric Acid
S – Sulfuric Acid
SH – Sodium Hydroxide
P – Phosphoric Acid
ST – Sodium Thiosulfate
U – Unpreserved

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	ANALYSES REQUESTED: CN	MBAS	547 Glycols	NO3/NO2 Cl, SO4, F	531.1 Carbamates	548 Endothall	Reg. VOCs	504 EDB DBPC	COMMENTS
			G	GW	14	Mon. Well Deep Zone 1	1	1	1	1	1	3	3	3	

Sample Type: G – Grab C – Composite O – Other
** Matrix: S – Solid SL – Sludge DW – Drinking Water GW – Ground Water SW – Surface Water WW – Wastewater

RELINQUISHED BY S. SIMOS	RELINQUISHED BY
DATE/TIME 08-29-01 2100	DATE/TIME
RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY Brett
DATE/TIME	DATE/TIME 8-30-01 0945

WHITE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

t Pierce, FL 34946

H # 82500/E82417
0 First Coast Hwy., Suite 1
andina Beach, FL 32034

H # 83486/E83509
Enterprise Road, Suite 1
na, FL 32725

H # 85512/E85370
Coolidge Avenue
h Acres, FL 33936

H # 84256/E84418
Osaweo Blvd.
Hill, FL 34607

HARBOR BRANCH ENVIRONMENTAL LABORATORY

Phone: (561) 465-2400, Ext. 285 Fax: (561) 467-1584

Chain-of-Custody

USE BALL POINT PEN ONLY

Company: Florida Water Services Method of Shipment: fed EX

Address: 960 N. Collier Blvd.

Marco Island FL. 34145 Cooler #'s

Phone: (941) 394-3353 Fax: (941) 394-4069 Date 08-29-01 Time

☐ Standard Turn Around Time

☐ Rush in _____ Business Days

Client Contact: Frank Kane

Project Name: Marco Lakes ASR

Sampled By: SIMOS

Purchase Order #:

For Lab Use Only

Temperature Checked (Y) N | Custody Seals Intact Y N | pH Checked Y N | HPN # 2007937

FIELD ID	COLLECTION DATE	COLLECTION TIME	Sample Type*	MATRIX**	# Containers	SAMPLE LOCATION	PRESERVATIVE: H	J	P	ANALYSES REQUESTED: SOS	THMS	TOTAL COLIFORM (MF)	COMMENTS
	08-29-01	1630	G	GW	7	Mon. Well Deep Zone				3	3	1	

Preservation Key: H – Hydrochloric Acid; P – Phosphoric Acid; N – Nitric Acid; ST – Sodium Thiosulfate; S – Sulfuric Acid; U – Unpreserved; SH – Sodium Hydroxide

* Type: G – Grab C – Composite O – Other

** Matrix: S – Solid SL – Sludge DW – Drinking Water GW – Ground Water SW – Surface Water WW – Wastewater

D BY S. SIMOS	RELINQUISHED BY	RELINQUISHED BY	
08-29-01 2100	DATE/TIME	DATE/TIME	
	RECEIVED BY	RECEIVED FOR HBEL CUSTODY BY	
	DATE/TIME	DATE/TIME	8:30-01 0945

TE with REPORT; YELLOW for FILE; PINK to CLIENT; GOLD for RECEIVING; GREEN for SAMPLER

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
561) 465-2400, Ext. 285

September 20, 2001

Frank Kane
Florida Water Services
960 N Collier Blvd
Marco Island, FL 341452721

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan [2007937]
Received: 8/30/01 9:45

Dear Frank Kane;

Analytical results presented in this report have been reviewed for compliance with the Harbor Branch Environmental Laboratory Comprehensive Quality Assurance Plan (FDEP CQAP #870174) and applicable quality control criteria. The quality control parameters evaluated have met all method and compliance criteria unless otherwise noted on a Quality Control Summary Page immediately following this coversheet.

FDOH Safe Drinking Water Act, Clean Water Act and RCRA Certification #'s:

E96080, E83509, E82417, E85370, E84418

Note: This report is not to be copied, except in full, without the expressed written consent of the Harbor Branch Environmental Laboratory.

Respectfully submitted,

Cindy Cromer
Laboratory Director

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007937001
Sample ID: MW Deep Zone 1 Grab
Matrix: Environmental Water

Sampled: 08/29/01 16:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Specific Conductance	EPA 120.1	08/31/01 15:45	GG	2300	umhos/cm	0.36		E96080
pH [6.5-8.5]	EPA 150.1	09/5/01 13:30	TCL	8.05	SU	0.200	Q	E96080
Aluminum	EPA 200.7	09/1/01 14:32	SP	0.0030 U	mg/L	0.0030		E96080
Arsenic	EPA 200.7	09/1/01 14:32	SP	0.0032 U	mg/L	0.0032		E96080
[illegible]ium	EPA 200.7	09/1/01 14:32	SP	0.014	mg/L	0.0018		E96080
Beryllium	EPA 200.7	09/1/01 14:32	SP	0.00010 U	mg/L	0.00010		E96080
Cadmium	EPA 200.7	09/1/01 14:32	SP	0.00070 U	mg/L	0.00070		E96080
Chromium	EPA 200.7	09/1/01 14:32	SP	0.0018 U	mg/L	0.0018		E96080
Copper	EPA 200.7	09/1/01 14:32	SP	0.0014 U	mg/L	0.0014		E96080
Iron	EPA 200.7	09/1/01 14:32	SP	0.73	mg/L	0.025		E96080
Manganese	EPA 200.7	09/1/01 14:32	SP	0.0041	mg/L	0.0038		E96080
Nickel	EPA 200.7	09/1/01 14:32	SP	0.0020 U	mg/L	0.0020		E96080
Silver	EPA 200.7	09/1/01 14:32	SP	0.0010 U	mg/L	0.0010		E96080
Sodium	EPA 200.7	09/1/01 14:32	SP	340	mg/L	0.50		E96080
Zinc	EPA 200.7	09/1/01 14:32	SP	0.015	mg/L	0.010		E96080
Antimony	EPA 200.9	09/6/01 18:48	DM	0.0042 U	mg/L	0.0042		E96080
Lead	EPA 200.9	09/1/01 12:34	SP	0.0011 U	mg/L	0.0011		E96080
Selenium	EPA 200.9	09/5/01 16:02	DM	0.0022 U	mg/L	0.0022		E96080
Thallium	EPA 200.9	09/5/01 11:27	SP	0.0010 U	mg/L	0.0010		E96080
Mercury	EPA 245.1	09/5/01 18:24	DM	0.000060 U	mg/L	0.000060		E96080
[illegible]e	EPA 300.0	09/6/01 19:42	SMB	470	mg/L	5.0		E96080
Fluoride	EPA 300.0	08/30/01 23:10	SMB	1.1	mg/L	0.011		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007937001
Sample ID: MW Deep Zone 1 Grab
Matrix: Environmental Water

Sampled: 08/29/01 16:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Nitrate as N	EPA 300.0	08/30/01 23:10	SMB	**0.0030 U**	mg/L	0.0030		E96080
Nitrite as N	EPA 300.0	08/30/01 23:10	SMB	**0.0022 U**	mg/L	0.0022		E96080
Sulfate	EPA 300.0	09/6/01 19:42	SMB	**210**	mg/L	1.4		E96080
Alkalinity	EPA 310.1	09/5/01 10:00	GG	**220**	mg/L CaCO3	2.0		E96080
1,2-Dibromo-3-chloropropane	EPA 504.1	08/30/01 23:25	RS	**0.0022 U**	ug/L	0.0022		E96080
Dibromoethane	EPA 504.1	08/30/01 23:25	RS	**0.0024 U**	ug/L	0.0024		E96080
Chlordane	EPA 505	08/30/01 23:03	RS	**0.087 U**	ug/L	0.087		E96080
Endrin	EPA 505	08/30/01 23:03	RS	**0.039 U**	ug/L	0.039		E96080
gamma-BHC (Lindane)	EPA 505	08/30/01 23:03	RS	**0.020 U**	ug/L	0.020		E96080
Heptachlor	EPA 505	08/30/01 23:03	RS	**0.085 U**	ug/L	0.085		E96080
Heptachlor epoxide	EPA 505	08/30/01 23:03	RS	**0.021 U**	ug/L	0.021		E96080
Methoxychlor	EPA 505	08/30/01 23:03	RS	**0.017 U**	ug/L	0.017		E96080
Toxaphene	EPA 505	08/30/01 23:03	RS	**0.96 U**	ug/L	0.96		E96080
PCB	EPA 508	09/8/01 7:37	RS	**0.24 U**	ug/L	0.24		E96080
2,4,5-TP	EPA 515.1	09/8/01 1:04	RS	**0.41 U**	ug/L	0.41		E96080
2,4-D	EPA 515.1	09/8/01 1:04	RS	**0.53 U**	ug/L	0.53		E96080
Dalapon	EPA 515.1	09/8/01 1:04	RS	**2.6 U**	ug/L	2.6		E96080
Dinoseb	EPA 515.1	09/8/01 1:04	RS	**0.58 U**	ug/L	0.58		E96080
Pentachlorophenol	EPA 515.1	09/8/01 1:04	RS	**0.34 U**	ug/L	0.34		E96080
Picloram	EPA 515.1	09/8/01 1:04	RS	**0.26 U**	ug/L	0.26		E96080
1,1,1,2-Tetrachloroethane	EPA 524.2	08/30/01 22:40	WR	**0.15 U**	ug/L	0.15		E96080
Trichloroethane	EPA 524.2	08/30/01 22:40	WR	**0.25 U**	ug/L	0.25		E96080
1,2,2-Tetrachloroethane	EPA 524.2	08/30/01 22:40	WR	**0.39 U**	ug/L	0.39		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007937001
Sample ID: MW Deep Zone 1 Grab
Matrix: Environmental Water

Sampled: 08/29/01 16:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
1,1,2-Trichloroethane	EPA 524.2	08/30/01 22:40	WR	0.23 U	ug/L	0.23		E96080
1,1-Dichloroethane	EPA 524.2	08/30/01 22:40	WR	0.11 U	ug/L	0.11		E96080
1,1-Dichloroethene	EPA 524.2	08/30/01 22:40	WR	0.21 U	ug/L	0.21		E96080
1,1-Dichloropropene	EPA 524.2	08/30/01 22:40	WR	0.10 U	ug/L	0.10		E96080
1,2,3-Trichloropropane	EPA 524.2	08/30/01 22:40	WR	0.26 U	ug/L	0.26		E96080
Trichlorobenzene	EPA 524.2	08/30/01 22:40	WR	0.37 U	ug/L	0.37		E96080
1,2-Dichlorobenzene	EPA 524.2	08/30/01 22:40	WR	0.35 U	ug/L	0.35		E96080
1,2-Dichloroethane	EPA 524.2	08/30/01 22:40	WR	0.45 U	ug/L	0.45		E96080
1,2-Dichloropropane	EPA 524.2	08/30/01 22:40	WR	0.23 U	ug/L	0.23		E96080
1,3-Dichlorobenzene	EPA 524.2	08/30/01 22:40	WR	0.22 U	ug/L	0.22		E96080
1,3-Dichloropropane	EPA 524.2	08/30/01 22:40	WR	0.30 U	ug/L	0.30		E96080
3-Dichloropropene	EPA 524.2	08/30/01 22:40	WR	0.30 U	ug/L	0.30		E96080
4-Dichlorobenzene	EPA 524.2	08/30/01 22:40	WR	0.28 U	ug/L	0.28		E96080
2-Dichloropropane	EPA 524.2	08/30/01 22:40	WR	0.47 U	ug/L	0.47		E96080
Chlorotoluene	EPA 524.2	08/30/01 22:40	WR	0.18 U	ug/L	0.18		E96080
Chlorotoluene	EPA 524.2	08/30/01 22:40	WR	0.16 U	ug/L	0.16		E96080
nzene	EPA 524.2	08/30/01 22:40	WR	0.090 U	ug/L	0.090		E96080
mobenzene	EPA 524.2	08/30/01 22:40	WR	0.20 U	ug/L	0.20		E96080
modichloromethane	EPA 524.2	08/30/01 22:40	WR	0.27 U	ug/L	0.27		E96080
moform	EPA 524.2	08/30/01 22:40	WR	0.48 U	ug/L	0.48		E96080
momethane	EPA 524.2	08/30/01 22:40	WR	0.41 U	ug/L	0.41		E96080
etrachloride	EPA 524.2	08/30/01 22:40	WR	0.28 U	ug/L	0.28		E96080
robenzene	EPA 524.2	08/30/01 22:40	WR	0.23 U	ug/L	0.23		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
'561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007937001
Sample ID: MW Deep Zone 1 Grab
Matrix: Environmental Water

Sampled: 08/29/01 16:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Chloroethane	EPA 524.2	08/30/01 22:40	WR	**0.42 U**	ug/L	0.42		E96080
Chloroform	EPA 524.2	08/30/01 22:40	WR	**0.18 U**	ug/L	0.18		E96080
Chloromethane	EPA 524.2	08/30/01 22:40	WR	**0.43 U**	ug/L	0.43		E96080
cis-1,2-Dichloroethene	EPA 524.2	08/30/01 22:40	WR	**0.23 U**	ug/L	0.23		E96080
Dibromochloromethane	EPA 524.2	08/30/01 22:40	WR	**0.40 U**	ug/L	0.40		E96080
›romomethane	EPA 524.2	08/30/01 22:40	WR	**0.41 U**	ug/L	0.41		E96080
Dichlorodifluoromethane	EPA 524.2	08/30/01 22:40	WR	**0.49 U**	ug/L	0.49		E96080
Ethylbenzene	EPA 524.2	08/30/01 22:40	WR	**0.19 U**	ug/L	0.19		E96080
Methyl-tert-butyl-ether	EPA 524.2	08/30/01 22:40	WR	**0.24 U**	ug/L	0.24		E96080
Methylene chloride	EPA 524.2	08/30/01 22:40	WR	**0.49 U**	ug/L	0.49		E96080
Styrene	EPA 524.2	08/30/01 22:40	WR	**0.24 U**	ug/L	0.24		E96080
Tetrachloroethene	EPA 524.2	08/30/01 22:40	WR	**0.26 U**	ug/L	0.26		E96080
Toluene	EPA 524.2	08/30/01 22:40	WR	**0.18 U**	ug/L	0.18		E96080
Total THMs	EPA 524.2	08/30/01 22:40	WR	**0.00050 U**	mg/L	0.00050		E96080
Total Xylenes	EPA 524.2	08/30/01 22:40	WR	**0.30 U**	ug/L	0.30		E96080
rans-1,2-Dichloroethene	EPA 524.2	08/30/01 22:40	WR	**0.18 U**	ug/L	0.18		E96080
richloroethene	EPA 524.2	08/30/01 22:40	WR	**0.21 U**	ug/L	0.21		E96080
richlorofluoromethane	EPA 524.2	08/30/01 22:40	WR	**0.20 U**	ug/L	0.20		E96080
inyl chloride	EPA 524.2	08/30/01 22:40	WR	**0.33 U**	ug/L	0.33		E96080
lachlor	EPA 525	09/3/01 2:10	WR	**0.68 U**	ug/L	0.68		E96080
razine	EPA 525	09/3/01 2:10	WR	**0.54 U**	ug/L	0.54		E96080
(a)pyrene	EPA 525	09/3/01 2:10	WR	**0.078 U**	ug/L	0.078		E96080
s(2-ethylhexyl)phthalate	EPA 525	09/3/01 2:10	WR	**0.94 U**	ug/L	0.94		E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Client: Florida Water Services
Workorder ID: 2601 Marco Lakes ASR DW Scan
Laboratory ID: 2007937001
Sample ID: MW Deep Zone 1 Grab
Matrix: Environmental Water

Sampled: 08/29/01 16:30
Received: 08/30/01 9:45

Analytical Results:

Parameter	Method	Analyzed Date/Time	Analyst	Result	Units	Reporting Limit	Data Qualifier	Lab ID
Di(2-ethylhexyl)adipate	EPA 525	09/3/01 2:10	WR	0.75 U	ug/L	0.75		E96080
Hexachlorobenzene	EPA 525	09/3/01 2:10	WR	0.34 U	ug/L	0.34		E96080
Hexachlorocyclopentadiene	EPA 525	09/3/01 2:10	WR	0.26 U	ug/L	0.26		E96080
Simazine	EPA 525	09/3/01 2:10	WR	0.70 U	ug/L	0.70		E96080
Carbofuran	EPA 531.1	09/3/01 15:28	JJM	0.18 U	ug/L	0.18		E96080
lyl	EPA 531.1	09/3/01 15:28	JJM	0.10 U	ug/L	0.10		E96080
Glyphosate	EPA 547	09/12/01 17:22	SAL	10 U	ug/L	10		E84129
Endothall	EPA 548.1	09/19/01 15:05	WR	2.8 U	ug/L	2.8		E96080
Diquat	EPA 549.1	09/10/01 14:17	JJM	2.6 U	ug/L	2.6		E96080
Gross Alpha	EPA 900.0	09/12/01 0:00	KNL	8.1 +/- 2.6	pCi/L			
Radium 226	EPA 903.1	09/13/01 0:00	KNL	1.7 +/- 0.5	pCi/L			
Color	SM2120 B	08/30/01 14:30	TCL	7.0	CU	5.0		E96080
Odor	SM2150 B	08/30/01 12:00	PHM	1.5	T.O.N.	1.0		E96080
Total Dissolved Solids	SM2540 C	08/31/01 16:00	JL	1400	mg/L	10		E96080
Cyanide	SM4500CN E	08/31/01 14:01	JL	0.016 U	mg/L	0.016		E96080
urfactants as LAS, Mol.wt.340	SM5540 C	08/31/01 11:20	JL	0.11	mg/L	0.019		E96080
ackground on Total Coli	SM9222 D	08/30/01 12:30	GG	1.0 U	CFU/100mL	1.0		E96080
onfirmed Fecal Coliform	SM9222 D	08/30/01 12:30	GG	1.0 U	CFU/100mL	1.0		E96080
onfirmed Total Coliform	SM9222 D	08/30/01 12:30	GG	1.0 U	CFU/100mL	1.0		E96080
tal Coliform	SM9222 D	08/30/01 12:30	GG	1.0 U	CFU/100mL	1.0		E96080

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name: 2007935-2007937, 2008032

Parameters	Units	Results	Method	Detection Limit	Date/Time Analyzed	Date/Time Prep	Analyst
Sample Description		2007935001					
Matrix		Groundwater					
SAL Sample Number		25635.01					
Date/Time Collected		08/29/01 15:45					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 16:57		DF
Sample Description		2007936001					
Matrix		Groundwater					
SAL Sample Number		25635.02					
Date/Time Collected		08/29/01 17:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:09		DF
Sample Description		2007937001					
Matrix		Groundwater					
SAL Sample Number		25635.03					
Date/Time Collected		08/29/01 16:30					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	10 U	EPA 547	10	09/12/01 17:22		DF
Sample Description		2008032001					
Matrix		Wastewater					
SAL Sample Number		25635.04					
Date/Time Collected		09/07/01 08:20					
Date/Time Received		09/11/01 14:00					
Pesticide Analyses							
Glyphosate	ug/l	610	EPA 547	10	09/12/01 17:44		DF

SOUTHERN ANALYTICAL LABORATORIES, INC.
110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2218

Harbor Branch Oceanographic Institution Inc.
5600 US 1 North
Fort Pierce, FL 34946-

September 13, 2001
Project No: 25635

Laboratory Report

Project Name 2007935-2007937, 2008032

Footnotes

U Analyte was not detected; indicated concentration is method detection limit.

FDOH Laboratory No. E84129
Comprehensive QA Plan No. 870317

Approved By: Francis I. Daniels

Environmental Laboratory
5600 U. S. 1 North, Ft. Pierce, FL. 34 , 561-465-2400 ext. 292
Fax: (561) 467-1584

n 001A

CHAIN OF CUSTODY RECORD

eiving Laboratory: Southern Analytical

e samples are to be shipped by Fed Ex to arrive on 9-11-01. TAT: Std

ARBOR BRANCH ENVIRONMENTAL LABORATORY

JECT NAME:

PLE TYPE: Composite = C, Grab = G, r = O

MATRIX: Drk. Wtr. = DW, Grd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

SERVATIVE: Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU; reserved = U

Client Code	MATRIX	2001 COLLECTION DATE	TIME	TYPE	HBEL SAMPLE ID	#	ANALYSIS REQUIRED / PRESERVATIVE 547	COLLECTION REMARKS / SAMPLE COMMENTS
[illegible]	GW	8/29	1545	G	2007935 001	1	V	
[illegible]	GW	8/29	1730	G	2007936 001	1	V	
[illegible]	GW	8/29	1630	G	2007937 001	1	V	
[illegible]	WW	9/7	0520	G	2005032 001	1	V	LCR/Lists

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
[illegible]	9-10-01	16:00	FEDEX		
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY	DATE	TIME
FEDEX			Sheila Savage / Southern Analytical Labs	9/11/01	1400

DOH Certification #E84025
DEP COMPQAP # 870251

KNL LABORATORY SERVICES
2742 N. Florida Ave.
P.O. Box 1833
Tampa, Florida 33601
(813) 229-2879
Fax (813) 229-0002

Report Date: September 20, 2001

Harbor Branch Environmental Labs
5600 U.S. 1 North
Ft. Pierce, FL 34946

Attn: Eric Charest

Field Custody: Client
Client/Field ID: 2007937001
Sample Collection: 8-29-01

Lab ID No: 61144
Lab Custody Date: 8-31-01
Sample description: GW

Parameter	Units	Results			Analysis Date	Method	Data Qualifier
Gross Alpha	pCi/l	8.1	±	2.6	9-12-01	EPA 900.0	
Radium-226	pCi/l	1.7	±	0.5	9-13-01	EPA 903.1	

lpha Standard: Th-230

James W. Hayes
Laboratory Manager

ranch
ental Laboratory

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U. S. 1 North, Ft. Pierce, FL 34946, 561-465-2400 ext. 292
Fax: (561) 467-1584

Form 001A

CHAIN OF CUSTODY RECORD

ving Laboratory: KNL

samples are to be shipped by Fed-Ex to arrive on ~~8/31~~ 8-31-01 TAT: Std.

BOR BRANCH ENVIRONMENTAL LABORATORY

CT NAME:

LE TYPE: Composite = C, Grab = G, = O

MATRIX: Drk Wtr. = DW, Grd. Wtr. = GW, Surface Wtr. = SW, Wastewtr. = WW, Soil or solids = S, Waste = W

RVATIVE Hydrochloric Acid = H; Nitric Acid = N; Sodium Thiosulfate = S; Sulfuric Acid = SU, erved = U

ANALYSIS REQUIRED							COLLECTION REMARKS
PRESERVATIVE							
HNO3							
Gross α, Conditional							

bient Code	MATRIX	COLLECTION DATE	COLLECTION TIME	TYPE	FIELD SAMPLE ID	#		SAMPLE COMMENTS
FWS	GW	8/29	1545	G	2007935 001	1	✓	
FWS	GW	8/29	1730	G	2007936 001	1	✓	
FWS	GW	8/29	1630	G	2007937 001	1	✓	

RELINQUISHED BY	DATE	TIME	RECEIVED BY	DATE	TIME
Ken North	8-30-01	1600			
RELINQUISHED BY	DATE	TIME	LABORATORY NAME AND RECEIVED BY:	DATE	TIME
			yvl Anderson / KNL	8/31/01	1000

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

INORGANIC ANALYSIS
62 - 550.310 (1)
(PWS030)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep Zone 1 Grab

Sample Number: 2007937001

Sampling Date: 8/29/01 16:30

Preservative: Nitric Acid, Sodium Hydroxide, or None

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1005	Arsenic	[0.05]	**0.0032 U**	mg/L	EPA 200.7	0.0032	9/01/01	E96080
1010	Barium	[2]	**0.014**	mg/L	EPA 200.7	0.0018	9/01/01	E96080
1015	Cadmium	[0.005]	**0.00070 U**	mg/L	EPA 200.7	0.00070	9/01/01	E96080
1020	Chromium	[0.1]	**0.0018 U**	mg/L	EPA 200.7	0.0018	9/01/01	E96080
1024	Cyanide	[0.2]	**0.016 U**	mg/L	SM4500CN E	0.016	8/31/01	E96080
25	Fluoride	[4]	**1.1**	mg/L	EPA 300.0	0.011	8/30/01	E96080
1030	Lead	[0.015]	**0.0011 U**	mg/L	EPA 200.9	0.0011	9/01/01	E96080
1035	Mercury	[0.002]	**0.000060 U**	mg/L	EPA 245.1	0.000060	9/05/01	E96080
1036	Nickel	[0.1]	**0.0020 U**	mg/L	EPA 200.7	0.0020	9/01/01	E96080
1040	Nitrate as N	[10]	**0.0030 U**	mg/L	EPA 300.0	0.0030	8/30/01	E96080
1041	Nitrite as N	[1]	**0.0022 U**	mg/L	EPA 300.0	0.0022	8/30/01	E96080
1045	Selenium	[0.05]	**0.0022 U**	mg/L	EPA 200.9	0.0022	9/05/01	E96080
1052	Sodium	[160]	**340**	mg/L	EPA 200.7	0.50	9/01/01	E96080
1074	Antimony	[0.006]	**0.0042 U**	mg/L	EPA 200.9	0.0042	9/06/01	E96080
1075	Beryllium	[0.004]	**0.00010 U**	mg/L	EPA 200.7	0.00010	9/01/01	E96080
1085	Thallium	[0.002]	**0.0010 U**	mg/L	EPA 200.9	0.0010	9/05/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Trihalomethane Analysis
62 - 550.310 (2) (a)
(PWS027)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep Zone 1 Grab

Sample Number: 2007937001

Sampling Date: 8/29/01 16:30

Preservative: 1:1 Hydrochloric Acid

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Chlorine Residual	Result		Method	MDL	Date	Lab ID
2950	Total THMs	[0.10]		0.00050 U	mg/L	EPA 524.2	0.00050	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Volatile Organic Analysis
62 - 550.310 (2) (b)
(PWS028)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep Zone 1 Grab

Sample Number: 2007937001

Sampling Date: 8/29/01 16:30

Preservative: 1:1 Hydrochloric Acid and Sodium Thiosulfate

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
2378	1,2,4-Trichlorobenzene	[70]	**0.37 U**	ug/L	EPA 524.2	0.37	8/30/01	E96080
2380	cis-1,2-Dichloroethene	[70]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2955	Total Xylenes	[10000]	**0.30 U**	ug/L	EPA 524.2	0.30	8/30/01	E96080
2964	Methylene chloride	[5]	**0.49 U**	ug/L	EPA 524.2	0.49	8/30/01	E96080
2968	1,2-Dichlorobenzene	[600]	**0.35 U**	ug/L	EPA 524.2	0.35	8/30/01	E96080
)69	1,4-Dichlorobenzene	[75]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
2976	Vinyl chloride	[1]	**0.33 U**	ug/L	EPA 524.2	0.33	8/30/01	E96080
2977	1,1-Dichloroethene	[7]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2979	trans-1,2-Dichloroethene	[100]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
2980	1,2-Dichloroethane	[3]	**0.45 U**	ug/L	EPA 524.2	0.45	8/30/01	E96080
2980	1,1,1-Trichloroethane	[200]	**0.25 U**	ug/L	EPA 524.2	0.25	8/30/01	E96080
2982	Carbon tetrachloride	[3]	**0.28 U**	ug/L	EPA 524.2	0.28	8/30/01	E96080
2983	1,2-Dichloropropane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2984	Trichloroethene	[3]	**0.21 U**	ug/L	EPA 524.2	0.21	8/30/01	E96080
2985	1,1,2-Trichloroethane	[5]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2987	Tetrachloroethene	[3]	**0.26 U**	ug/L	EPA 524.2	0.26	8/30/01	E96080
2989	Chlorobenzene	[100]	**0.23 U**	ug/L	EPA 524.2	0.23	8/30/01	E96080
2990	Benzene	[1]	**0.090 U**	ug/L	EPA 524.2	0.090	8/30/01	E96080
2991	Toluene	[1000]	**0.18 U**	ug/L	EPA 524.2	0.18	8/30/01	E96080
2992	Ethylbenzene	[700]	**0.19 U**	ug/L	EPA 524.2	0.19	8/30/01	E96080
2996	Styrene	[70]	**0.24 U**	ug/L	EPA 524.2	0.24	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

PESTICIDES _PCB CHEMICAL ANALYSIS
62 - 550.310 (2) (c)
(PWS029)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: MW Deep Zone 1 Grab
Sample Number: 2007937001
Sampling Date: 8/29/01 16:30
Preservative: Sodium Thiosulfate
Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
2005	Endrin	[2]	0.039 U	ug/L	EPA 505	0.039	8/30/01	E96080
2010	gamma-BHC (Lindane)	[0.2]	0.020 U	ug/L	EPA 505	0.020	8/30/01	E96080
2015	Methoxychlor	[40]	0.017 U	ug/L	EPA 505	0.017	8/30/01	E96080
2020	Toxaphene	[3]	0.96 U	ug/L	EPA 505	0.96	8/30/01	E96080
2031	Dalapon	[200]	2.6 U	ug/L	EPA 515.1	2.6	9/08/01	E96080
2032	Diquat	[20]	2.6 U	ug/L	EPA 549.1	2.6	9/10/01	E96080
?	Endothall	[100]	2.8 U	ug/L	EPA 548.1	2.8	9/19/01	E96080
2034	Glyphosate	[700]	10 U	ug/L	EPA 547	10	9/12/01	E84129
2035	Di(2-ethylhexyl)adipate	[400]	0.75 U	ug/L	EPA 525	0.75	9/03/01	E96080
2036	Oxamyl	[200]	0.10 U	ug/L	EPA 531.1	0.10	9/03/01	E96080
2037	Simazine	[4]	0.70 U	ug/L	EPA 525	0.70	9/03/01	E96080
039	bis(2-ethylhexyl)phthalate	[6]	0.94 U	ug/L	EPA 525	0.94	9/03/01	E96080
040	Picloram	[500]	0.26 U	ug/L	EPA 515.1	0.26	9/08/01	E96080
041	Dinoseb	[7]	0.58 U	ug/L	EPA 515.1	0.58	9/08/01	E96080
042	Hexachlorocyclopentadiene	[50]	0.26 U	ug/L	EPA 525	0.26	9/03/01	E96080
046	Carbofuran	[40]	0.18 U	ug/L	EPA 531.1	0.18	9/03/01	E96080
050	Atrazine	[3]	0.54 U	ug/L	EPA 525	0.54	9/03/01	E96080
051	Alachlor	[2]	0.68 U	ug/L	EPA 525	0.68	9/03/01	E96080
065	Heptachlor	[0.4]	0.085 U	ug/L	EPA 505	0.085	8/30/01	E96080
067	Heptachlor epoxide	[.2]	0.021 U	ug/L	EPA 505	0.021	8/30/01	E96080
05	2,4-D	[70]	0.53 U	ug/L	EPA 515.1	0.53	9/08/01	E96080
10	2,4,5-TP	[50]	0.41 U	ug/L	EPA 515.1	0.41	9/08/01	E96080
74	Hexachlorobenzene	[1]	0.34 U	ug/L	EPA 525	0.34	9/03/01	E96080
06	Benzo(a)pyrene	[.2]	0.078 U	ug/L	EPA 525	0.078	9/03/01	E96080
26	Pentachlorophenol	[1]	0.34 U	ug/L	EPA 515.1	0.34	9/08/01	E96080
83	PCB	[.5]	0.24 U	ug/L	EPA 508	0.24	9/08/01	E96080
	1,2-Dibromo-3-chloropropane	[.2]	0.0022 U	ug/L	EPA 504.1	0.0022	8/30/01	E96080
46	1,2-Dibromoethane	[.02]	0.0024 U	ug/L	EPA 504.1	0.0024	8/30/01	E96080
59	Chlordane	[2]	0.087 U	ug/L	EPA 505	0.087	8/30/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

SECONDARY CHEMICAL ANALYSIS
62 - 550.320
(PWS031)

Client: Florida Water Services

Workorder: 2601 Marco Lakes ASR DW Scan

Sample Location: MW Deep Zone 1 Grab

Sample Number: 2007937001

Sampling Date: 8/29/01 16:30

Preservative: Nitric Acid or None

Date Received: 8/30/01 9:45

ID	Parameter	MCL	Result		Method	MDL	Date	Lab ID
1002	Aluminum	[0.2]	**0.0030 U**	mg/L	EPA 200.7	0.0030	9/01/01	E96080
1017	Chloride	[250]	**470**	mg/L	EPA 300.0	5.0	9/06/01	E96080
1022	Copper	[1]	**0.0014 U**	mg/L	EPA 200.7	0.0014	9/01/01	E96080
1025	Fluoride	[4]	**1.1**	mg/L	EPA 300.0	0.011	8/30/01	E96080
1028	Iron	[0.3]	**0.73**	mg/L	EPA 200.7	0.025	9/01/01	E96080
1032	Manganese	[0.05]	**0.0041**	mg/L	EPA 200.7	0.0038	9/01/01	E96080
1050	Silver	[0.1]	**0.0010 U**	mg/L	EPA 200.7	0.0010	9/01/01	E96080
1055	Sulfate	[250]	**210**	mg/L	EPA 300.0	1.4	9/06/01	E96080
1095	Zinc	[5]	**0.015**	mg/L	EPA 200.7	0.010	9/01/01	E96080
1905	Color	[15]	**7.0**	CU	SM2120 B	5.0	8/30/01	E96080
1920	Odor	[3]	**1.5**	T.O.N.	SM2150 B	1.0	8/30/01	E96080
1925	pH	[6.5-8.5]	**8.05**	SU	EPA 150.1	0.200	9/05/01	E96080
1930	Total Dissolved Solids	[500]	**1400**	mg/L	SM2540 C	10	8/31/01	E96080
2905	Foaming Agents	[0.5]	**0.11**	mg/L	SM5540 C	0.019	8/31/01	E96080

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

RADIOCHEMICAL ANALYSIS
62 - 550.310 (5)
(PWS033)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: MW Deep Zone 1 Grab
Sample Number: 2007937001
Sampling Date: 8/29/01 16:30
Preservative: Nitric Acid
Date Received: 8/30/01 9:45

ID	Parameter	Result | Error		Method	Date	Lab ID
4000	Gross Alpha	8.1 +/- 2.6	pCi/L	EPA 900.0	9/12/01	E84025
4020	Radium 226	1.7 +/- 0.5	pCi/L	EPA 903.1	9/13/01	E84025

HARBOR BRANCH ENVIRONMENTAL LABORATORY
5600 U.S. 1 North, Fort Pierce, FL 34946
(561) 465-2400, Ext. 285

Unregulated Group II Analysis
62 - 550.410
(PWS034)

Client: Florida Water Services
Workorder: 2601 Marco Lakes ASR DW Scan
Sample Location: MW Deep Zone 1 Grab
Sample Number: 2007937001
Sampling Date: 8/29/01 16:30
Preservative: 1:1 Hydrochloric Acid
Date Received: 8/30/01 9:45

ID	Parameter	Result		Method	MDL	Date	Lab ID
2210	Chloromethane	0.43 U	ug/L	EPA 524.2	0.43	8/30/01	E96080
2212	Dichlorodifluoromethane	0.49 U	ug/L	EPA 524.2	0.49	8/30/01	E96080
2214	Bromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2216	Chloroethane	0.42 U	ug/L	EPA 524.2	0.42	8/30/01	E96080
2218	Trichlorofluoromethane	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080
2.	Methyl-tert-butyl-ether	0.24 U	ug/L	EPA 524.2	0.24	8/30/01	E96080
2408	Dibromomethane	0.41 U	ug/L	EPA 524.2	0.41	8/30/01	E96080
2410	1,1-Dichloropropene	0.10 U	ug/L	EPA 524.2	0.10	8/30/01	E96080
2412	1,3-Dichloropropane	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
2413	1,3-Dichloropropene	0.30 U	ug/L	EPA 524.2	0.30	8/30/01	E96080
414	1,2,3-Trichloropropane	0.26 U	ug/L	EPA 524.2	0.26	8/30/01	E96080
416	2,2-Dichloropropane	0.47 U	ug/L	EPA 524.2	0.47	8/30/01	E96080
941	Chloroform	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
942	Bromoform	0.48 U	ug/L	EPA 524.2	0.48	8/30/01	E96080
943	Bromodichloromethane	0.27 U	ug/L	EPA 524.2	0.27	8/30/01	E96080
944	Dibromochloromethane	0.40 U	ug/L	EPA 524.2	0.40	8/30/01	E96080
965	2-Chlorotoluene	0.18 U	ug/L	EPA 524.2	0.18	8/30/01	E96080
966	4-Chlorotoluene	0.16 U	ug/L	EPA 524.2	0.16	8/30/01	E96080
967	1,3-Dichlorobenzene	0.22 U	ug/L	EPA 524.2	0.22	8/30/01	E96080
978	1,1-Dichloroethane	0.11 U	ug/L	EPA 524.2	0.11	8/30/01	E96080
986	1,1,1,2-Tetrachloroethane	0.15 U	ug/L	EPA 524.2	0.15	8/30/01	E96080
988	1,1,2,2-Tetrachloroethane	0.39 U	ug/L.	EPA 524.2	0.39	8/30/01	E96080
993	Bromobenzene	0.20 U	ug/L	EPA 524.2	0.20	8/30/01	E96080

APPENDIX 3.2

GIARDIA LAMBLIA AND CRYPTOSPORIDIUM TEST RESULTS

FLORIDA DEPARTMENT OF
HEALTH

April 6, 2001

Mr. Frank Kane
Florida Water Services
960 Collier Blvd.
Marco Island, FL 34145

Dear Mr. Kane:

Enclosed are the results for the samples submitted Giardia/Cryptosporidium assay on March 19, 2001. These samples were processed and assayed according to the US EPA ICR Microbial Laboratory Manual (EPA/600/R-95/178) protocol for detecting *Giardia* cysts and *Cryptosporidium* oocysts. When organisms are detected, they are reported as calculated on the basis of a 100 liter sample. When no organisms are observed, the detection limit is reported.

This sample was also stained with DAPI in order to enhance determination of cyst/oocyst internal structure. Positive DAPI staining is an indicator of potential viability. One cryptosporidium oocyst was observed in the examined portion of sample E01-0051; it had amorphous structure and did not stain with DAPI.

In addition to the Assay Report, I have also enclosed copies of specimen submittal sheet and an invoice for these tests. Please forward it for payment.

Please contact me if you have any questions or need additional documentation.

Thank you for selecting our laboratory. I hope we will be able to meet your testing needs now and in the future. I look forward to hearing from you.

Sincerely,

Lillian M. Stark, Ph.D., M.P.H., M.S.
Biological Administrator I

LMS/als

Enclosure: 3

FLORIDA DEPARTMENT OF HEALTH

Giardia/Cryptosporidium Assay Report

Sample #	Collection site	Collection date	Volume examined	# Giardia cysts	# Cryptosporidium oocysts	Comments
E01-0051	Henderson Creek 1730 Collier Blvd Naples, FL	03/26/01	17.0 L	<5.87 / 100 L	5.87 / 100 L	Cryptosporidium oocyst DAPI negative; heavy debris, algae; some crustaceans

* If no oocysts (or cysts) are detected, the detection limit for the sample is reported as < per 100 liters

Reported by

Lillian M. Stark, Ph.D., M.P.H., M.S.
Biological Administrator

Date: 04/06/01

Jeb Bush
Governor

Tampa Branch Laboratory
3952 West Dr. Martin Luther King Jr. Boulevard • Tampa, Fl. 33614-8404
Fax: (813)871-7468 Phone:(813)871-7465 Suncom: 512-6778

Robert G. Brooks, M.D.
Secretary

FLORIDA DEPARTMENT OF HEALTH

M Water Service

E01- 051

Tampa Branch Laboratory
3952 W. Dr. M.L. King Jr. Blvd.
Tampa, FL 33614-8404
phone: (813)871-7465
ATTN: Dr. Stark

Submission Sheet: Water Samples (Potable and Non-potable) for Parasite, Enterovirus or Microscopic Particulate Analysis

Please complete separate form down to heavy dark line for each specimen.

Send Reports to:

Name: Frank Kane

Mailing Address: 960 Collier Blvd

City: Marco Is   County: Collier

State: Fla   Zip: 34145   Phone: 941-394-3353   Fax: 941-394-4069

Collection Data:

Site: Henderson Creek

Address: 1730 Collier Blvd

City: Naples   County: Collier

State: Fla   Zip: 34113   Collector's signature: [signature]

Start Date Sample Collected: 3-26-2001	Finish Date Sample Collected: 3-26-2001	Sample temperature: pH: 8.2
Start Time 14:00	Finish Time 14:26	Total Sampling Time 26 min
Start Meter Reading 257.0	Finish Meter Reading 259.7	Total Volume Collected: 27 gal gallons ☑ liters ☐
Start Turbidity N/A	Finish Turbidity N/A	Sodium Thiosulfate added ? YES ☐ NO ☑

Collector's Comments: FILTER #5

Test Requested: *Giardia/Cryptosporidium* ☑ MPA ☐
Total Culturable Enteroviruses ☐ Other ☐ (specify):

Do NOT write below this line (For laboratory use only)

Date Sample Received: 3/27/01	Time Rec'd: 10:45 AM ☑ PM ☐	Rec'd By: Lea Larson
Shipping Carrier: UPS	Tracking #: 1Z3798980145806361	Specimen Temperature: 4°C
Laboratory Accession # E01-051	Specimen condition: Good	
Date Processed: 3/27/01 + 3/28/01	Technician Larson, Kehoe, + Rezai	
Date Assayed: 4/2, 4/5 + 4/6/01	Technician: Larson + Kazanis	
Date Reported: 4/[illegible]	By: [initials]	

submit (rev 3/12/98)