

96 DEC -9 PM 2: 24

Project No.  
3174-F9

November 20, 1996

Mr. Dick Alford  
Livermore Valley Joint Unified School District  
685 East Jack London Boulevard  
Livermore, CA 94550

*considering RCRA*

Subject: Maintenance Yard  
2900 Ladd Avenue  
Livermore, California

## REPORT ON GROUND-WATER SAMPLING

Reference: ENGEO Inc.; Proposed Ground-Water Monitoring Well Sampling Program,  
2900 Ladd Avenue, Livermore, California, dated October 1, 1996.

Dear Mr. Alford:

ENGEO is pleased to provide the results from the most recent sampling and laboratory testing of the ground water monitoring wells located at 2900 Ladd Avenue in Livermore, California. This report presents the results of the November 1996 sampling event as recommended in the referenced report. The scope of services included the following:

- Purging of the three ground-water monitoring wells with the recovery of a ground-water sample from each of the wells.
- Laboratory analysis of the ground-water samples for TPH as gasoline, benzene, toluene, ethyl benzene and xylene (BTEX). *no analysis for MTBE*
- Preparation of this letter report.

### Ground-Water Sampling

Field work was conducted on November 1, 1996. The depth to the top of the ground water was verified and the wells were checked for the presence of free product or petroleum sheen. No free product or sheen was observed. Prior to sampling, approximately four casing volumes of water were removed from the wells using a submersible electric pump. Water quality parameters including, temperature, pH, and conductivity were monitored to allow for adequate purging. The ground-water samples were collected for laboratory testing using a disposable polyethylene bailer. The samples were then decanted into precleaned laboratory glassware and cooled in an ice chest until delivery under a documented chain-of-custody to Chromalab, Inc. in Pleasanton, California. The well sampling information forms and the chain-of-custody are provided as attachments.

Laboratory Analysis

The ground-water samples were tested for total petroleum hydrocarbons as gasoline, (EPA 5030/8015) and benzene, toluene, ethylbenzene and xylenes (BTEX - EPA 602). A copy of the laboratory test report is provided as an attachment. Table I provides a summary of the laboratory test results.

**TABLE I**  
 Laboratory Analysis Summary  
 (Concentrations reported in parts per billion)

	DTW	Elevation	TPHg	B	T	E	X
<b>MW2</b>							
4/20/93	30.81	100.00	4,500	340	110	8.0	630
5/12/94	31.12	100.00	7,000	520	220	35	410
2/8/95	28.04	100.00	170	8.9	4.5	2.1	17
5/23/95	17.77	100.00	<50	<0.5	<0.5	<0.5	<0.5
9/20/95	25.55	100.00	8,400	2,500	1,200	180	940
12/29/95	20.91	100.00	640	0.7	<0.5	1.9	4.7
11/01/96	22.63	100.00	1600	390	140	25	120
<b>MW3</b>							
7/12/94	38.76	98.85	<50	<0.5	<0.5	<0.5	<0.5
2/8/95	27.08	98.85	<50	<0.5	<0.5	<0.5	<0.5
5/23/95	17.28	98.85	<50	<0.5	<0.5	<0.5	<0.5
9/20/95	25.06	98.85	<50	1.4	<0.5	<0.5	<0.5
12/29/95	20.25	98.85	50	1.8	<0.5	<0.5	<0.5
11/01/96	22.22	98.85	<50	<0.5	<0.5	<0.5	<0.5
<b>MW4</b>							
7/12/94	39.50	99.22	<50	<0.5	<0.5	<0.5	<0.5
2/8/95	27.66	99.22	<50	<0.5	<0.5	<0.5	<0.5
5/23/95	17.68	99.22	60	<0.5	<0.5	<0.5	<0.5
9/20/95	25.81	99.22	<50	<0.5	<0.5	<0.5	<0.5
12/29/95	20.90	99.22	<50	<0.5	<0.5	<0.5	<0.5
11/01/96	22.84	99.22	<50	2.7	<0.5	<0.5	<0.5

DTW: Depth to water (ft.)  
 Elevation: Relative casing elevation (ft.)

Livermore Valley Joint Unified School District  
Maintenance Yard  
REPORT ON GROUND-WATER SAMPLING

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The next sampling episode for the three wells is scheduled for April 1997. With your authorization, a copy of this report will be provided to Ms. Eva Chu with the Alameda County Department of Environmental Health. We appreciate the opportunity to be of continued service to you on this project. If you have any questions, please contact our office.

Very truly yours,

ENGEO INCORPORATED



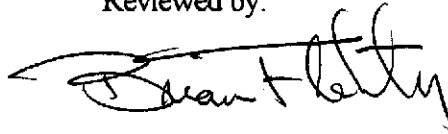
Shawn Munger  
RG 5810

sm/lb:gws

Attachments

cc: 1 - Alameda County Department of Environmental Health, Ms. Eva Chu

Reviewed by:



Brian Flaherty  
Vice President  
Director, Environmental Services

Vacaville: (707) 455-7833

## **LIST OF ATTACHMENTS**

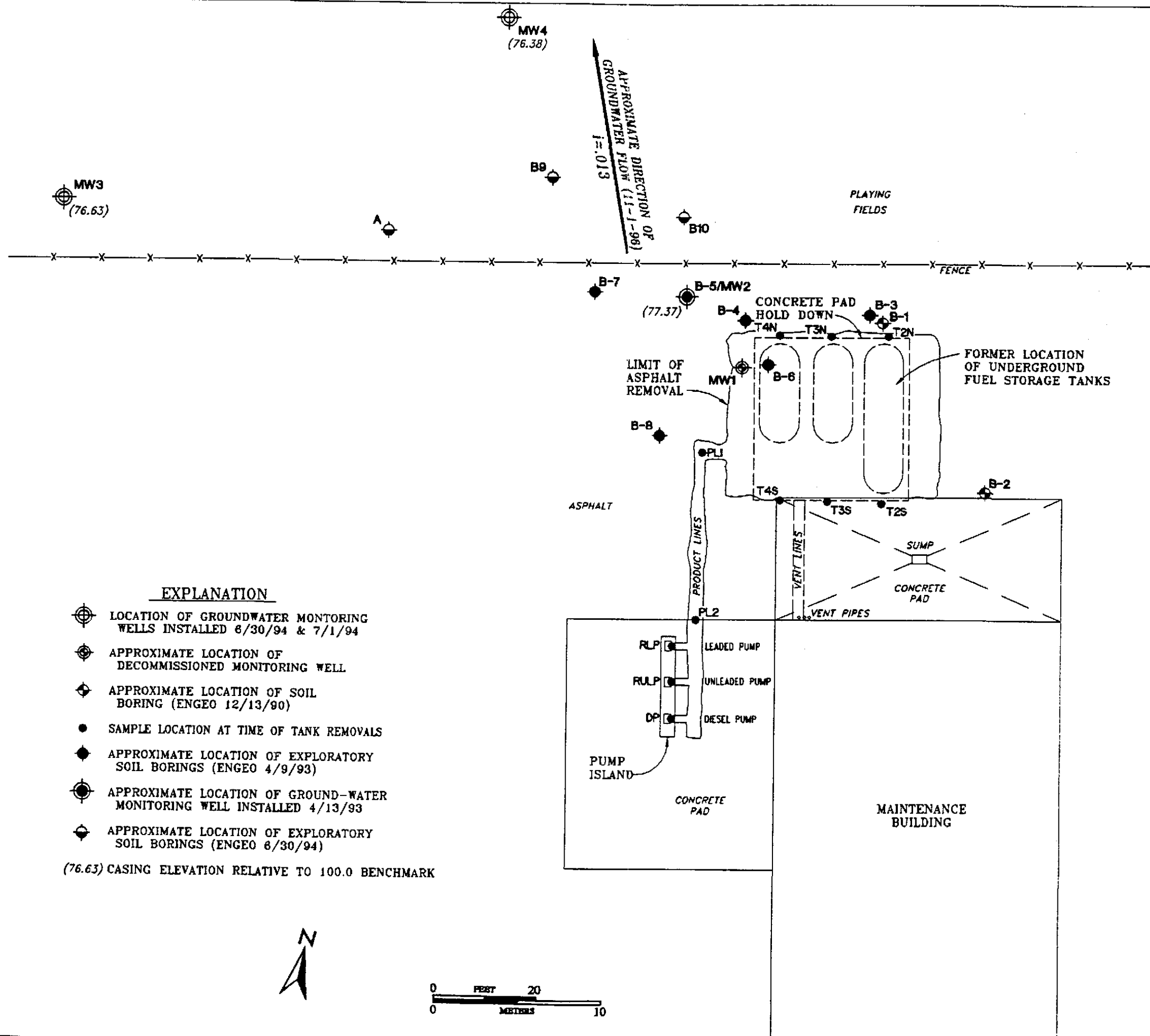
Figure 1 - Monitoring Well Locations

Three Ground-Water Sampling Information Forms

Chromalab, Inc. Report

Chain-of-Custody

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**EXPLANATION**

- ⊕ LOCATION OF GROUNDWATER MONITORING WELLS INSTALLED 6/30/94 & 7/1/94
  - ⊙ APPROXIMATE LOCATION OF DECOMMISSIONED MONITORING WELL
  - ◆ APPROXIMATE LOCATION OF SOIL BORING (ENGEO 12/13/90)
  - SAMPLE LOCATION AT TIME OF TANK REMOVALS
  - ◆ APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGEO 4/9/93)
  - ⊕ APPROXIMATE LOCATION OF GROUND-WATER MONITORING WELL INSTALLED 4/13/93
  - ◆ APPROXIMATE LOCATION OF EXPLORATORY SOIL BORINGS (ENGEO 6/30/94)
- (76.63) CASING ELEVATION RELATIVE TO 100.0 BENCHMARK

FIGURE NO. **1**  
 JOB NO.: 3174-PD  
 DATE: NOVEMBER 1996  
 DRAWN BY: [Signature]  
 CHECKED BY: [Signature]

**MONITORING WELL LOCATIONS**  
 L.V.J.U.S.D. MAINTENANCE YARD  
 2900 LADD AVENUE  
 LIVERMORE, CALIFORNIA

ENGEO  
 INCORPORATED

**ENGEO INCORPORATED  
GROUND-WATER SAMPLING INFORMATION**

Job Name: 2900 Ladd Avenue

Job Number: 3174-F9

Location: Livermore, California

Date: November 1, 1996

Client: L.V.J.U.S.D.

By: Keith Nowell

**WELL INFORMATION**

Well Number: MW-2

Diameter (in): 2

Total Depth (ft): 56.78 (toc)

Screen Length: 25'

Depth to Water (ft): 22.63 (toc)

Casing Volume (gal): 5.7

**PURGING INFORMATION**

Bailer: Pump: X (rate): 1.3 gpm

Time: (init./fin) 14:32/14:49

Volume Removed (gal): 24

No. of Casing Vol: 4.2

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (µS)	pH	Comments
14:32	--	--	--	--	--	Initial, no odor, no sheen
14:37	6	1.1	67.5	740	8.2	Turbid
14:41	12	2.1	66.6	722	8.2	Slightly turbid
14:45	18	3.2	66.6	727	8.1	Slightly turbid
14:49	24	4.2	66.4	711	8.1	Clear

**SAMPLE INFORMATION**

Bailer: X Pump: (gpm):

Decon Procedure: TSP

Dist. H<sub>2</sub>O

Disposable X

Other

Sample	Time	Size	Presv.	Test	Comments
MW-2	15:00	40ml (3)	ICE	TPHg/BTEX	Slightly turbid

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November 20, 1996

**ENGENO INCORPORATED  
GROUND-WATER SAMPLING INFORMATION**

Job Name: 2900 Ladd Avenue	Job Number: 3174-F9
Location: Livermore, California	Date: November 1, 1996
Client: L.V.J.U.S.D.	By: Keith Nowell

**WELL INFORMATION**

Well Number: MW-3	Diameter (in): 2
Total Depth (ft): 52.52 (toc)	Screen Length: 25'
Depth to Water (ft): 22.22 (toc)	Casing Volume (gal): 5.1

**PURGING INFORMATION**

Bailer: Pump: X (rate): .1.8 gpm	Time: (init./fin) 13:38/13:50
Volume Removed (gal): 20	No. of Casing Vol: 3.8

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (µS)	pH	Comments
13:38	--	--	--	--	--	Initial, no odor, no sheen
13:41	5.0	1.0	68.7	880	8.4	Slightly turbid
13:44	10	1.9	68.4	959	8.1	Slightly turbid
13:47	15	2.9	67.8	882	8.1	Slightly turbid
13:50	20	3.8	67.0	871	8.0	Slightly turbid

**SAMPLE INFORMATION**

Bailer: X Pump: (gpm):	Dist. H <sub>2</sub> O
Decon Procedure: TSP	Other
Disposable X	

Sample	Time	Size	Presv.	Test	Comments
MW-3	14:05	40ml (3)	ICE	TPHg/BTEX	Slightly turbid

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**ENGEO INCORPORATED  
GROUND-WATER SAMPLING INFORMATION**

Job Name: 2900 Ladd Avenue

Job Number: 3174-F9

Location: Livermore, California

Date: November 1, 1996

Client: L.V.J.U.S.D.

By: Keith Nowell

**WELL INFORMATION**

Well Number: MW-4

Diameter (in): 2

Total Depth (ft): 53.55 (toc)

Screen Length: 25'

Depth to Water (ft): 22.84 (toc)

Casing Volume (gal): 5.2

**PURGING INFORMATION**

Bailer: Pump: X (rate): 0.90 gpm

Time: (init./fin) 12:42/13:00

Volume Removed (gal): 20

No. of Casing Vol: 3.8

Time	Volume Removed (Gal.)	Total Casing Volumes	Temp °F	Cond (µS)	pH	Comments
12:42	--	--	--	--	--	Initial, no odor, no sheen
12:49	5	1.0	68.5	1050	8.7	Clear
12:53	10	1.9	66.3	1000	8.4	Clear
12:57	15	2.9	65.9	1160	8.3	Clear
13:00	20	3.8	64.8	980	8.2	Slightly turbid

**SAMPLE INFORMATION**

Bailer: X Pump: (gpm):

Decon Procedure: TSP

Dist. H<sub>2</sub>O

Disposable X

Other

Sample	Time	Size	Presv.	Test	Comments
MW-4	13:15	40ml (3)	ICE	TPHg/BTEX	Clear

3174-F9  
November 20, 1996



# CHROMALAB, INC.

Environmental Services (SDB)

November 8, 1996

Submission #: 9611011

ENGE0, INC.

Atten: Keith Nowell

Project: 2900 LADD AVE.  
Received: November 1, 1996

Project#: 3174-F9

re: 3 samples for Gasoline and BTEX compounds analysis.  
Method: EPA 5030/8015M/8020A

Matrix: WATER  
Sampled: November 1, 1996 Run#: 3902 Analyzed: November 5, 1996

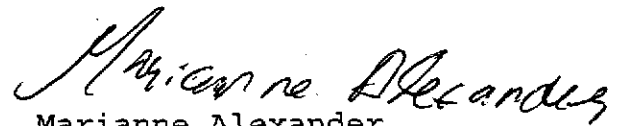
Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
105970	MW-2	1600	390	140	25	120

Matrix: WATER  
Sampled: November 1, 1996 Run#: 3957 Analyzed: November 7, 1996

Spl#	CLIENT SPL ID	Gasoline (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl Benzene (ug/L)	Total Xylenes (ug/L)
105971	MW-3	N.D.	N.D.	N.D.	N.D.	N.D.
105972	MW-4	N.D.	2.7	N.D.	N.D.	N.D.

Reporting Limits	50	0.50	0.50	0.50	0.50
Blank Result	N.D.	N.D.	N.D.	N.D.	N.D.
Blank Spike Result (%)	81.4	86.1	81.5	79.2	82.9

  
Kayvan Kimyai  
Chemist

  
Marianne Alexander  
Gas/BTEX Supervisor

**CHROMALAB, INC.  
SAMPLE RECEIPT CHECKLIST**

Client Name Fargo Date/Time Received 11/19/96 1345  
 Project 2900 Ladd Ave/374-F9 Received by Mpak / Time  
 Reference/Subm # 30528/96/1011 Carrier name \_\_\_\_\_  
 Checklist Completed by: Santone 11/4/96 Logged in by MP 11/19/96  
 Signature / Date Initials / Date  
 Matrix: \_\_\_\_\_

- Shipping container in good condition? NA  Yes  No
- Custody seals present on shipping container? Intact  Broken  Yes  No
- Custody seals on sample bottles? Intact  Broken  Yes  No
- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Samples intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- VOA vials have zero headspace? NA  Yes  No
- Trip Blank received? NA  Yes  No
- All samples received within holding time? Yes  No
- Container temperature? 10.7
- pH upon receipt \_\_\_\_\_ pH adjusted \_\_\_\_\_ Check performed by: \_\_\_\_\_ NA

Any **NO** response must be detailed in the comments section below. If items are not applicable, they should be marked NA.

Client contacted? \_\_\_\_\_ Date contacted? \_\_\_\_\_  
 Person contacted? \_\_\_\_\_ Contacted by? \_\_\_\_\_  
 Regarding? \_\_\_\_\_  
 Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Corrective Action: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

