LEE COUNTY BOARD OF COUNTY COMMISSIONERS
AGENDA ITEM SUMMARY — BLUE SHEET NO: 20020797-UTL

1. REQUESTED MOTION:

ACTION REQUESTED:
Approve Supplemental Task Authorization No. 6 dated June 6, 2002 to Water Resource Solutions, Miscellaneous Utility Engineering Design and/or Inspection Services, Contract No. 1863 for the N-T-E amount of $81,150.00 for the North Reservoir and Olga Water Treatment Plant Aquifer Storage and Recovery (ASR) systems Cycle 2 operations and monitoring. This work will be performed under CIP #7110.

WHY ACTION IS NECESSARY: Projects over $50,000 require BOCC approval.

WHAT ACTION ACCOMPLISHES:
Due to the successful completion of Cycle 1 Aquifer Storage and Recovery (ASR) performance test, Cycle 2 is required to further model the aquifer performance and develop an ASR operational protocol as required by the FDEP, LCDOH and SFWMD. Cycle 2 operational testing will involve injection and recovery of potable water from the aquifer storage zones at the Olga Water Treatment Plant and North Reservoir. Water Resource Solutions will manage the Cycle 2 operational testing and report test results and/or findings to Lee County Utilities, FDEP, LCDOH and SFWMD.

2. DEPARTMENTAL CATEGORY: 10 - UTILITIES C10E
COMMISSION DISTRICT #: 5

3. MEETING DATE: 8-6-02

4. AGENDA:
- X CONSENT
- ___ ADMINISTRATIVE
- ___ APPEALS
- ___ PUBLIC
- ___ WALK ON
- TIME REQUIRED: ____

5. REQUIREMENT/PURPOSE: *(Specify)*
- ___ STATUTE ____
- ___ ORDINANCE ____
- ___ ADMIN. CODE ____
- X OTHER STA

6. REQUESTOR OF INFORMATION:
A. COMMISSIONER: ____
B. DEPARTMENT: Lee County Public Works
C. DIVISION/SECTION: Utilities Division
BY: Rick Diaz, Utilities Director
DATE: 7/17/02

7. BACKGROUND:

On February 12, 1998, a grant was obtained from South Florida Water Management District for joint funding to drill two observation wells, one ASR well at North Reservoir and one ASR well at the Olga Water Treatment Plant site. Promising ASR storage zones were found at both locations. Surface facilities (pump system and transmission lines) were constructed to enable injection and recovery of potable water into and out of the well. The next phase of work, for which this funding request is made, requires Cycle 2 operational testing to further model the aquifer storage and recovery efficiencies and develop an ASR Operational Protocol.

Funds are available in account number:
20711048730.506540 in the amount of $15,840, and as of October 1, 2002, an additional $150,000 will be available.

(Capital Projects/ASR Wells @ North Reservoir & Olga Water Treatment Plant/LCU Capital Improvement/Improvement Construc.)

Attachments: 4 Originals

8. MANAGEMENT RECOMMENDATIONS:

9. RECOMMENDED APPROVAL

(A) DEPARTMENT DIRECTOR	(B) CONTRACTS	(C) HUMAN RESOURCES	(D) OTHER	(E) COUNTY ATTORNEY	(F) BUDGET SERVICES				(G) COUNTY MANAGER
					OA	OM	Risk	GC	
J. Lavender Date: 7-17-02	C. Logan Date: 7/18/02	N/A Date:	S.I. Velez Date: 7-17-02 B. Dearborn Date: 7-17-02	D. Owen Date: 7/18/02	CA 7/19/02	7/22/02	7/23	7/23	J. Lavender Date: 7.17.02

10. COMMISSION ACTION:
- _____ APPROVED
- _____ DENIED
- _____ DEFERRED
- _____ OTHER

Recvd. by CO. ATTY. 7/18/02 1470m CO. ATTY. FORWARDED TO Budget 7/18/02

7-19-02 10:40 A

7/23 JP

LEE COUNTY PROFESSIONAL SERVICE/SERVICE PROVIDER AGREEMENT
CHANGE ORDER/SUPPLEMENTAL TASK AUTHORIZATION

☐ Change Order
☒ Supplemental Task Authorization

NO.: 6

(A Change Order or Supplemental Task Authorization Requires Approval by the Department Director for Expenditures Under $25,000 or Approval by the County Manager for Expenditures Between $25,000 and $50,000 or Approval by the Board of County Commissioners for Expenditures over $50,000)

CONTRACT/PROJECT NAME: OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

CONSULTANT: Water Resource Solutions PROJECT NO.:

SOLICIT NO.: CN-01-11 CONTRACT NO.: 1863 ACCOUNT NO.:

REQUESTED BY: Luis Molina, Lee County Utilities DATE OF REQUEST: 6/6/02

Upon the completion and execution of this Change Order or Supplemental Task Authorization by both parties the Consultant/Provider is authorized to and shall proceed with the following:

EXHIBIT "CO/STA-A: SCOPE OF PROFESSIONAL SERVICE: DATED: 6/6/02

EXHIBIT "CO/STA-B: COMPENSATION & METHOD OF PAYMENT: DATED: 6/6/02

EXHIBIT "CO/STA-C: TIME AND SCHEDULE OF PERFORMANCE: DATED: 6/6/02

EXHIBIT "CO/STA-D: CONSULTANT'S/PROVIDERS ASSOCIATED SUB-CONSULTANT(S)/SUB-CONTRACTORS: DATED: 6/6/02

EXHIBIT "CO/STA-E: PROJECT GUIDELINES AND CRITERIA: DATED: 6/6/02

It is understood and agreed that the acceptance of this modification by the CONSULTANT/PROVIDER constitutes an accord and satisfaction.

RECOMMENDED:

By: _____ 7/15/02
Department Director Date

By: _____
Contracts Mgmt Date

APPROVED:

By: _____
*County Attorney's Office Date

*County Attorney signature needed for **over** Board level expenditures only.

CMO:023

ACCEPTED:

By: _____
Consultant/Provider

Date Accepted: 6/6/02

Corporate Seal

COUNTY APPROVAL:

By: _____
Department Director
(Under $25,000)
Date Approved: _____

By: _____
County Manager (Between ($25,000 and under $50,000)
Date Approved: _____

By: _____
Chairman
Board of County Commissioners
Date Approved: _____

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No.6

EXHIBIT "CO/STA-A"

Date: 6/6/02

SCOPE OF PROFESSIONAL SERVICES

For OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING
(Enter Project Name from Page 1 of the
Change Order or Supplemental Task Authorization)

SECTION 1.00 CHANGE(S) TO PROFESSIONAL SERVICES

The "Scope of Professional Services" as set forth in Exhibit "A" of the Professional Services Agreement, or Service Provider Agreement, referred to hereinbefore is hereby supplemented, changed or authorized, so that the CONSULTANT or SERVICE PROVIDER, shall provide and perform the following professional services, tasks, or work as a supplement to, change to, or authorized to, the scope of services previously agreed to and authorized:

Perform daily system operation and monitoring for ASR wells at the N. Reservoir and Olga water plants. This will be the second annual injection/recovery cycle for both sites. Detailed scope of services for each site are enclosed in two separate letters dated May 30, 2002.

*Use Additional Sheets for Scope of Services, if needed

☐ CHANGE ORDER AGREEMENT No.
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

EXHIBIT "CO/STA-B"

Date: 6/6/02

COMPENSATION AND METHOD OF PAYMENT

For OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

(Enter Project Name from Page 1 of the
Change Order or Supplemental Task Authorization)

SECTION 1.00 CHANGE(S) IN COMPENSATION

The compensation the CONSULTANT, or SERVICE PROVIDER, shall be entitled to receive for providing and performing the supplemented, changed or authorized services, tasks, or work as set forth and enumerated in the Scope of Services set forth in this CHANGE ORDER OR SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", attached hereto shall be as follows:

NOTE: A Lump Sum (L.S.) or Not-to-Exceed (N.T.E.) amount of compensation to be paid the CONSULTANT should be established and set forth below for each task or sub-task described and authorized in Exhibit "S/COA-A". In accordance with Professional Services Agreement Article 5.03(2) "Method of Payment", tasks to be paid on a Work-in-Progress payment basis should be identified (WIPP).

Task Number	Task Title	Amount of Compensation	Indicate Basis of Compensation LS or NTE	If Applicable Indicate (W.I.P.P.)
11.00	Hydrogeological Services	$81,150.00	NTE	WIPP
TOTAL (Unless list is continued on next page)		$81,150.00	NTE	

CMO:029
09/25/01

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

SECTION 2.00 SUMMARY OF CHANGE(S) IN COMPENSATION

Pursuant to and in consideration of the change(s) in the Scope of Professional Services set forth in the CHANGE ORDER or AGREEMENT, Exhibit "CO/STA-A", the compensation the COUNTY has previously agreed to pay to the CONSULTANT, or SERVICE PROVIDER, as set forth in Exhibit "B" of the Professional Services Agreement, or Service Provider Agreement, shall be changed to be as follows:

Section/Task Number	Section/Task Name	Compensation In the Basic Agreement	Adjustment(s) by Previous CO or STA Nos. 1	Adjustment(s) Due to this CO or STA	Summary of Changed Compensation
STA #1	Hydro Services		15,925.00		15,925.00
STA #2	Hydro Services		9,800.00		25,725.00
STA #3	Hydro Services		10,975.00		10,975.00
STA #4	Hydro Services		1,101.50		1,101.50
STA #5	Hydro Services		22,000		22,000.00
STA #6	Hydro Services			81,150.00	81,150.00
TOTAL					140,951.50

CMO:026
09/25/01

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

EXHIBIT "CO/STA-C"

Date: 6/6/02

TIME AND SCHEDULE OF PERFORMANCE

for OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

(Enter Project Name from Page 1 of the
Change Order or Supplemental Task Authorization Agreement)

SECTION 1.00 CHANGES FOR THIS CHANGE ORDER OR SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT

The time and schedule of completion for the various phases or tasks required to provide and perform the services, tasks, or work set forth in this CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", entitled "Scope of Professional Services" attached hereto is as follows:

Phase and/or Task Reference as Enumerated in EXHIBIT "A"	Name or Title of Phase and/or Task	Number of Calendar Days For Completion of Each Phase and/or Task	Cumulative Number of Calendar Days For Completion from Date of Notice to Proceed For this CO or STA
11	Hydro Services	365	365

CMO:027
09/25/01

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

EXHIBIT "CO/STA-C"

Date: 6/6/02

TIME AND SCHEDULE OF PERFORMANCE

for OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

(Enter Project Name from Page 1 of the Change Order or Supplemental Task Authorization Agreement)

SECTION 2.00 SUMMARY OF THE IMPACT OF CHANGE(S) IN PROFESSIONAL SERVICES ON THE OVERALL PROJECT TIME AND SCHEDULE OF PERFORMANCE

Pursuant to and in consideration of the changes in the Scope of Professional Services in this CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", the time and schedule the COUNTY and the CONSULTANT, or SERVICE PROVIDER, has previously agreed to for all of the work to be done under this Professional Services Agreement, or Service Provider Agreement, shall be changed to be as follows:

Phase and/or Task Reference as Enumerated in EXHIBIT 'A' and EXHIBIT 'CO/ STA-A'	Name or Title of Phase and/or Task	Number of Calendar Days For Completion of Each Phase and/or Task	Cumulative Number of Calendar Days For Completion From Date of Notice to Proceed
11	Hydro Services	365	365

CMO:027
09/25/01

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

EXHIBIT "CO/STA-D"

Date: 6/6/02

CONSULTANT'S, OR SERVICE PROVIDER'S, ASSOCIATED SUB-CONSULTANT(S) AND SUBCONTRACTOR(S)

for OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

(Enter Project Name from Page 1 of the Change Order or Supplemental Task Authorization Agreement)

CONSULTANT, or SERVICE PROVIDER, intends to engage the following sub-consultant(s) and/or sub-contractor(s) to assist the CONSULTANT, or SERVICE PROVIDER, in providing and performing the services, tasks, or work required under this CHANGE ORDER, or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT.

(If none, enter the word "none" in the space below.)

Service and/or Work to be Provided or Performed	Name and Address of Individual or Firm	Disadvantaged, Minority or Women Business Enterprise, (If Yes, Indicate Type)			Sub-Consultant Services are Exempted from Prime Consultant's Insurance Coverage	
		Yes	No	Type	Yes	No
	none					

CMO:028
09/25/01

☐ CHANGE ORDER AGREEMENT No. _____
or
☒ SUPPLEMENTAL TASK AUTHORIZATION No. 6

EXHIBIT "CO/STA-E"

Date: 6/6/02

PROJECT GUIDELINES AND CRITERIA

for OLGA & N. RESERVOIR ASR CYCLE 2 SYSTEM OPERATION/MONITORING

(Enter Project Name from Page 1 of the
Change Order or Supplemental Task Authorization Agreement)

As a supplement, or change, to the Project Guidelines and Criteria set forth in the Professional Services Agreement, or Service Provider Agreement, Exhibit "E", the COUNTY has established the following Guidelines, Criteria, Goals, Objectives, Constraints, Schedule, Budget, and/or Requirements which shall serve as a guide to the CONSULTANT, or SERVICE PROVIDER, in performing the professional services, tasks, or work to be provided pursuant to the professional services set forth hereinbefore in CHANGE ORDER or SUPPLEMENTAL TASK AUTHORIZATION AGREEMENT, Exhibit "CO/STA-A", attached hereto:

(If none, enter the word "None" in the space below.)

ITEM No. 1
none

Water Resource Solutions
428 Pine Island Road SW • Cape Coral, Florida 33991 239 574-1919 Fax: 239 574-8106

May 30, 2002

Mr. Luis Molina
Lee county Utilities
1500 Monroe Street, Third Floor
Ft. Myers, FL 33902

Re: North Reservoir ASR System Cycle 2 System Operation/Monitoring
WS Proposal # P02-11178.01

Dear Luis:

As we have discussed, Cycle 2 injection for the North Reservoir ASR well is anticipated to begin around June 17. In order for us to operate and monitor the system as we did during Cycle 1, we will need an amendment to Supplemental Task Authorization # 54 (CN-96-07) or a new STA.. We have attached an STA request for the tasks described below.

A detailed proposed work scope and cost proposal is provided below.

PROPOSED WORK SCOPE

(1) Detailed injection/storage/recovery protocols will be prepared for Cycle 2.

(2) During the cyclical testing, those parameters shown on Tables 1 and 2 will be monitored by WRS personnel at the frequencies indicated. Water samples will be procured in conformance with WRS' FDEP approved quality assurance/quality control (QA/QC) protocols. The samples will be transported to the Lee County Environmental Laboratory for analyses.

(3) Data obtained will be tabulated on a monthly basis. Monthly reports will be prepared and provided to Lee County Utilities, the FDEP, and TAC members.

(4) The data will be analyzed and appropriate technical memos including graphs and charts will be prepared. The data will be entered into the computer model prepared for Cycle 1 to further calibrate that model and predict recovery efficiencies for subsequent injection/storage/recovery cycles.

(5) Assistance will be provided to Lee County for the permitting of the recovery appurtenances through the Lee County Department of Health.

(6) A final report will be prepared for Cycle 2.

COST PROPOSAL

Item	*Amount*
(1) Prepare Cycle 2 injection/storage/recovery protocols	$ 750.00
(2) Daily operation and monitoring of system	26,500.00
(3) Tabulation of data and monthly reporting	8,000.00
(4) Data analyses and model update	4,250.00
(5) LCDOH permitting assistance	1,950.00
(6) Cycle 2 final report	3,250.00
Total:	$44,700.00

ACCEPTANCE

Do not hesitate to call should you have any questions or comments regarding this matter. You may indicate your acceptance of this proposal by providing us with a purchase order or the above amount. Water Resource Solutions is pleased to be of continuing service to Lee County Utilities.

Sincerely,

Daniel J. Acquaviva, P.G.
Senior Project Manager
Licensed Professional Geologist # 1066

TABLE 1.

ASR OBSERVATION WELLS #1 (LM-6208)
MONITORING PARAMETERS AND FREQUENCIES
DURING CYCLICAL TESTING

Parameters	Reporting Frequency
Water Level	Continuous
Maximum Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Minimum Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Average Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Water Quality	
Dissolved Chloride (mg/L)	Weekly
pH (std. units)*	Weekly
Specific Conductance (umhos/cm)	Weekly
Sulfate (mg/L)	Weekly
Temperature (°C)*	Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Total Color (SU)	Weekly
Dissolved Oxygen (mg/l)	Weekly
Arsenic (ug/l)	Weekly
Total Iron (mg/l)	Weekly
Total and Residual Chlorine	Weekly
Gross Alpha (pCi/L)	Monthly

* Measured in field.

TABLE 2.

ASR WELL (LM-6210) MONITORING PARAMETERS AND FREQUENCIES DURING CYCLICAL TESTING

Parameters	Reporting Frequency
Injection Pressure (p.s.i.)	Continuous
Monthly Maximum Pressure	Monthly
Monthly Minimum Pressure	Monthly
Monthly Average Pressure	Monthly
Daily Maximum	Daily
Daily Minimum Pressure	Daily
Daily Average Pressure	Daily
Flow Rate (G.P.M.)	Continuous
Monthly Maximum Flow Rate	Daily/Monthly
Monthly Minimum Flow Rate	Daily/Monthly
Monthly Average Flow Rate	Daily/Monthly
Specific Injectivity	Weekly (During Injection)
Specific Capacity	Weekly (During Recovery)
Total Volume Injected (gallon)	Daily/Monthly
Total Volume Recovered (gallons)	Daily/Monthly
Total Volume in Storage	Daily/Monthly

*Measured in field.
**Beginning of recharge cycle; beginning and end of each recovery cycle.

TABLE 2.

ASR WELL (LM-6210) MONITORING
PARAMETERS AND FREQUENCIES
DURING CYCLICAL TESTING
- CONTINUED -

Injected Fluid Parameters	
Dissolved Chloride (mg/L)	Daily
pH (std. units)*	Daily
Specific Conductance (umhos/cm)	Daily
Sulfate (mg/L)	Weekly
Temperature (°C)*	Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Gross Alpha (pCi/L)	**
Dissolved Oxygen (mg/L)	Weekly
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Turbidity (NTU)	Daily
Total Iron (mg/l)	Weekly
Total Suspended Solids	Weekly
Arsenic (mg/l)	Weekly
Total Color (SU)	Weekly
Recovered Fluid Parameters	
Dissolved Chloride (mg/L)	Daily/Weekly
pH (std. units)	Daily/Weekly
Specific Conductance (umhos/cm)	Daily/Weekly
Sulfate (mg/L)	Weekly
Temperature (°C)	Daily/Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Gross Alpha (pCi/L)	**
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Total Color (SU)	Weekly
Total & Free Chlorine	Weekly
Arsenic	Weekly
Turbidity (NTU)	Daily
Total Iron (mg/l)	Weekly

*Measured in field.

**Beginning of recharge cycle; beginning and end of each recovery cycle.

Water Resource Solutions
428 Pine Island Road SW • Cape Coral, Florida 33991 239 574-1919 Fax: 239 574-8106

May 30, 2002

Mr. Luis Molina
Lee county Utilities
1500 Monroe Street, Third Floor
Ft. Myers, FL 33902

Re: Olga ASR System Cycle 2 System Operation/Monitoring
WS Proposal # P02-11179.01

Dear Luis:

As we have discussed, Cycle 2 injection for the Olga ASR well is anticipated to begin around June 17. In order for us to operate and monitor the system as we did during Cycle 2, we will need an amendment to Supplemental Task Authorization # 7 (CN-96-16). We have attached an STA request for the tasks described below. Please note that there are some remaining amounts from Cycle 1 field monitoring tasks which we anticipate being able to use for Cycle 2, therefore the requested amounts are those that would be anticipated to be needed to supplement the existing excess amounts.

A detailed proposed work scope and cost proposal is provided below.

PROPOSED WORK SCOPE

(1) Detailed injection/storage/recovery protocols will be prepared for Cycle 2.

(2) During the cyclical testing, those parameters shown on Tables 1 and 2 will be monitored by WRS personnel at the frequencies indicated. Water samples will be procured in conformance with WRS' FDEP approved quality assurance/quality control (QA/QC) protocols. The samples will be transported to the Lee County Environmental Laboratory for analyses.

(3) Data obtained will be tabulated on a monthly basis. Monthly reports will be prepared and provided to Lee County Utilities, the FDEP, and TAC members.

(4) The data will be analyzed and appropriate technical memos including graphs and charts will be prepared. The data will be entered into the computer model prepared for Cycle 1 to further calibrate that model and predict recovery efficiencies for subsequent injection/storage/recovery cycles.

(5) Assistance will be provided to support Lee County's permitting, through the Lee County Department of Health, of surface appurtenances necessary for use of the of the recovered water.

(6) A final report will be prepared for Cycle 2.

COST PROPOSAL

Item	*Amount*
(1) Prepare Cycle 2 injection/storage/recovery protocols	$ 500.00
(2) Daily operation and monitoring of system	23,250.00
(3) Tabulation of data and monthly reporting	5,250.00
(4) Data analyses and model update	3,250.00
(5) Permitting assistance for LCDOH approval	1,950.00
(6) Cycle 2 final report	2,250.00
	Total: $36,450.00

ACCEPTANCE

Do not hesitate to call should you have any questions or comments regarding this matter. You may indicate your acceptance of this proposal by providing us with a purchase order or the above amount. Water Resource Solutions is pleased to be of continuing service to Lee County Utilities.

Sincerely,

Daniel J. Acquaviva, P.G.
Senior Project Manager
Licensed Professional Geologist # 1066

TABLE 1.

ASR OBSERVATION WELLS #1 (LM-6209) and #3 (LM6615)
MONITORING PARAMETERS AND FREQUENCIES
DURING CYCLICAL TESTING

Parameters	Reporting Frequency
Water Level	Continuous
Maximum Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Minimum Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Average Water Level/Pressure (psi or feet NGVD)	Daily/Weekly
Water Quality	
Dissolved Chloride (mg/L)	Weekly
pH (std. units)*	Weekly
Specific Conductance (umhos/cm)	Weekly
Sulfate (mg/L)	Weekly
Temperature (°C)*	Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Total Color (SU)	Weekly
Dissolved Oxygen (mg/l)	Weekly
Arsenic (ug/l)	Weekly
Total Iron (mg/l)	Weekly
Total and Residual Chlorine	Weekly
Gross Alpha (pCi/L)	Monthly

* Measured in field.

TABLE 2.

ASR WELL (LM-6086) MONITORING PARAMETERS AND FREQUENCIES DURING CYCLICAL TESTING

Parameters	Reporting Frequency
Injection Pressure (p.s.i.)	Continuous
Monthly Maximum Pressure	Monthly
Monthly Minimum Pressure	Monthly
Monthly Average Pressure	Monthly
Daily Maximum	Daily
Daily Minimum Pressure	Daily
Daily Average Pressure	Daily
Flow Rate (G.P.M.)	Continuous
Monthly Maximum Flow Rate	Daily/Monthly
Monthly Minimum Flow Rate	Daily/Monthly
Monthly Average Flow Rate	Daily/Monthly
Specific Injectivity	Weekly (During Injection)
Specific Capacity	Weekly (During Recovery)
Total Volume Injected (gallon)	Daily/Monthly
Total Volume Recovered (gallons)	Daily/Monthly
Total Volume in Storage	Daily/Monthly

*Measured in field.

**Beginning of recharge cycle; beginning and end of each recovery cycle.

TABLE 2.

ASR WELL (LM-6086) MONITORING
PARAMETERS AND FREQUENCIES
DURING CYCLICAL TESTING
- CONTINUED -

Injected Fluid Parameters	
Dissolved Chloride (mg/L)	Daily
pH (std. units)*	Daily
Specific Conductance (umhos/cm)	Daily
Sulfate (mg/L)	Weekly
Temperature (°C)*	Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Gross Alpha (pCi/L)	**
Dissolved Oxygen (mg/L)	Weekly
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Turbidity (NTU)	Daily
Total Iron (mg/l)	Weekly
Total Suspended Solids	Weekly
Arsenic (mg/l)	Weekly
Total Color (SU)	Weekly
Recovered Fluid Parameters	
Dissolved Chloride (mg/L)	Daily/Weekly
pH (std. units)	Daily/Weekly
Specific Conductance (umhos/cm)	Daily/Weekly
Sulfate (mg/L)	Weekly
Temperature (°C)	Daily/Weekly
Total Dissolved Solids (mg/L)	Weekly
Total Trihalomethanes (mg/L)	Weekly
Gross Alpha (pCi/L)	**
Total Alkalinity (mg/L)	Weekly
Total Hardness (mg/L)	Weekly
Calcium Hardness (mg/L)	Weekly
Total Color (SU)	Weekly
Total & Free Chlorine	Weekly
Arsenic	Weekly
Turbidity (NTU)	Daily
Total Iron (mg/l)	Weekly

*Measured in field.
**Beginning of recharge cycle; beginning and end of each recovery cycle.
10963TGG.A11